

**Stefan Marinov**

# **THE THORNY WAY OF TRUTH**

**Part II**

**Documents on the violation of the laws  
of conservation**

**EST-OVEST**  
Editrice Internazionale



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**Part II**

**Documents on the invention of the perpetuum  
mobile, on the centurial blindness of mankind, and  
on its frantic perseverance in it**

**EST-OVEST**

**Editrice Internazionale**

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А К О П О Л У К О О И Д Е Т Р А К Т О Р ,  
О Т Л У К О У И С Т А Я .

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Untranslatable Bulgarian pun with a double and tripple sense. (See THE THORNY WAY OF TRUTH, part I, p. 1 and ИЗЪДИ, САНА!, p. 34, the bottom.)



O father Galileo, cunning one and wise!

## PREFACE TO THE FIRST EDITION

The story narrated in this book will remain as one of the most curious and fantastic stories in the history of our planet. The *perpetuum mobile*, the fabulous machine which once set in motion rotates eternally, and which the man vainly searches for centuries and centuries, turns out to be a childishly simple gadget. Mankind could discover it at the dawn of the electromagnetic era. The discoverer could be Faraday, Siemens, Edison, or a certain Jablotchkov, persecuted by the retrograde tsarist regime for his devotion to scientific truth and imprisoned in jails and psychiatric clinics for his love and help to the abased and insulted (за его любовь и помощь униженным и оскорбленным). However, the *perpetuum mobile* was discovered in the fateful Orwellian nineteen-eighty-four. Why? - An enigma. May be only the future of our terribly sick planet will decipher it. May be not.

In this second part of THE THORNY WAY OF TRUTH (the first part published in 1982 was dedicated to the restoration of the absolute space-time conceptions) I give the documented story on the invention of the *perpetuum mobile*. The book CALVARIO with 12 paintings of the great Cenni is included as a biographical sketch (of me and of our century) and as an absolutely adequate and complete presentation of my social and political concepts which I (together with Cenni) think are the unique true and exact reflection of the existing social and political reality. To say with words what Cenni said with 12 pictures, one has to write 1 million and 200,000 pages. Thus including CALVARIO, I spared my time and the time of the reader. I included CALVARIO also for other reasons: Those paintings, covered with dust and arranged in an angle of Cenni's studio, were shown to me in the summer of 1982 by his widow Ada. I remained shocked: such a tremendous beauty! A treasure more worth than tons of gold and diamonds! And nobody sees it, meanwhile in Guggenheim one exposes excrements! - Thus with my friend, the Genoa editor Franco Pirella, we decided to excavate this treasure. But have we until now succeeded? --- The journals have written that when the President of the Italian republic, A. Pertini, visited the exposition of Picasso's paintings in Venice, he remained 10 minutes to contemplate "Guernica". Meanwhile Pertini left to his secretaries the presentation of his thanks when the book CALVARIO was sent to him and I can only say to my Parteigenosse the following: "Caro Sandro, scusa, ma nell'arte non capisci un cacchio. Se davanti la "Guernica" sei rimasto 10 minuti, allora fino la morte non devi far nient'altro che contemplare il "Calvario". Stai almeno tranquillo che nella tua ignoranza non sei solo, perché tutti i critici d'arte capiscono le tele non meglio di te."

In this book are presented three of my scientific papers:

1) NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY WITH THE HELP OF THE "COUPLED SHUTTERS" EXPERIMENT. The paper gives the account on my this year measurements of the laboratory velocity carried out in Graz. This paper has not a direct relation to the *perpetuum mobile* but since it is largely discussed in my 1984-correspondence, I decided to include it, so that the reader can make reference to this so furiously rejected paper.

2) ON THE ACTION AND INTERACTION OF STATIONARY CURRENTS. The older variation of this paper had the title "Mathematical nonsenses slipped into the fundamentals of conventional electromagnetism must finally be corrected". This paper is discussed in the 1983- and 1984-correspondence. The most important aspects of this paper are: the large discussion of the violation of the simple (mechanic) Newton's third law at the interaction of electric currents, the discovery of the "current jet effect", the establishment that the energy velocity of the current conducting electrons is  $c$ , and the explanation of the mechanism of rotation of an axle along which electric current flows. The interaction between radial and circular electric currents discussed in the paper is extremely important for the understanding of the *perpetuum mobile*.

TO

3) COUP DE GRACE TO RELATIVITY AND SOMETHING ELSE. This is the paper which presents the theoretical background and the description of the *perpetuum mobile*. Here I should like to give the most simple its description (fig. 1):

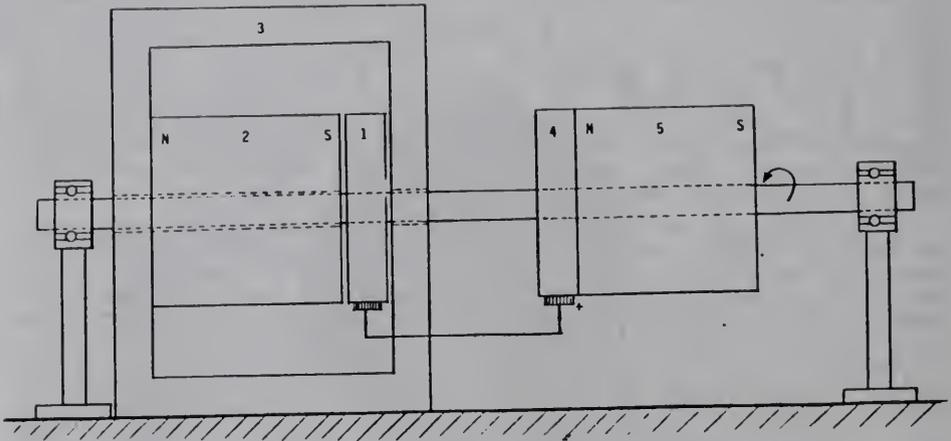


Fig. 1

The copper disk 1 (to diminish the action of the eddy currents, radial slits are bored in the disk, so that it presents a wheel) is solidly attached to the axle. This disk is in the gap between the stationary magnet 2 and its yoke 3. When the axle is rotated, an electric current is induced in disk 1, and the tension appears between the axle (one of the electric poles) and the brush sliding on the disk's rim (the other electric pole); thus it represents the so-called Faraday dc generator. If electric tension is applied to those two poles, the disk 1 begins to rotate. Thus it represents also the so-called Barlow wheel. The copper disk 4 is solidly connected to the magnet 5 and to the axle. When the axle is rotated, an electric current is induced in disk 4 between the axle and the brush sliding on the disk's rim and, if tension is applied to those two poles, the disk rotates. Thus disk 4 also represents a Faraday generator and a Barlow wheel. The disk 4 with the magnet 5 solid to it has, however, a very strange behaviour: when it rotates, the electric power produced by it is bigger than its mechanical braking power. In any other generator known to humanity these two powers are always exactly equal one to another. Thus the Faraday disk 4 produces electric energy for which no equivalent in mechanical energy has to be paid. The basis of my perpetuum mobile is this energetic unbalance.

The perpetuum mobile operates in the following way: At the indicated polarity of the magnets one makes the magnetic intensity produced by the magnet 5 to be stronger than the magnetic intensity produced by the magnet 2. Hence the electric tension produced by the disk 4 (with the indicated polarity at the indicated direction of rotation) will be bigger than the electric tension produced by the disk 1 and through the circuit "axle - disk 1 - conductor - disk 4 - axle" an electric current

$$I = (U_4 - U_1)/R$$

will flow, where  $U_4$  is the tension produced by the disk 4,  $U_1$  is the tension produced by the disk 1 and  $R$  is the resistance of the circuit. This current maintains the rotation of the Barlow disk 1. If the rotational moment of the Barlow disk 1 is equal and opposite to the braking moment of friction, the apparatus rotates eternally.

I came to this discovery after having received two hints. The one came from my

Greek friend Dr. P. Pappas (who visited the prohibited by the Bulgarian government ICSTA-conference in 1977 in Sofia). On the ICSTA-conference in Genoa in July 1982 Pappas reported on his repetition of Ampere's "floating bridge" experiment which cannot be explained without violating Newton's third law. Pappas experiment suscitated a lengthy discussion between him, our American friend Prof. Wesley, and me. In December 1982 Pappas came with his car to Graz to take me to visit Wesley and to make there a mini-conference. However the tsarist (b-r-r-r, the German and Austrian) police undermined the conference imprisoning me first in a German jail and then in an Austrian one (see ИЗБИЛИ, САТАНА!, pp. 202 - 215 and p. 189 in the present book). We all (especially Wesley and I) were convinced that Newton's third law cannot be violated and we made any efforts to save this sacred law (see our papers in the PROCEEDINGS OF ICSTA). Until now Wesley is further firmly convinced that Newton's third law cannot be violated because it is a fundamental stone in our today's physics and if it is not true, then the whole body of today's physics has to crumble to pieces. Many months I shared Wesley's opinion, as it is entirely logic. However my 1983 and 1984 experiments, as well as the whole experimental evidence in electromagnetism, show clearly that Newton's third law is violated at the interaction of stationary currents. And, as Wesley expected, whole today's "conservation of energy physics" crumbled to pieces: I constructed a perpetuum mobile.

The other hint came from Miami, Florida. The story of this hint is largely presented in this book: one has to read all letters of Dr. Francisco Müller (see pp. 206, 211, 239) and his article "The amazing problem of the electromagnetic unipolar induction" (p. 46). For me it was clear that the electromagnetic phenomena are "point-to-point" interactions and depend on the absolute velocities of the particles, but not on their relative velocities (as the theory of relativity asserts), and these my conceptions are largely presented with the relevant formulas in CLASSICAL PHYSICS. However, Dr. Müller reported on many specific experiments which have been done by him for a first time, he sent me a reprint of Kennard's 1917-paper, he turned my attention to Faraday's unipolar generator when disk and magnet rotate together. I must firmly declare: without Müller's hints I would be never ABLE TO DISCOVER the perpetuum mobile. And another interesting detail. Müller investigated during a dozen of years only the Faraday inductor but he has not paid attention to the "motor effects", i.e., to the Barlow disk. Had he done this, surely <sup>he</sup> had to be the discoverer of the perpetuum mobile.

Müller is an excellent experimenter and a profoundly thinking person (let me add that he is one of the most pure, noble and humble spirits ever met by me on this Earth). However he cannot grasp with easiness the description of the electromagnetic phenomena by the help of the formulas of the vector analysis. As an example I shall give formulas (28) and (29) (see p. 124) which explain many of the puzzles analysed in his letter of the 15.IV.1984 (see p. 239), as, say, the explanation of the null effect in the experiment shown in his fig. 4 (see p. 250). But this remark concerns not only him. Whole conventional electromagnetism does not know and consequently does not understand the capital importance of the mentioned two simple formulas. And another remark. Müller always tries to explain the effects taking into account the time derivative of the magnetic intensity  $dB/dt$ . Meanwhile if one wishes to reveal the relevant physical essence of the phenomena, one has to work with the time derivative of the magnetic potential  $dA/dt$ . One says that the last words of Weber on his death-bed were: "Potentials, potentials - not intensities."

I warmly recomand the reading of Müller's paper and letters. I suggest to the reader to give the answers to the questions posed on p.215 without looking at the answers given by Müller. If somebody in the world will find alone the right answers, I beg him to write me, to swear on the heads of his parents and children that he has found the right answers without looking at Müller's ones and he will receive from me a cheque for \$ 200.

Here I should like to mention that at the conference on hadronic mechanics in Como in August I met my old Turkish friend Dr. H. Yilmaz. After my lecture on the perpetuum mobile Yilmaz said to me: "My PH. D. in Istanbul some 20 years ago was dedicated exactly to the problem about the 'seat' of the electromagnetic induction. This term 'seat' is introduced by me." I do not know whether the notion "seat of electromagnetic induction" comes from Yilmaz, from Müller or from some XIX-th century physicist.

I only know that this extremely important problem is completely disregarded by conventional electromagnetism which, following Faraday, always searches to cut the magnetic flux by the surface of a closed loop, as if the magnetic flux is a sausage and the loop a knife.

About my perpetuum mobile I spoke in April this year on an alternative fair here in Graz (see p. 238), where I announced of having discovered how to realize the dream of mankind, but, being a poor groom, that I have no money to construct it. A week later Mr. Florian Hopfgartner, a fitter in a small Graz workshop, came to my stable and said to me: "I heard your speech and I am disposed to construct your perpetuum mobile without payment." And he constructed it. However, the most interesting story is that Florian gave me the book of Dr. Nieper (publ. 1981) where many reports on Faraday unipolar generators with rotating magnets and disks are presented. All persons who have carried out those experiments report that they have not observed the appearance of braking mechanical moments. It remains an enigma for me why all those gentlemen (Bruce de Palma, Kieninger, Trombley, Valone) have not coupled the Faraday unipolar generator with a Barlow wheel and have not constructed the perpetuum mobile. Instead to measure the input and output energies and try to convince the scientists that the output energy is bigger than the input energy, one has to construct a perpetuum mobile with a closed cycle, as in fig. 1, and then even the blind will open widely their eyes.\* During 35 years of research work I established that when the scientists see the black white and the white black, it is impossible to convince them that the opposite is true. The scientists are "besonders riechende Tiere" (Brecht), they are unable to grasp the most simple and clear truths if the holy books deny such truths. The present book, as well as its first part, present a vast experimental confirmation of this assertion. I must add that in the present book are given only the rejection letters to the three included in the book papers. The total number of rejection letters received by me after the appearance of the first part is more than 50. The referees systematically repeat the same stupidities<sup>as</sup> in the preceding 10 years. As a unique example I give the letter of the PHYS. REV. of the 5.V.1983 (see p. 192).

A part of the documents reflect my desperate fight for the liberation of my Russian colleague Yuri Orlov. The reader can clearly see that the so-called "Western world" is definitely against the humanization and democratization of the totalitarian countries. And the Western world will costly pay for this its swinery.\*\* However, I do not wish to discuss here this big and ominous problem. I wish only to draw two parallels. Andropov did not fulfil my ultimatum. For him the life of a man was nothing in comparison to his unsatiated thirst for power. Strangely enough, neither Dr. Maddox has fulfilled my ultimatum. And if on the balance of Dr. Maddox the life of a man has no weight, how can we expect that the lives of the millions can have certain weight on the balance of the politicians whose morality is million times lower than the morality of Dr. Maddox. I begin the shudder thinking on the cold-bloodedness of Dr. Maddox.

My fight for the publication of the three articles presented in this book goes further on. Now I prepare my self-immolation in front of the British Embassy in Vienna. I issued this book. Then a day before the immolation I shall give a press-conference in Vienna for the international press. I am sure that Dr. Maddox will give up and will publish the three papers. In the same way tomorrow Tchernienko (or his successor) will give up and free Sakharov and the thousands prisoners of conscience in the Soviet Union. Despite the terrible truth narrated in CALVARIO, despite the indisputable example of thousands of years of human history, I firmly believe that the force of the tongue will overwhelm the force of the fist.

Graz, September 1984

Stefan MARINOV

\* In relation to the same topic see the peculiar documents concerning the Newman's "impossible motor" on pp. 274 and 275. To spare space, I give only the last page of Newman's affidavit. In the other pages one cannot find some other valuable information. Newman gives not the principle of his motor and until now I do not know whether this is a Faraday unipolar generator or some other type of dc electrical machine. But I think neither the editors of SCIENCE know this. SCIENCE has published a SCIENTIFIC paper about a BLACK BOX (see p. 230).

\*\* In German: Schweinerei.

PREFACE TO THE SECOND EDITION

I give to the printer the second edition of this book today, on the 26 April 1985. The first edition was given to the printer on the 7 September 1984. As the first edition had only a limited number of copies, and the world libraries will acquire predominantly the second edition, I shall consider 1984 (December) as publishing year for the second edition. In this way I intend to keep the year 1984 as the year of publication of THE THORNY WAY OF TRUTH, Part II (TWT-II). The ominous Orwellian year passed away without some significant world event. I wish to keep its fame in history as the year in which the perpetuum mobile was invented. It is true that in 1984 a perpetuum mobile with a closed cycle (i.e., an eternally rotating machine) was not constructed. If mankind will further frantically persevere in its "centurial blindness" and will give me no possibility for printing papers and no material possibilities for carrying out experiments, may be, the perpetuum mobile will begin to run neither in 1985. But what can I more do? --- I wish once again to inform the reader that I am a poor groom living in a horse-stable in a small village near Graz. I work black only for my bread and roof, as during four years that I am in Graz the Austrian government does not give me a permission for work. On the other hand no other government in the world gives me an entering visa. Since three years the Belgian government does not permit me to visit my wife in Brussels (see p. 223), since 6 months the Australian government does not give me a permission to visit my brother in Sydney, the Bulgarian government confiscated my house, deprived me of Bulgarian citizenship and does not permit me to visit my son in Sofia, on the 25 March 1985 the American government denied me a visa for the States where I intended to visit the other constructors of perpetua mobilia (Bruce de Palma, Joseph Newman, etc.) and my friend Henry Dart III who sent me money for trip and sojourn. After informing him on the phone for the denial, Dr. Dart sent a telegram and a letter of protest to the American Embassy in Vienna, but the Embassy neither answered him as if he is not an American citizen but a head of onion (in Bulgarian: сякаш че не е американски гражданин, а лукова глава). Thus any man with eyes can see that the American government, exactly as a government in an Eastern totalitarian country, deprives its citizens of the right to keep friendly and scientific contacts and relations with foreigners. Needless to say that in such countries as Italy (I am member of the ruling Italian Socialist Party!), France, Germany, etc. I enter only illegally, and if being kept, my research work continues further in the corresponding jail (see pp. 189, 191, 268)..... I pay my whole theoretical, experimental, organisatory, and publication activity only by the money received from the sale of my books. But this resource is very limited, as the scientific journals refuse to print my paid advertisements (see pp. 307 and 309). Nevertheless, as the reader can see, although being persecuted by all governments in the East and the West, although being ostracized by all scientific and political institutions and authorities, I continue "froh und munter" my walk on the thorny way of truth and I found on it many roses, I met friends, supporters, admirers, and I enjoyed the profound satisfaction in revealing the secrets of Nature.

This book shows, however, that the enigma of the electromagnetic interactions is not still thoroughly resolved. My friends, Müller, Pappas, Wesley, have done enormously important contributions. Many other contemporary scientists have realized that in electromagnetism there is still "much bread to be eaten". Needless to mention that a whole cohort of scientists of the XIXth and of the beginning of the XXth century knew pretty well that the problems in electromagnetism are not resolved. But the most important and amazing aspect of the electromagnetic interactions is the fact (remained almost unnoticed during one and a half century) that they violate the conservation laws (first of all they violate the third Newton's law what was established by Grassmann in 1845). The violation of the conservation laws can be observed in many historical experiments. In the present book are described other experiments where such violations come patently to light. And the possibility for constructing a perpetuum mobile becomes evident for any reader who reads this book with open eyes. I hope that if TWT-II will reach more readers, the day when the perpetuum mobile will begin to rotate will come soon.

When one reads both parts of TWT, when one becomes aware of the scientific level

of my CLASSICAL PHYSICS, one receives the impression that we live in a Kafkian world. I, however, firmly believe that our world is not Kafkian. I further consider the sup-  
pression of the absolute conceptions by the scientific community as a result of ig-  
norence and misunderstanding, not as a result of a malicious mafia conspiracy.

In the TWT-I there were many actors playing the same role. To spare my time and  
the time of the reader I concentrated all world "relativists" to a single person:  
Dr. Maddox, and I should say, the TWT-II became a two-actors drama. In a good drama  
any protagonist speaks for himself and with his words must give explanation for all  
his actions and for all his conscious and subconscious motivations leading to these  
actions. When the Moscow actresses asked: "Антон Павлович, а почему Маша Мишу в первом  
действии поцеловала, а во втором дулась?", the answer of Tchekhov always was: "А вы  
текст читайте, текст, там сказано зачем и почему." In my drama Dr. Maddox also  
speaks for himself and it is needless to give further explanations for his actions.  
Dr. Maddox did only one thing which remains an enigma: Во втором действии he promi-  
sed me (see p. 227) to publish the Russian and English texts of my ultimatum to An-  
dropov for a tripple page charge as an advertisement, and I went to Paris to execute  
my self-immolation in front of the Soviet Embassy. However, he did not print this  
ultimatum and he gave not a single word of explanation why he played this dirty joke.  
If the ultimatum had been printed, now Orlov should be free in the West and Sakha-  
rov had not to stay more under a police controle in Gor'ki. For Dr. Maddox it was  
clear that my possibilities to impose my will over the Soviet government are much  
bigger, than, say, the possibilities of President Carter were (Reagan is not interes-  
ted at all in freeing Soviet dissidents). Dr. Maddox knew that by publishing my ul-  
timatum, he will open the doors of Orlov's jail. He promised me, then had a second  
thought, and refused the publication (I repeat, as an advertisement for a tripple  
page charge!). WHY? A very big enigma for me and for the world. May be, history will  
decipher it, may be not.

I wish here only to say the following: A general opinion is that the cutthroats  
of KGB are responsible for the imprisonment of the dissidents in the Soviet Union  
and the black squadrons of Guy de Buisson are responsible for the massacres in El  
Salvador. This is the most erroneous belief which exists in the world. The responsible  
for the excesses in the Soviet Union are the members of the Soviet Academy of Scien-  
ces, the members of the Union of Writers, the physicians, the teachers, the workers  
and the kolkhozeniks. The same kind of persons are responsible for the tragedy in  
El Salvador. As I do not wish to be untenable, I shall give immediately an example:  
The man who retained Dr. Orlov in the Soviet jail after the 16 January 1984 was only  
one: Dr. Maddox! May be, Dr. Maddox will object that my words are a calomny. I stay  
with experimental proofs behind any of my physical or political statement. And I  
can show the guilt of Dr. Maddox in the following manner: If Dr. Maddox will publish  
my ultimatum (see pp. 203 and 204) changing the name of Andropov by the name of Gor-  
batchov and the date 16.I.1984 by the date 16.I.1986, then next January he will be  
able to speak with Orlov in London. If he again will refuse to print this ultimatum,  
he will condemn the poor Dr. Orlov for another couple of years to exile in Siberia.

In the second edition the papers "On the action..." (p. 82) and "Coup de grace..."  
(p. 112) are enlarged and new documents sprung up after September 1984 have been in-  
cluded. To have a book of about 300 pages, certain documents from the first edition  
(predominantly in German, thus not interesting for the world readership) have been  
canceled.

All formulas are written in the CGS system of units, <sup>for</sup> except the last two papers ad-  
ded in the third edition, written in the SI.  
Graz, April 1985 Stefan MARINOV

PREFACE TO THE THIRD EDITION

In the third edition the papers "On the action..." (p. 82) and "Coup de grace..."  
(p. 112) are further revised and new documents sprung up after April 1985 have been  
included. Only eight documentary pages from the second edition have been canceled.

Graz, May 1986 Stefan MARINOV

Renato Cenni

# Calvario

poesie di Stefan Marinov

*presentazione di Fulvio Cerofolini  
e di Mario Bottaro*

Pirella editore Genova

Le poesie pubblicate fanno parte della raccolta:

МИСТ ОИБРУ.ТЕН

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**È** per me un grande onore introdurre questa pubblicazione che presenta, in eccellente veste tipografica, la riproduzione delle dodici tele che costituiscono il famoso "Calvario" che Renato Cenni dipinse stupendamente per lasciare agli uomini, attraverso le immagini dell'orrore nazista, uno dei più validi messaggi di pace. Queste tele, che l'Autore ha voluto donare alla nostra città, esprimono con rara efficacia una tragedia che secoli di storia futura non riusciranno a cancellare. Al valore artistico si affianca, prepotente, il grande impegno morale con cui Cenni ci ripropone, ripercorrendo le tappe fondamentali del martirio di Cristo, l'analogo Calvario di milioni di uomini annientati in un genocidio che ancora agghiaccia per la fredda organizzazione con cui fu perpetrato. Il simbolo della croce è qui inteso in tutta la sua primitiva e lacerante violenza. Ed è proprio in questo che sta la grandezza dell'opera, nella sua genuinità, nel nitore di un duro ammonimento che Cenni ha voluto riproporre agli uomini.

Ho conosciuto personalmente Renato Cenni. Gli fui amico ed io amo ricordarlo non solo per il suo straordinario impegno politico, non solo come artista di grande levatura ma anche, se mi è consentito, proprio per l'amicizia che ci legava, per quella arguzia di vecchio toscano trapiantato a Genova.

L'uomo Cenni, il combattente partigiano, l'antifascista irriducibile, l'artista turbato e tormentato da orrori indelebili, aveva dentro una tale ricchezza creativa che gli consentiva di attendere con identica genialità all'arte pittorica, alla scultura, all'arte letteraria.

Oggi, in questa pubblicazione, vediamo opere di Cenni affiancate dai versi sofferti di Stefan Marinov, e sembra quasi che i due abbiano condiviso lo stesso destino, percorso gli stessi sentieri, tanto i versi del poeta si attagliano via via alla cromia e all'espressività delle immagini scaturite dalla tormentata tavolozza del pittore.

Sembra quasi, dicevo, una storia di vite parallele, e forse è proprio così, perchè quando si hanno gli stessi ideali non è necessario conoscersi, frequentarsi, vivere negli stessi luoghi, per poter esprimere all'unisono i propri sentimenti, la rabbia, il desiderio di lotta, soprattutto quando il primo di questi ideali è quello da sempre più ambito dall'uomo: la libertà.

Sento di dover ringraziare anche l'editore per il coraggio dimostrato nell'impegnarsi in quest'opera, e con intenti non meramente speculativi.

Spero vivamente che la diffusione dell'opera porti, ancora intatto, il palpitante messaggio lasciatoci da Renato Cenni. Esso è diretto

*ai giovani che non hanno conosciuto gli orrori dei lager, agli uomini che ancora recano nelle carni e nell'animo il segno di profonde ferite, ma soprattutto a tutti coloro che troppo presto hanno dimenticato o che, per disimpegno e voluta superficialità, lasciano aperte le maglie di una rete difensiva che potrebbe precipitarci, oggi come ieri, in un abisso ancora più cupo.*

Fulvio Cerofolini

**C** è nella vita di un pittore almeno un momento di completo isolamento dal mondo, di riflessione, di distacco dall'arte intesa come professione (e, perciò, dal mercato e dai mercanti): è quando, smesse le cose che devono piacere anche agli altri, il pittore si tormenta per dipingere la "sua" opera. Renato Cenni non ha quasi mai, nella sua vita e nella sua copiosa produzione, seguito consigli; tanto meno ha seguito le indicazioni del mercato o dei mercanti (non li amava molto neppure come frequentazione). Ha praticamente sempre disegnato e dipinto solo le cose che gli piacevano e che gli avevano suggerito quelle sensazioni trasmesse agli artisti da oggetti, persone, luoghi altrimenti banali. Ma, appunto, attendeva e pretendeva che i suoi disegni, i suoi quadri fossero capiti, "piacessero" anche agli altri.

Con "Calvario", Cenni non si è posto nessun problema di platea. Ha voluto essere, solitario, l'unico spettatore di quanto nasceva sulla tela. Per questo più volte, per anni, disperatamente, ha smontato immagini, ha ridipinto, ha distrutto composizioni, ha ricominciato da capo. Non attendeva l'applauso che è, in fondo, necessità di ogni artista: l'incomunicabilità è arte solo se può diventare forma di comunicazione; l'indifferenza e l'incomprensione non appartengono al nostro tempo: che la sentenza vera spetti ai posteri non dà soddisfazione. Cenni cercava se stesso e la propria ideologia. Cercava l'esule a Parigi, cercava il partigiano "Neri" e tutti coloro che, come lui, avevano combattuto per la pace, cercava di dare forma all'urlo di dolore, di paura, di commozione, di disperazione che si era sentito dentro guardando le immagini dei campi di sterminio, o viaggiando nell'Africa post-coloniale, nel centro America dei generali e delle multinazionali, nelle megalopoli statunitensi in cui abita l'emarginazione.

"Calvario" è l'opera più bella di Cenni; è stata anche l'opera da lui concepita come più segreta, più personale. Non intendeva farne commercio e preferiva sapere che, anche dopo la sua morte, nessuno (Ada senza dubbio no, ma altri?) l'avrebbe monetizzata. Perciò andò dal sindaco di Genova Cerofolini per regalarla al Comune: Cenni era nato toscano, ma Genova era la città della sua giovinezza e dei primi passi della sua pittura.

"Calvario" o "Via Crucis": il problema è sorto mentre Franco Pirella preparava questo volume, mentre il Comune accettava ufficialmente dalla vedova di Cenni le tavole e gli schizzi dell'opera. Si è poi scelto "Calvario" per vari motivi: perché lo stesso Cenni chiamava così le tele (come mostra il documento riprodotto anche in questo libro), perché, soprattutto, il nome "Calvario" rende

*maggiormente la religiosità dell'opera tutta rivolta all'uomo e non alla trascendenza. Il Cristo che passa attraverso le stazioni della crocifissione è materializzato, nel fisico e nello spirito, in un deportato, in un perseguitato, in un internato nei campi di sterminio. Non ha, negli occhi, la luce della resurrezione. Forse non ha neppure quella della speranza. È una vittima inerme e nuda, priva di vie di scampo nell'aldiqua e nell'aldilà. Il suo calvario è quello di milioni di uomini su tutta la terra. Se, nella sofferenza, chi crede vede Dio, Cenni riscopriva un destino concreto, una violenza istituzionalizzata, un'espressione comune a tutti i travestimenti del potere. Nessuno si salva: tutti coloro che opprimono e ordinano sono raffigurati ghignanti attorno all'uomo-Cristo. Per questo Cenni non poteva pensare di commercializzare l'opera: rifiutava di "scegliere" i buoni per accontentare l'eventuale committente. Per lui, in alto, non c'erano buoni.*

*Se Cenni avesse conosciuto Stefan Marinov — le cui poesie accompagnano "Calvario" — lo avrebbe scelto come amico. Marinov è esule, dissidente politico e scientifico; si oppone all'oppressione nella propria terra, ma non per questo è comodamente schierato a favore di altri governi, di altri poteri, di altri sistemi. Bulgaro, fuggiasco, non si piega: la sua speranza sono la scienza e il comune destino per gli uomini. Nella poesia le formule matematiche e fisiche non hanno spazio: Marinov è perciò, in questa pagina, soprattutto un esule e un perseguitato, che si rivolge direttamente a chi esilia e a chi perseguita. Scava nell'amarezza del dolore, dell'incomprensione, della tortura (amarezza, questa, ancor più pungente perché chi vuole degradare si degrada), della prigionia, dei manicomi per "diversi". Marinov, non impreca: vuole convincere forse, certamente vuole raccontare, far sapere.*

Mario Bottaro

L'idea di dipingere questo «Calvario» risale a molti anni addietro. Gli orrori della guerra l'hanno ispirato.

Giugno millenovecentoquaranta, Parigi. I «boches» sono arrivati. Avanguardie di acrobati motociclisti saettono sui boulevards.

Dall'alto dei loro cavalli, artiglieri ubriachi di sonno e di champagne brindano alla vittoria. Il rombo dei panzer diventa agghiacciante cadenza di stivali ferrati. Dalla porta d'Orléans gli ultimi fuggiaschi rientrano a Parigi. Sull'antenna della torre Eiffel sale la svastica, dall'arco dell'Etoile ciondola il gonfalone di Hitler.

I compagni antifascisti sono tutti arrestati. Documenti e carte d'alimentazione false consentono di vivere, di tener duro, di aiutare gli amici.

Appaiono le prime strazianti figure di ebrei con la tragica stella gialla cucita sul petto. Poi, in una sola notte, ne scompariranno venticinquemila.

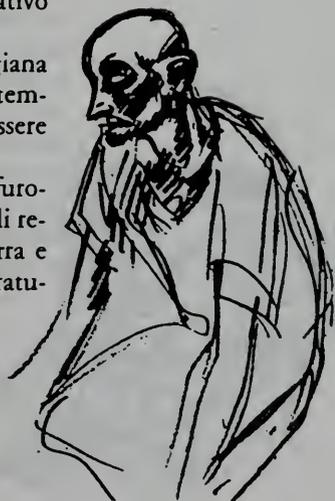
Ecco Pétain Laval Vichy, ecco gli attentati dei partigiani, i proclami del comando tedesco, le fucilazioni, le deportazioni in massa. Ecco il luglio del '43 la caduta del fascismo, il ritorno in patria e l'arresto con la moglie.

Ed ecco l'armistizio, ma anche il ritorno del «Duce» e del fascismo, la lotta partigiana, le ferree repressioni, la lotta fratricida, la liberazione, le vendette. Poi... Hiroshima.

Gli anni perduti, l'odio per i responsabili delle rovine e i lutti della guerra, mi tennero a lungo in uno stato di esasperazione nervosa tale da non consentire la serenità, indispensabile per affrontare con qualche probabilità di successo, un lavoro così impegnativo quale sentivo doveva essere il «Calvario».

Così, l'idea — nutrita di dolore anche durante la lotta partigiana — di realizzare un'opera che fosse una protesta e nello stesso tempo un omaggio alle vittime di tutte le guerre cominciò ad essere realizzata solo nel 1958.

La ricerca di materiale su fatti di guerra, sulle persone che ne furono i maggiori artefici, i ritratti dei capi di stato e di governo, di responsabili militari, ecc. dei paesi coinvolti nella grande guerra e nei fatti d'arme successivi occuparono molto tempo. E la letteratu-



ra di guerra, il materiale giornalistico fotografico e cinematografico, uniti ai ricordi personali, mi furono di grande aiuto nella lavorazione delle dodici tele. Le centinaia di schizzi e disegni, in nero ed a colori, di studi di ritratti di atteggiamenti di espressione dei molti personaggi che vi appaiono, impegnarono mesi di lavoro. Guardando le «Via Crucis» tradizionali, dipinte dagli artisti di tutti i tempi, pensai sempre alla figura del Cristo come ad un simbolo dell'Umanità, sofferente di tutte le sofferenze che solo la malvagia bestialità dell'uomo può procurare.

Ho sempre creduto che il primo dovere dei capi sia quello di servire il popolo (e succede il contrario). Ho sempre creduto criminale ogni gesto di violenza diretto a sottomettere l'individuo ad altro individuo od un popolo ad altro popolo.

Per questo ho dipinto nel «Calvario» alcune delle figure più compromesse nella tragedia della nostra epoca, rappresentandoli nella parte di sgherri torturatori e carnefici.

Non tutti i personaggi raffigurati sono considerati responsabili: da questo la differenza degli atteggiamenti, delle espressioni e della posizione datagli nei dipinti.

Ma pur essendo stata la grande guerra ad ispirarlo, questo «Calvario» non vuol essere una condanna solo della guerra 39-45, ma di tutte le infamie, legate alle guerre passate presenti e future, perciò vi appaiono figure note legate ad avvenimenti bellici anteriori e posteriori a quella data.

Il «Calvario» fu dipinto tre volte; oltre trenta tele occorsero per arrivare alle dodici attuali.

L'esperienza cinematografica acquisita durante la realizzazione di un film, mi suggerì di deviare dalla tradizione che tende a rappresentare la «Via Crucis» sempre con lo stesso taglio, cioè con le figure intere viste da lontano (in campo lungo). Usai così le inquadrature della macchina da presa per movimentare le diverse «stazioni»; da qui le figure intere, le mezze figure i tre quarti o il particolare.

Dipinsi le prime tele impostandole direttamente dagli studi preparatori fatti prima. Il risultato singolo mi parve andasse bene, ma avvicinate una all'altra non si accordavano, mancavano di unità,



ne risultava insomma un'opera slegata; ogni pezzo preso a sé si reggeva, vicino agli altri crollava tutto.

Ricominciai daccapo; abbassai il tono del colore concentrai maggiormente il «fuoco» sulla figura principale, controllai di più gli atteggiamenti dei carnefici e delle figure di contorno. Il risultato non fu molto diverso. Anche la prova che volli fare fu negativa: sottoposi le tele al giudizio di una dozzina di persone, esseri semplici, il cui giudizio consideravo di grande importanza, dato che volevo essere "capito" da tutti.

Fu così che mi resi conto che l'esasperazione espressionistica data ai dipinti, ne comprometteva la «lettura» da parte delle persone meno preparate.

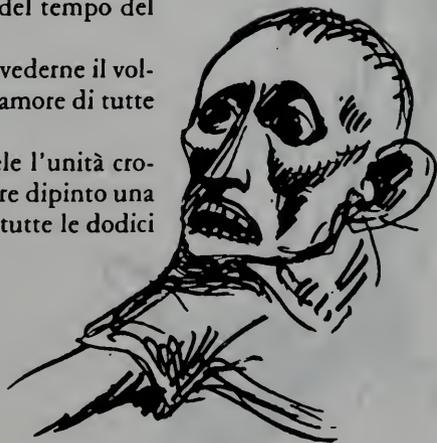
Allora cambiai ancora le composizioni, la posizione di certi personaggi di cui ridussi anche il numero, accentuai la rassomiglianza dei ritrattati, calmai la violenza delle espressioni, castigai il colore che in talune tele era esasperato come la forma; curai gli abiti gli elmetti le armi, resi più statici ed essenziali gli atteggiamenti di tutte le figure, breve, cercai di mantenermi il più possibile aderente al vero.

Sulle tele la figura del Cristo era ancora quella tradizionale, cioè quella di un uomo con barba e capelli lunghi; ma un giorno la visione di un film sugli orrori della guerra mi rivelò che fra i personaggi che lo circondavano quell'Essere appariva retorico e fuori del nostro tempo e furono i milioni di poveri scheletri di Dachau, di Buckenwald, di Mathausen, di Auschwitz, di Belsen, che mi disse- ro come doveva essere il Cristo del «Calvario».

Però dell'immagine del Redentore mantenni il rosso della veste, per ragioni pittoriche e per chiarezza di simbolo, ritenendo di rendere così maggiormente l'idea della continuazione del tempo del sacrificio dell'Uomo.

La figura della Madre è girata di spalle per evitare di vederne il volto, preferendo sintetizzare nel gesto della carezza, l'amore di tutte le madri per la loro creatura.

Grande difficoltà ebbi anche per dare alle dodici tele l'unità cromatica che hanno adesso. Questo perché avevo sempre dipinto una tela per volta. Quando lo compresi, mi circondai di tutte le dodici



tele e cominciai a ridipingerle contemporaneamente passando da una stazione all'altra, da un ciclo all'altro, da un personaggio all'altro, con gioia con rabbia con dolore.

E se per non aver voluto togliere dalle tele questo o quel personaggio, alte personalità politiche, responsabili di partiti e di associazioni, funzionari di gallerie, agenzie di stampa, giornali e riviste mi hanno ignorato e illuso e amareggiato con promesse non mantenute e mostre non organizzate, non ha più importanza.

Le tele sono finite ed il risultato è quello che è. Ormai non sono più in condizioni di giudicarle.

D'altronde non le ho dipinte per me. Questo «Calvario» è stato fatto per tutti quelli che come e più di me le guerre le hanno sofferte ed è il loro giudizio che conta.

Credo fermamente che in questo nostro mondo ci sia ancora qualcuno che farà sì che questo «Calvario» possa essere visto dagli uomini per cui è stato fatto.

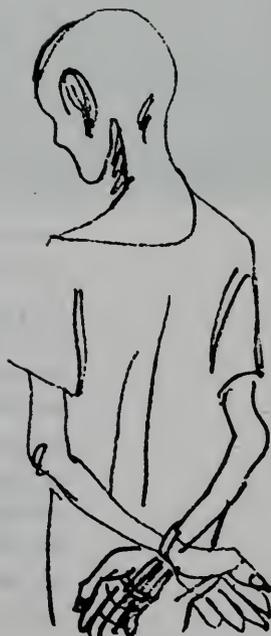
E se il giudizio espresso dalle migliaia di persone che ormai l'hanno veduto, vale, vuol dire che un granello di sabbia per la costruzione della Pace, l'ho portato anch'io.

Genova, Gennaio 1961

*Renato Cenni*



- 1 *Condannato*  
*Verurteilt*  
*Condamné*
- 2 *La Croce*  
*Das Kreuz*  
*La Croix*
- 3 *Prima caduta*  
*Erster Fall*  
*Première chute*
- 4 *Incontro con la madre*  
*Begegnung mit der Mutter*  
*Rencontre avec la mère*
- 5 *Il Cireneo*  
*Der Cyreneer*  
*Le Cyrénéen*
- 6 *La Veronica*  
*Veronika*  
*La Véronique*
- 7 *Seconda caduta*  
*Zweiter Fall*  
*Deuxième chute*
- 8 *Incontro con le donne*  
*Begegnung mit den Frauen*  
*Rencontre avec les femmes*
- 9 *Terza caduta*  
*Dritter Fall*  
*Troisième chute*
- 10 *Denudato e deriso*  
*Entbloesst und verlacht*  
*Dépouillé et dérisé*
- 11 *Crocefisso*  
*Gekreuzigt*  
*Crucifié*
- 12 *La Fine*  
*Das Ende*  
*La Fin*



War unser Ahnen Blut denn noch zu wenig,  
das sie vergossen in des Ersten schmutzigen Krieges Schlachthof?  
War denn zu wenig unserer Väter Blut,  
das sie im Zweiten opferten der ewig blutgierigen Erde?

Zu wenig waren wohl die Opfer, die wir brachten,  
daß ihr mit euren hohlen leeren Marschallköpfen,  
anstatt wie Vogelscheuchen auf dem Feld zu stehen,  
Schindluder triebt mit unser aller Schicksal?

Es reicht! Blast selbst die Hörner und die Trompeten!  
Minister, reiht ein euch in die erste Angriffsreihe,  
reiht ein euch, stolze Hähne und gekrönte Dichter,  
die Oden singen auf den Soldaten Mut!

Wir, aber, wir spucken auf eure Gesetze der Schlächter,  
wir spucken auf euch und auf das Gold auf euren Schulter.

Fu poco il sangue versato dai nonni  
nel massacro della prima sporca guerra?  
Nella seconda, non bastò quello dei padri  
che ha impregnato l'insaziabile terra?

Fu poco il prezzo pagato alla morte  
se le teste vuote dei potenti  
invece di impaurire i corvi sonnolenti  
van fornicando con la nostra sorte?

Basta! Suonate pure le trombe coi tromboni,  
schiegate i ministri nelle linee di lotta,  
mettete in fila i poeti e i galli cedroni  
che esaltano le imprese degli eroi.

Ma noi sputiamo sulle vostre leggi, noi  
sulle spalline d'oro sputiamo e su di voi.



Малко ли кърви проляха дедите ни  
в касапницата на Първата мръсна война,  
през Втората с малко ли кръв напоиха бащите ни  
жадната вечно за кърви земя,

малко ли жертви платихме, че с вашите  
кухи и празни маршалски глави  
вместо по нивите гарги да плашите  
блудствате с наште човешки съдби?

Стига! — Сами си свирете с тръби и тромпети,  
постройте министрите в бойни редици,  
постройте и всички петлета и пости напети,  
възпяващи храбростта на герои-войници. —

А ние ще плюем по ваште касапски закони,  
ще плюем по вас и по златните ваши пагони.

Wieder, wie vor acht Jahren, bin ich hinter dem Gitter,  
und wieder verfolge ich den leichten Gang der Wolken am Himmel,  
und wieder jeden Abend weht von der Straße die Frische  
und ein ewiger Lärm kommt von den Nachbarhäusern.

Dieselben weißen Zimmer - wie in jenen Jahren,  
dieselben sind die Sanitäter, die Ärzte, die Wächter, -  
nur scheinen etwas nervöser zu sein, mehr sind die grauen Haare,  
und ihre Augen blicken müde und trüb.

Und eines wiederholt mir beim Gespräche hier jeder:  
"So viele Jahre hast du nichts verstanden, Marceau,  
und bleibst derselbe treuherzige Dummkopf,  
der die nackte Hand in das Rad steckt."

Und ich schaue stumm in ihre traurigen langen Gesichter,  
und ich sehe: die sind die Speichen des Rades.

Sono di nuovo dietro la rete, come negli anni sessanta,  
seguendo nel cielo il calmo andare delle nuvole,  
e di nuovo ogni sera soffia da fuori un vento leggero,  
e un rumore smorzato arriva alle case vicine.

Le stesse camere bianche, come a quei tempi,  
gli stessi infermieri, dottori, guardiani...  
Sono però più nervosi, nei capelli appare la vecchiaia,  
e i loro occhi sono pesanti e tristi.

E ognuno di loro mi ripete le stesse parole:  
"Da anni non riesci a capire il mondo, Marceau,  
rimani lo stupido ingenuo di sempre  
che infila la mano nuda nella ruota".

Ed io, ammutolito, li guardo dentro gli occhi  
e vedo che sono essi i raggi della ruota.



Я опять за решеткою, как лет восемь назад,  
и опять слежу по небу тихий ход облаков,  
и опять каждый вечер вест с улицы хлад  
и доносится шум из соседних домов.

Те же комнаты белые — как и в те времена,  
те же санитары, врачи, старшины —  
только стали нервнее, пробились седина,  
да глаза их как-то утомленно-грустны.

И одно вторит мне в разговоре тут всяк:  
"Столько лет ничего ты не понял, Марсо,  
и остался такой же наивный дурак,  
чтобы голую руку совать в колесо."

А я немо смотрю в их печальные лица  
и понять не могу, почему они спицы.

Mein Abend, mein Abend, herrlicher Sommerabend,  
nur du läßt mich mit mir allein,  
und die frische Kühle von draußen hätschelt mich,  
in einem stillen hellen Kummer umarmend.

Den ganzen Tag plagt man mich hier,  
den ganzen Tag verlangt jemand etwas von mir,  
und ich kreise wie ein Narr oder ein Verrückter im Zimmer umher,  
und mein Mitmensch zermalmt mich im Mörser.

Nur jetzt vor dem Schlaf bleib ich allein hinter dem Gitter,  
mit den Augen in den rosigen Himmel versinkend;  
ich leide, schwer drückt es am Herzen, doch mit stillem Kummer  
empfange ich das Los wie Brot und Salz.

Nur eines kann ich nicht verstehen: warum in dieser traumhaften Welt,  
ohne es zu wollen, quälen wir einander so grausam.

Tramonto, mio tramonto, sereno tramonto d'estate,  
solo tu mi fai sentire in pace con me stesso,  
e dalla strada un vento dolce e fresco  
mi avvolge in languida tristezza.

Tutto il giorno, senza tregua, qui mi tormentano,  
tutto il giorno qualcuno da me vuole qualcosa,  
mentre giro nelle corsie come un pazzo o un buffone,  
e il mio prossimo mi pesta nel mortaio, indifferente.

Soltanto prima del sonno, dietro la rete, quieto,  
inebrio il mio sguardo nel cielo rossastro.

Sono afflitto, sto male, ma rassegnato  
accetto il destino come pane e sale.

Non riesco solo a capire perché in questo mondo stupendo,  
pur non volendo, ci tormentiamo l'un l'altro.



Закат, мой закат, чудный летний закат,  
ты один оставляешь меня с собою,  
и ласкает меня свежий уличный хлад,  
обвевая тихой светлой тоскою.

Целый день меня дергают тут,  
целый день кто-то почему-то чего-то хочет,  
и верчусь по палатам будто псих, будто шут,  
и ближний в ступке меня толочет.

Только теперь перед сном я один за решеткою,  
упиваясь глазами в красноватое небо, —  
больно мне, грустно мне, но с грустью кроткою  
принимаю судьбу, как соль с хлебом.

Лишь понять не могу, за что в том мире, травой пахучем,  
все мы друга, нехотя, столь много мучим.

*С.Я.*

Wenn, Mutter, früh am Morgen  
Stiefel vor unserer Tür anhalten,  
beeile dich und öffne, bevor das Klopfen erschallt,  
mit deiner Hand unterschreibe die Einladung.

Setze dich dann in die Dämmerung und wecke mich nicht,  
sei nicht in Eile in mein Zimmer einzutreten;  
geh mit den verblassenden Sternen zu sprechen,  
frage den stillen Morgenzauber:

Mußt du mich für die heilige Pflicht aufrufen  
und das gelbe Blatt mir in die Hand stecken,  
um mich halberwacht, halbgeschult, kaum verliebt  
in die hoffnungslose Hölle des Krieges zu schicken?

Oder...

Oh, Mutter, an diesem grausamen Morgen wecke mich nicht,  
laß langsam die blassen Sterne am Himmel verlöschen.

Quando, madre, presto alla mattina  
stivali si fermeranno davanti alla nostra porta,  
affrettati e, prima che bussino, apri il cancello:  
firma con la tua mano la cartolina precetto.

Poi siediti nel crepuscolo e non mi svegliare,  
non aver fretta di entrar nella mia stanza;  
vai a parlare con le pallide stelle lontane,  
chiedi al calmo splendore antelucano,  
se devi chiamarmi al sacro dovere,  
ficcandomi nelle mani la cartolina gialla,  
e spedirmi perplesso, insonnolito, appena innamorato,  
nel disperato inferno della guerra.

Oppure...

Oh, madre, a quell'alba tremenda non mi svegliare,  
lascia che, sommessamente, si spengano le stelle turchine.



Когато, майко, рано призори  
ботуши спрат пред нашата врата,  
побързай и, преди да чукнат,  
призовката ми подпиши със своята ръка.

След туй седни сама във здрача и не ме буди,  
не бързай да пристъпиш в мойта стая,  
иди поговори със бледите угасващи звезди,  
попитай тихата предутринна омая —

дали ти мен да призовеш за дълг свещен  
и да ми пъкнеш жълтата хартийка във ръката,  
да ме изпратиш сънен, недоучен, негоден  
във ада безнадежден на войната, —

или . . .

О, майко, в тази страшна утрин ти не ме буди,  
и нека тихо да угаснат сините звезди.

Kerker, Galgen, Folter, Gestank der Scheiterhaufen,  
und Kardinäle in schwarzen und purpurfarbigen Talaren -  
mit diesem Requisit des Mittelalters  
hat man stets den Teufel aus den Köpfen der Freigeister verjagt.

Aber die Schlange des Zweifels, eine ausharrende Bestie,  
hat letzten Endes die königlichen Kronen, das päpstliche Szepter,  
das biblische Gerümpel  
vor der ganzen Welt verlacht und verspottet  
und niemanden auf die Dauer zu lügen und zu wehräuchern gelassen.

Jetzt sind andere Jahrhunderte - das zwanzigste neigt bald dem Ende sich,  
und nicht die Kardinäle in Talaren die Hydra des Satans verfolgen;  
jetzt sind in Mode die Ärzte in weißen Kitteln,  
die das Obel der Erkenntnis mit Spritzen in den Köpfen der Freidenker  
tilgen.

Doch diesmal, kann sein, wird der Zweifel aus den Seelen verbannt,  
denn nicht das Fleisch - der Geist wird mit dem Eisen verbrannt.

Carceri, prigionì, torture, fetore di roghi ardenti,  
e i cardinali in tonaca nera e porporina;  
da secoli con gli strumenti medievali  
scacciano il diavolo dall'anima dei liberi pensatori.

Ma il serpente del dubbio, feroce bestia,  
sulle corone dei re, sulla tiara del papa, sul ciarpame biblico,  
sempre, alla fine, deride le grandi bugie  
e non lascia nessuno bruciar l'incenso e mentire a lungo.

Ora i secoli sono diversi — già il ventesimo declina —  
e contro il serpente lottano non più i cardinali nei manti,  
ma van di moda i dottori nelle gabbanelle bianche  
che scacciano con punture il diavolo dall'anima dei liberatori.

Così, forse, riusciranno finalmente a tagliare la via del dubbio,  
perché il ferro non brucerà la carne, ma lo spirito.



Застенки, тюрьмы, пытки, смрад пылающих костров,  
и кардиналы в тогах черных и пурпурных —  
всегда всем этим реквизитом средне-вековых веков  
гоняли сатану из душ головоотяпов вольнодумных.

Но сатана-змея живучею гадюкой оказалась —  
над царскими коронами, над папским жезлом, над  
библейским хламом  
всегда, в конце концов, на весь мир издевалась  
и никого не оставляла долго лгать и гадить фимиамом.

Теперь века иные, — небось, двадцатый на исходе,  
и гидру-сатану не кардиналы в черных тогах гонят;  
теперь врачи в халатах белых как-то в моде  
и дьявола познания уколами из душ инакодумных  
шмоняют.

Но, может быть, сей раз сумеют путь сомнению пересечь,  
ибо не плоть, а дух железом будут жечь.

Wieder schaue ich auf deine Ikone,  
die Ikone, die nur ich auf der weißen Wand sehe -  
im Tempel bin ich, wo kein Kirchenklang erschallt,  
wo keine Kerzen sind, kein Weihrauch und Erscheinungen im Gebet.

Ein arger Pessimist bin ich, Atheist und Gottesleugner,  
ich glaube an nichts von dieser und von jener Seite,  
und ich wand're durch die Welt wie jeder Obdachlose,  
ohne zu hoffen, daß irgendeine Tür sich mir öffne.

Aber warum vor dir falle ich auf die Knie,  
und warum stundenlang starre ich in deine Züge,  
warum schlägt das Herz im Jubel in meiner weißen Zelle,  
wenn deine traurigen Augen in meine versinken.

Ich weiß nicht, wo das Geheimnis liegt: ist alles eine Chimäre,  
oder den Zauber macht ganz einfach dein Name - Vera\*.

\* Der russische weibliche Name VERA bedeutet GLAUBE.

Di nuovo guardo la tua icona,  
l'icona che solo io vedo sul muro bianco;  
sono nel tempio, dove mai echeggerà lo scampanio,  
dove non ci sono candele, incenso, né fantasmi del sonno.

Pessimista accanito, ateo e dubbioso,  
niente del mondo di qui, né dell'aldilà, mi convince.  
Vagabondo in terra, senz'atetto,  
non mi aspetto che qualche porta si spalanchi per me.

Ma perché davanti a te cado in ginocchio,  
perché per ore ed ore contemplo il tuo volto,  
perché con gioia batte il cuore nella mia bianca cella  
quando i tuoi occhi fissano i miei?

Non so dov'è il segreto: o questo è solo chimera,  
oppure è il tuo nome che fa il miracolo, Vera.

*Il nome femminile russo, Vera, significa Fede*



Я снова гляжу на твою икону,  
только мною видимую икону на белой стене —  
в храме я, где не раздаётся церковному звону,  
где нет свеч, фимнама и видений во сне.

Пессимист я заклятый, атеист и безбожник,  
не верю ни во что по этой и по той стороне,  
брожу по земле как и всякий бездомник,  
не ожидая, что дверь чья-то откроется мне.

Но зачем пред тобою падаю я на колени  
и зачем часами всматриваюсь в твои черты,  
зачем бьется сердце радостью в моей белой молельне,  
когда в мои глаза вдруг глазами вниваешься ты? —

Я не знаю где тайна, или это химера,  
или просто у тебя имя такое: Вера.

Nur ein Gedanke macht mir Sorgen,  
nur ein Leid durchdringt mein Herz:  
sind so billig unsere Häute,  
daß wir sie für ein Spottgeld verkaufen?

Für ein Plätzchen, mager und unbedeutend,  
sind wir bereit bis zum Tode zu schwitzen,  
daß man uns beschimpft, betrügt und verspottet,  
jeden Tag die Ikonen der Heiligen auswechselnd.

Im Altertum hingegen kaufte man Reiche mit Häuten,  
das Gold im Vergleich kostete wenig;  
die stärkste zog man über die Trommeln,  
und viele verkauften sehr teuer die eigne an den Tyrannen.

Denn die menschliche Haut ist sehr geschätzt und sieht aus gut  
nach einer Bearbeitung mit Peitsche und Knut.

Un solo pensiero mi tormenta,  
un solo dolore brucia il mio cuore:  
vale tanto poco la nostra pelle  
che la vendiamo per quattro miseri soldi.

Per quattro miseri soldi  
lasciamo che ci insanguinino il collo,  
che ci disprezzino, che ci mentano senza pudore,  
cambiando ogni giorno le icone dei santi.

Invece nei tempi remoti si compravano regni con pelli,  
e al confronto l'oro valeva poco;  
le più dure le tendevano sui tamburi  
e molti vendevano cara la propria ai tiranni.

Poichè, da sempre, la pelle umana è stata stimata  
secondo le stigmate incise dalla frusta.



Една едничка мисъл ме тревожи,  
една едничка скръб сърцето ми гори, —  
дали тъй ефтини са наште кожи,  
та ги продаваме за шепичка пари.

За някакво местенце постно и нищожно  
съгласни сме да ни претрият шните,  
да ни ругаят, да ни лъжат най-безбожно,  
да ни сменияват всеки ден светините.

А в древността царства със кожи са купували,  
безсилствали пред кожата дори жълтиците —  
най-яките на барабани ги опъвали  
и скъпо ги продавали в тъмниците, —

че кожата човешка се цени и много и прилича,  
когато бъде здравата нашарена със бича.

Du hast mich vergessen. Nun sitz' ich hinter dem Gitter eines  
seltsamen Hauses, -  
wozu sich erinnern und dann noch leiden und schmachten.

Wir trafen uns selten, waren einfach Bekannte  
und Seele mit Seele haben sich nicht vereinigt.

Und du hast dich entfernt... Aber ich werde nie deine Lippen und  
Hände vergessen,  
und dein Name wird geliebt und heilig gehalten,  
denn es scheint mir, wir sind uns nach einer langen Trennung begegnet,  
irgendwann haben wir zusammengelebt und einander geliebt...

Ja, so war es... An einem weiten anderen Ufer, -  
dort haben wir in den Wellen getobt und wie Kinder gespielt,  
dort trug ich dich in den Händen und küßte im Laufen,  
und in deinen Augen leuchteten alle blauen Sterne des südlichen Himmels.

Ich weiß, etwas anderes vorherging uns'rer Begegnung,  
denn die Liebe ist ein Treffen nach einer schmerzlichen Trennung.

Tu mi hai dimenticato. Infatti sono dietro la rete d'una casa strana;  
perchè ricordare, aspettare invano, soffrire?  
Raramente ci si incontrava, parlavamo poco,  
e l'anima con l'anima non si sono unite.

E ti sei allontanata. Ma io non dimenticherò le tue labbra, le mani,  
e il tuo nome sarà custodito amato e santo.  
Poichè mi sembra che ci siamo incontrati dopo lungo distacco,  
e che tanto tempo fa abbiamo vissuto l'uno per l'altra.

Sì, era proprio così... Su una spiaggia lontana,  
dove fra le onde si giocava felici,  
dove nelle mie braccia ti prendevo e baciavo,  
e nei tuoi occhi brillavano tutte le stelle del cielo australe.

Lo so, alla nostra conoscenza altro era il precursore:  
l'amore è un incontro, imprevisto e strano, dopo un addio.



Ты меня позабыла. Ведь я за решетками странного  
дома, —  
зачем вспоминать и грустить, и томиться зачем. —  
Мы так мало встречались, были только знакомы  
и с душою душа не связалась ничем.

И ушла, удалилась . . . Но я не забуду твои губы и руки  
и имя твоё сохраняю любимю и свято, —  
ведь кажется мне, что встретились мы после долгой  
разлуки,  
что мы жили с тобою и любили друг друга когда-то.

Было, было все это . . . На каком-то далеком, ином  
берегу,  
где мы в волнах резвились и как дети играли,  
где я нес тебя на руках, целовал на бегу,  
а в глазах твоих все синие звезды южного неба  
блистали.

Я знаю — знакомству нашему инос было предтеча,  
Ведь любовь — это после жгучей разлуки  
нечаянно-странная встреча

Wenn deine Hände gebunden sind  
und dein jegliches Tun wird verfolgt,  
wenn für jedes Wort oder Seufzer  
nur die Knut dich erwartet,

wenn alle dich verlassen haben,  
fallend auf die Knie vor dem Gott Angst,  
wenn alle in ihren Schalen sich verkettet haben,  
umwandelnd die Ketten der Freundschaft in Staub,

wenn in dem ganzen weiten Weltall  
du bleibst allein mit deinem Schicksal,  
und mit unbegrenztem Schmerz und in endloser Verzweiflung  
in die Zukunft du weiter siehst,

wisse doch - auch wenn keine Freundin hast und keine Liebe,  
die verwaiste Erde bleibt deine Geliebte.

Quando le mani sono legate  
ed è spiata ogni tua mossa  
quando per qualunque sussurro  
ti aspetta solo la frusta  
quando ognuno è rintanato nel suo guscio,  
e s'inchina davanti alla paura  
quando tutti ti han voltato le spalle,  
riducendo in polvere i vincoli d'amicizia  
quando nel tuo muto universo  
resti a tu per tu col destino  
e in una angoscia immensa  
abbracci la solitudine,  
sappi:  
benchè senza moglie, né amante,  
amica tua resta la triste terra orfana.



Когда у тебя связаны руки  
и каждый шорох твой стергут,  
когда за лобные звуки и стук  
ждет тебя только кнут,

когда от тебя все отвернулись,  
павши ниц перед богом Страх,  
когда все в скорлупах замкнулось,  
превратив узы дружбы в прах,

когда один во Вселенной  
остаешься со своею судьбой  
и на жизнь в тоске беспредельной  
и в отчаянии ты махнешь рукой,

все же знай тогда — хоть ты без жены, без друга,  
грустная сирота-планета остается тебе подругой.

In dieser abendlichen Dämmerungstunde, wenn die "Arbeit" zu Ende ist,  
wenn zu Ende sind die Verhöre, die Spritzen, die Schocks,  
wenn nach Hause verschwindet die Kompanie der Ärzte  
und ich bleibe in der Stille hinter dem Gitter allein,

in dieser Stunde, meine Brüder, wende ich mich an euch,  
die in Kerkern, Lagern und Krankenhäusern schmachten,  
um euch zu sagen: verfluchet nicht euer Schicksal  
und beneidet nicht die in Freiheit fliegenden Vögel.

Auch wenn jeder von euch bis zum Wahnsinn allein ist  
und keiner hat weder Frau noch Geliebte,  
auch wenn unendlich ist vor jedem die Frist des Urteils,  
und jeder den Tod wie eine Rettung erwartet,

wisset doch: Tausende und tausende leiden in Einzelzellen,  
also, wir sind zu viel um Angst vor der Einsamkeit zu haben.

Al tramonto, finito il "lavoro",  
finiti gli interrogatori, le punture, gli chocs,  
quando verso casa sfolla la compagnia dei dottori  
e nel silenzio rimango solo dietro la rete,  
in quell'ora mi rivolgo a voi, fratelli lontani,  
che languite in carceri, lager, ospedali.  
Non maledite il crudele destino  
e non invidiate gli uccelli che volano liberi.  
Sebbene ognuno di voi sia solo alla follia  
e nessuno abbia più amico né amante,  
sebbene davanti a voi sia infinito il tempo di condanna  
e ciascuno pensi alla morte come salvezza,  
ricordate:  
a migliaia soffriamo nell'isolamento  
e non dobbiamo, così tanti, aver paura della solitudine.



В тот вечерний закатный час, когда уже кончена  
"работа",  
когда кончились допросы, уколы, кормежки, шоки,  
когда по домам разбрелась санитарно-врачебная рота  
и я остаюсь за решеткою в тишине одинокий, —

в этот час ко всем вам я обращаюсь, братья мои,  
томящиеся по тюрьмам, лагерям и больницам,  
чтобы вам сказать — не проклинайте судьбы свои  
и не завидуйте на свободе летающим птицам.

Хотя каждый из вас до безумия одинок  
и ни у кого из вас больше ни любимой, ни друга нет,  
хотя бесконечен перед каждым заключения срок  
и всякий о смерти как о спасении думает,

все же знайте: десятки и сотни тысяч в одиночках томятся,  
значит нас столь уж много, что нам-то одиночества не  
бояться.

Beklage dich nicht über das verspielte Leben, mein Freund,  
weine nicht weil du auf dem Boden liegst,  
trotz alledem bleibt der Gefallene ein Held,  
wenn er sich nicht ergeben hat, aber wurde geschlagen.

Selten lacht uns die Sonne des Sieges zu,  
weil wir immer allein vor der Menge stehen.  
Unsere Siege - das sind die Kerker, die Folter, die Peitsche, die Not,  
nur Siege über uns selbst verleiht uns das Schicksal.

So war es immer - in allen Zeiten -  
und in allen nördlichen und südlichen Ländern,  
aber immer sind von uns Samen geblieben,  
die zu den blutigen Pfaden die anderen locken.

Und die Einzelnen, die Zähne zusammenbeißend,      ohne Hoffnung,  
auf diesen Pfaden steigen zu den Niederlagen in die Berge,      ohne Vorwurf,

Non lamentarti della vita perduta, amico,  
non piangere perché sei stato vinto:  
il caduto rimane sempre un eroe,  
se non si è arreso, ma è stato battuto.

Raramente ci sorride il sole della vittoria,  
perché noi siamo sempre soli davanti alla folla.  
Le nostre vittorie sono le prigionie, le torture, le fruste;  
solo la vittoria su noi stessi ci offre il destino.

Così è stato sempre, in ogni tempo  
e in ogni paese, al nord e al sud,  
ma sempre sono rimasti, dopo di noi, i semi  
che hanno chiamato altri verso sentieri insanguinati.

E stringendo i denti, i solitari, senza speranza e lamenti,  
su queste strade salgono sulla vetta verso la sconfitta.



Не горюй о проигранной жизни, друг мой,  
не плачь о том, что тебя победили,  
упавший по своему остается герой,  
если он не сдался, а просто побили.

Нам редко улыбается солнце победы,  
ибо мы всегда одиноки перед толпой,  
наши победы — тюрьмы, пытки, плети и беды, —  
лишь над собою победы суждены нам судьбой.

Так было всегда — во все времена  
и во всех полночных и солнечных странах,  
но всегда оставались от нас семена  
и к кровавым тропам зывали незваных.

И, стиснув зубы, одиночки, без надежд, без укора  
по этим тропам подымались к пораженьям в горы.

Man sagt, nach einem Monat werde ich freigelassen,  
wenn ich die Tropfen trinke und auf den Hinterfüßchen stehe,  
doch jetzt müssen die Träume von Freiheit weg,  
daß sie mich nicht wie glühende Kohle verbrennen.

Einen Monat, und zwei, und drei werde ich noch ausdauern  
hier hinter dem weißen Gitter in Kreuzen durchflochten,  
aber warum warte ich nicht <sup>auf</sup> die Morgenröte der Freiheit,  
wie sie alle Gefangenen der Welt erwarten?

Ich kenne die Wahrheit: Hinter dieser Mauer  
gibt es keine Auferstehung, keine Hoffnung, kein Erwachen -  
das ganze Land ist ein riesiger Kerker geworden  
und das Leben ein Urteil auf lebenslang.

Es gibt keinen Ausgang aus der Einsamkeit auf dieser Erde,  
Lüge ist jede Prophezeiung von Rettung.

Dicono che dopo un mese sarò rilasciato,  
se bevo le gocce e sto sulle zampine di dietro,  
intanto i pensieri per la libertà devono dormire  
per non bruciarmi come carboni ardenti.

Sopporterò un mese ancora, e due, e tre  
dietro la rete bianca intrecciata;  
ma perché non aspetto l'alba della libertà  
come l'aspettano tutti i prigionieri?

Conosco la verità: dietro il muro  
non c'è risurrezione, né speranza e risveglio;  
tutto il paese è diventato un'immensa prigione  
e la vita di ognuno una condanna a vita.

Non c'è esodo sulla terra dalla solitudine,  
tutte le profezie di salvezza sono bugie.

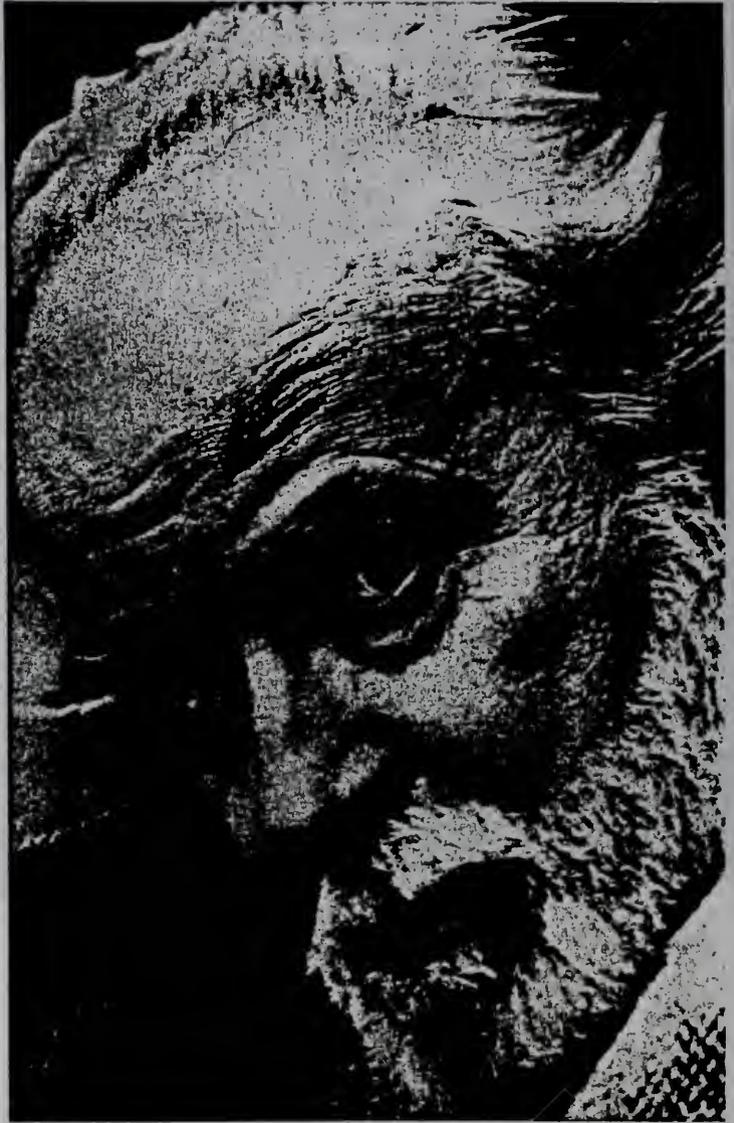


Говорят еще месяц и меня выпустят,  
если буду капли пить и на лапках сидеть,  
а пока мечты о воле в груди пусть спят,  
чтоб углями раскаленными зря не тлеть.

Вытерплю и месяц, и два еще, и три  
за решеткою белою крест-накрест сплетенною,  
но зачем я не жду близкой воли зари,  
как свободы ждут все заключенные.

Да ведь знаю, что будет там, за этой стеною,  
с буднями непробудными и с выходным  
безвыходным, —  
вся страна стала, ведь, беспредельной тюрьмою  
и вся жизнь заключеньем пожизненным.

Нет исхода на земле нашей от одиночества,  
о спасении лгут и врут все пророчества.



Amis

**R**enato Cenni nasce a Firenze nel 1906. Nel 1911 si trasferisce con la famiglia a Genova dove frequenterà l'Accademia di Belle Arti.

Dal 1937 al 1943 lavora a Parigi. Tornato in Italia, prende parte alla lotta partigiana. Dopo un soggiorno a Roma, rientra nuovamente a Genova nel 1946.

Durante la sua vita inquieta e movimentata lavora nel 1954 in Africa, nel 1956 a Panama dove dirige anche un film "Il ponte dell'universo", ancora a Parigi e, nel 1965, negli Stati Uniti. Muore a Genova nel 1977. Oltre alla vastissima opera grafica e pittorica ha lasciato sculture ed ha firmato recensioni d'arte, racconti, libri.

La massima espressione artistica di Renato Cenni è considerato "Calvario", 12 tele cm. 100 x cm. 80 già esposte nel 1978 a Genova in Palazzo Ducale. Donate alla Città sono oggi collocate in Villa Grimaldi a Nervi.

**S**tefan Marinov nasce nel 1931 a Sofia, in una famiglia di intellettuali comunisti. Nel 1958 si laurea in fisica e negli anni 1960-74, lavora nell'Istituto di Fisica dell'A.S.B. da cui viene licenziato come "paranoico" per la sua "dissidenza" politica e scientifica. Curato forzatamente per lunghi periodi negli ospedali psichiatrici di Sofia, solo nel 1977 ottiene il passaporto e può recarsi all'estero. Soggiorna a Bruxelles, Mosca, Praga, Washington e, nel 1979, si trova anche a Genova.

Stefan Marinov ha pubblicato libri negli Stati Uniti d'America, in Inghilterra e in Italia per esporre i fondamenti della sua teoria di spazio-tempo assoluto e descrivere gli esperimenti di alta velocità da lui effettuati.

Stefan Marinov, esule, sta attualmente perfezionando i propri studi in un paese dell'Europa occidentale.



S C I E N T I F I C   P A P E R S

THE AMAZING PROBLEM OF ELECTROMAGNETIC UNIPOLAR INDUCTION

By Francisco J. Müller

(1979)

(A new experimental approach might clarify Faraday's original DC generator.)

S U M M A R Y

(Not for publication)

A BRIEF REVIEW IS MADE OF THE PRINCIPAL QUESTIONS RELATED TO FARADAY'S DISK: (A) DO THE MAGNETIC LINES ROTATE WHEN A MAGNET ROTATES? (B) CAN THE "SEAT" OF INDUCTION BE EXPERIMENTALLY LOCALIZED? (C) IS RELATIVE MOTION ESSENTIAL? (D) IS MAXWELL'S FLUX RULE APPLICABLE? THE ANSWERS, DERIVED FROM ORIGINAL AND OTHER INVESTIGATORS' EXPERIMENTS ARE: (A) NO; (B) YES; (C) NO; (D) UNDECIDED. RECOURSE TO GENERAL RELATIVITY THEORY IS BRIEFLY DESCRIBED, BUT THREE FINAL TESTS REVEAL THE SHAPE AND CONTINUITY OF THE MAGNETIC FIELD TO BE A PRIMARY FACTOR IN MOTIONAL ELECTROMAGNETIC INDUCTION PHENOMENA.

Editorial note. This is the original paper which Dr. Müller sent to Marinov in the fall of 1983. All hand-written remarks are of Dr. Müller.

## THE AMAZING PROBLEM OF ELECTROMAGNETIC UNIPOLAR INDUCTION

Century and a half old, but still a mystery, Faraday's disk cannot be understood without recourse to General Relativity Theory. In this article some variations of Faraday's original experiments are presented which might reveal hidden aspects of the problem.

In his "Experimental Researches in Electricity" of January 1832 Michael Faraday, that greatest of experimentalists, presented his famous disk experiment, actually the first direct current generator ever created. A copper disk revolves near one pole of a magnet while a fixed wire touches its rim and its center through sliding contacts. This produces an abundant amount of electric current which can be detected by inserting a voltmeter in the circuit.

Fig. 1

This rather elementary D.C. generator, (later called "unipolar inductor" by Weber and "homopolar generator" in a more recent terminology), is also the basis for a prestigious theory about the origin of the Earth's magnetic field, (see February issue of Scientific American). The theory of its action, however, has long been the subject of discussion among scientists. Some of them, like George Cohn (1949), E. Cullwick (1959), nobel laureate R. Feynman (1964) and F. Kaempffer (1967), claim that Faraday's disk does not follow one of Maxwell's basic relationships, the so called "flux rule" of electromagnetic induction. Others, like N. Savage (1949), Panofsky & Phillips (1952), and Scanlon et al (1969) among others, claim just the opposite: that the flux rule is valid for all cases of induction.

In 1952, L. Bewley noted that "interest in this matter has erupted again" and that "it does so every few years like a slumbering volcano!". But little agreement is reached, indicating the inherent difficulty of the subject. Panofsky & Phillips go as far as saying that only relativity theory resolves the apparent paradox of the unipolar inductor, especially when rectilinear motion is involved. For a rotating disk these authors admit that it is not possible to discuss the problem consistently without recourse to General Relativity. Why is this problem so difficult? How can a rotating disk produce so much debate among scientists? I will try to describe the problems involved, first reviewing their emergence throughout the history of Science, and then illustrating some experimental aspects of this "old puzzle of a rotating magnet," as Cullwick calls it, with a few original experiments.

The "puzzle" starts precisely when the magnet is rotated together with the disk. Faraday also performed this test in 1832 just to check if the disk had to be moved relative to the magnet in order for induction to occur. As the reader might recall, Faraday's own theory concerning electromagnetic induction is based upon the conviction that a magnet is invisibly surrounded by "magnetic lines" or "tubes of force". His idea was that whenever a wire or conductor moves across these lines and "cuts" them, an electric field will be induced within the conductor and, hence, electricity will tend to flow in the wire if a circuit is completed. If the circuit remains incompletd only a static voltage difference will develop between the ends of the wire, with a concomitant separation of positive and negative charges. An airplane, for instance, will have a small electric voltage difference induced between its wing tips as it "cuts" through the magnetic lines of the Earth in its flight.

Now, according to this view, Faraday would think that the metallic Internal Radius, (IR for short), in his disk, acts like a wire "cutting" the magnetic lines of force as it rotates. Hence, a voltage or Electromotive Force, (emf), will be induced in it, just like in the airplane. The so called "seat" or source of the induction will be located, therefore, in that part of the circuit, namely IR, which is moving relatively to the magnet. The External Connector, (ECR for short), acts only in a passive way, completing the circuit and allowing the flow of electricity to be detected. We can imagine, then, Faraday's surprise when in 1832 he rotated the magnet together with the disk, (i.e., without relative motion), and noticed exactly the same amount and direction of electricity generated "as that which would have resulted if the copper (disk) only had revolved and the magnet been fixed". Did he give up his line "cutting" theory? No. From this experiment he boldly concluded that the lines were in no way "attached" to the magnet, but could remain in space as the magnet and disk rotated together. Hence, we could still imagine that the disk "cuts" the same lines as before. The "seat" of induction would still be located along the internal radius, IR.

Twenty years later, however, Faraday changed his opinion, as we read in his diary, July 14, 1851. Now he thought that the lines might be firmly attached to the magnet and might rotate with it. The "cutting" effect, then, would be located not at IR but along the external connector, ECR, since the latter branch would now receive the "cutting" effect of the lines

as they rotated together with the magnet and disk. The result is the same whether the wire moves and "cuts" the lines, as when the magnet moves and the lines "cut" the wire. Only the relative motion between magnet and wire counts. The "seat" of induction, however, is different in each case. It is IR according to the 1832 view; but it is ECR according to the 1851 opinion. Is there any way to localize, experimentally, the "true" location of the induction within the circuit? If we could localize such a spot then we could decide whether the lines rotate with the magnet, ( the emf would originate at ECR), or do not rotate with the magnet, (the emf would originate at IR). By simply measuring the current intensity in the whole circuit no discrimination can be made about the "seat" or origin of induction, since in either alternative the intensity of the emf is the same.

At this point in our historical review we should introduce Albert Einstein, whose centennial we are celebrating precisely this year. The principle that electromagnetic phenomena "depends only on the relative motion of the conductor and magnet", as he wrote in the introduction to his famous 1905 paper, was, indeed, his inspiration for the whole theory of relativity. Again, in 1919, Einstein asserted that "the phenomenon of electromagnetic induction forced me to postulate the (special) principle of relativity". (See New York Times, March 28, 1972). Concerning the localization of the "seat" of induction, however, Einstein writes on section 6 of his 1905 paper, that this problem "now has no point". Why? We can imagine that Einstein considered the problem as meaningless as asking <sup>the</sup> following question: when a body A moves relatively to another body B, who is "really" moving, A or B? This question is meaningless in special relativity since this theory is based upon the fact that no motion can be detected within the moving body itself, and hence no absolutely or "really" moving body can be demonstrated by experimental means. Only relative motions are detectable and meaningful.

The special relativistic principle, however, refers only to rectilinear uniform motion, (hence the name "special"). For a rotating system, which is precisely the case of Faraday's disk, the situation might be different.

Some discussions, therefore, continued occurring between 1910 and 1920 among physicists like Poincaré, Barnett, Pegram, Kennard, and Swann. The issue was still this: can the magnetic lines of force be said to rotate when their source, a magnet or an electromagnet, is rotated? As we saw before, this question is tied to the possibility of localizing the "seat" of induction within the circuit of a Faraday disk. An important breakthrough

was proposed by Kennard in 1912: to use an open circuit. If we eliminate, for example, branch ECR from Faraday's circuit and observe any voltage difference along IR, like in the case of the airplane, then there would be no doubt that the seat of emf is located there. The amount of electricity accumulated at the ends of IR, however, would be ridiculously small. Hence, a design ought to be used such as to enhance the capacity of the open ends to accumulate electrical charges.

See  
Fig. 2

← Such a "capacitive" design was used by Kennard in 1917. The "capacitor" consists of a small cylinder surrounded by a larger and concentric one. They are connected by means of a radial wire which functions very much like the internal radius, IR, of Faraday's disk. If this radius is rotated in a perpendicular magnetic field the induced voltage difference between its ends will be communicated to the cylinders, charging them with opposite electrical charges. In this experiment the magnetic field was not created by a permanent magnet but by a solenoid, that is, by a coil of wire wound around the whole capacitor and energized with a current strong enough to produce an intense magnetic field inside the capacitor and across IR. With this design Kennard observed the following three cases:

Case 1: A voltage difference was induced, as expected, when the radial wire and capacitor rotated relative to the solenoid.

Case 2: Nothing happened when the solenoid was rotated alone.

Case 3: Surprisingly, just like in Faraday's experiment of 1832, the same voltage difference of case 1 was observed when everything rotated together.

In this way Kennard demonstrated in 1917 that electromagnetic induction was possible even without relative motion between the conductor (radial wire) and the source of the magnetic field (the solenoid). It was also evident that the radial wire contained the seat of induction since there was no other branch like ECR where it could be located. This result, however, did not invalidate in any way Einstein's assertions since we must recall that relativity theory does not apply to rotating bodies but only to rectilinearly and uniformly displaced ones.

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Case 2 of Kennard's experiment, however, did invalidate the hypothesis that the magnetic lines rotated when its source is rotated, (the so called "moving line theory", inspired by Faraday's opinion of 1851). This negative consequence was summarized by J. Tate in the Bulletin of the National Research Council of 1922. Tate specified, however, that only when

a magnet rotates can we say that its lines do not rotate with it. If the magnet happens to move rectilinearly then everything happens "as if" the lines did partake of the translational motion of the magnet. Why such a distinction between the two cases? It has to do with the distinction between special relativity (rectilinear motion) and general relativity theory, (rotational and accelerated motion in general). To illustrate the crucial difference between the two types of motion and their effects in unipolar induction I will now refer to some of my original experiments. (For practical details the reader can see the "Amateur Scientist" section appearing in (this, or next) issue. (ALSO ENCLOSED))

Fig. 3  
at the  
end

The accompanying diagrams show the four basic types of experimental designs that I have studied. Types A and B utilize open magnetic fields. Types C and D use magnetic fields enclosed within rectangular steel plates (which we will call "wings"). A and C are designed for rotation; B and D for translation. Wire IR, covered with adequate insulation, is inserted inside a gap in the cylindrical magnet, CM, or rectangular magnet, RM. If a sliding contact is included at point R all three elements, IR, ECR and CM (or RM), can be moved (or oscillated) independently of each other. Only the wings remain always fixed to the Lab. This yields eight possible combinations of rest (0) and motion (v), between the three components. The experimental qualitative results for each case are summarized in TABLE I under columns A, B, C, D. Let us describe the more important cases.

Experiment A is equivalent to Faraday's experiment, except that the disk has been reduced to its essential element, the internal radius IR. Experiment B is a rectilinear version of experiment A. The results for the eight cases in both types of experiments are identical, thus showing that when open magnetic fields are used no difference arises between rotational and rectilinear unipolar induction. Likewise, we cannot pinpoint the location of the seat of induction in cases 6 and 7 where one of the wires moves with the magnet. In a book entirely dedicated to this subject, however, Cullwick categorically affirms that the seat of induction is always located "in that wire which is in motion relative to the magnet", lest relativity theory, he says, be contradicted. The seat, therefore, should be at ECR in cases 2 and 7, and at IR in cases 3 and 6. Can we have an experimental test of Cullwick's statement in these cases?

For that purpose I have designed experiments C and D. Here the magnetic lines emerge vertically through the magnet in the center; they "touch"

the internal radius IR in the gap, and before reaching ECR the lines are deviated and forced to follow a ferromagnetic (steel) path. Through the steel "wings" they return to the bottom of the central magnet without ever escaping into the open air. If confinement of the lines within this "magnetic circuit" were perfect, (which in practice is never 100% true), then no lines would ever reach the external branch ECR. That this is nearly true can be seen by comparing the results of cases 2C and 2D with those of cases 3C and 3D in the TABLE. No emf results in cases 2C and 2D, evidencing that ECR "cuts" no magnetic lines when oscillating alone. But IR does "cut" the lines when oscillating inside the gap. Thus we have the positive results of 3C and 3D. The more crucial cases will be examined now.

In cases 4 only the magnet moves, (rotation in 4C, translation in 4D). The results are: no emf for rotation; positive emf for translation. What could be the cause of such a difference? We will not go here into any detailed analysis. It suffices to notice that if we assume, as Tate said in 1922, that the lines do move when the magnet translates, (case 4D), then they will be "cut" by wire IR, (only), thus producing the observed emf. In case 4C, however, the lines do not rotate when the magnet rotates and, hence, they are not "cut" by IR. Tate's summary of 1922 is, therefore, experimentally validated, namely, that the lines do not rotate with the magnet but that they do translate with it. (This already shows that the lines cannot be conceived as physical entities).

Finally, in cases 8 all three elements rotate together (case 8C) or slide linearly (case 8D) under the "wings". Now we notice that the results are the reverse: rotation yields a positive effect, whereas translation does not. The explanation, however, is the same as before: translation "moves" the lines with the magnet; hence, IR, also moving with it, cannot "cut" those lines. But rotation "leaves" the lines fixed in space as Faraday first thought in 1832; hence IR, rotating with the magnet, can "cut" the lines and produce an emf. This positive result of case 8C is a remarkable one, indeed. It shows again what Kennard demonstrated in 1917: that electromagnetic induction is possible even without relative motion between the conductor, IR, and the source of the field (magnet CM).

Does this result contradict Cullwick's relativistic hypothesis? According to it the seat of induction might be better located at ECR, not at IR, since ECR at least is moving relatively to the steel wings which contain part of the magnetic field. It is true that ECR "cuts" no magnetic

lines at all, (no emf in case 2C). But physicists know that even when a magnetic field is zero there can be, and in fact there is in this case, an important quantity in space called the "vector potential A", which, according to relativity theory, can also yield an electric field when seen by an observer from a moving frame of reference, (i.e., from the lab, which is "rotating" backwards relative to the magnet in case 8C). It is crucial, therefore, to try to elucidate where is the seat of induction in case 8C.

It seems that such an enterprise has been impossible when a closed circuit is involved. After seven years, however, in pursuit of this "impossible dream", a very simple technique occurred to me by reducing to its minimum expression the theory of a long transmission line. It consists of using two resistors and one capacitor as shown in the diagram, (an R-C-R circuit). Suppose that the "seat" of induction lies somewhere along branch EC, (represented by a dotted line battery symbol). Then when the magnet and circuit start to move a current begins to flow into the circuit but not in the same way in each branch. The story of what happens at each resistor is summarized by the plots also appearing in the diagram in which the variation of voltage versus time is shown for each resistor. (In technical jargon these are called the "transient state voltages" of the circuit). After a certain time has elapsed the capacitor becomes fully charged and both resistors will show steady and equal voltages. Now, if the "seat" of induction would have been initially located along branch IR, then the two plots would have been interchanged. By noting, therefore, which resistor shows an initially higher voltage we can identify the branch wherein lies the true seat of induction. A very important condition for this method to work properly is to make sure that the capacitive branch itself does not get any induction at all, lest the whole interpretation become obscured.

As a test of the method I tried it first in the previous cases 2A and 3A where we know the location of the "seats" of emf, (namely, in that wire which moves relatively to the magnet). The expected curves were obtained: high initial voltage for ECR in case 2A and high initial voltage for IR in case 3A.

Having thus tested the method, I applied it to case 8C. (For practical details concerning the way of connecting the capacitive branch see the "Amateur Scientist" <sup>selected</sup> section referred before). The results clearly indicated high initial voltage for the resistor in the IR branch and low initial voltage for the ECR resistor. Thus, IR is the seat of induction in this case

Fig. 4 ←

and we can conclude that electromagnetic induction is possible in rotation even when there is no relative motion between the conductor (IR) and the magnet (CM). I have, therefore, extended for a permanent magnet what Kennard already proved for a solenoid in 1917. Cullwick's relativistic statement, consequently, should be restricted to rectilinearly moving systems. For a rotating magnet and circuit it seems that Special Relativity theory is not adequate and, as Panofsky & Phillips say, we have to recourse to the General Theory. See Panofsky (PhilMag, pages 337-329 (Ser) 10-18-6)

The latter authors refer their readers to an article about this problem written by Schiff in 1939. Professor Oppenheimer presented the matter to Schiff who, in the article, calculates the "warping" of "space" which is "ascribed to the rotation of the distant masses" of the universe and which show that an "extra current appears and modifies the electromagnetic tensor equations" in a rotating frame of reference. Translating this into plain language it means that the peculiar effects observed in a rotating electromagnetic system are supposed to be caused by the violent "backward" rotation of all fixed stars and extragalactic nebulae as seen from the rotating system itself. The introduction of the "rest of the universe" as a relevant physical cause can be ultimately traced back to the influence of Ernst Mach, the empiriocriticist of science, on Einstein's thought. No detailed physical explanation is given, however, as to how such a mysterious interaction takes place. Thus, we are left as in the beginning of this article, with using one of the most complicated theories of the 20th. Century to explain the simplest electric generator ever created. Isn't that amazing?!

As an experimentalist, however, one hardly ever resigns to the exploration of minute, possibly hidden factors, that might affect an experiment. To look to extragalactic nebulae as parameters that might explain the difference between case 8C and 8D seems like a renunciation of the search for more "down-to-earth" causes. The motion in either case, 8C or 8D, might amount to less than one millimetre oscillations. Infinitesimal calculus teaches us that a very minute arc tends to resemble a straight segment in the limit. Yet, the galaxies seem to have a very "fine eye" and invariably and instantly (!) tell the difference, yielding a positive emf in case 8C but absolutely nothing in case 8D. Why not consider other possible causes that might explain the difference between the two cases? The fact that branch EI moves in case 8D but not in 8C does not explain any difference, neither does it the changes in "wing" lengths occurring in case 8D when the magnet approaches one or the other vertical sides.

Could the shape of the magnet be a relevant factor in these experiments? With this question in mind three final tests were made, as follows.

Test 1- Translation of either a rectangular magnet or a cylindrical one with circuit RIEC as in case 8D, always yielded NO emf.

Test 2- Rotation of a cylindrical magnet or a rectangular one as in case 8C always yielded a positive emf in the circuit.

From these two tests it seems that the shape of the magnet is not a relevant factor since either kind of shape can yield either type of results, depending only on the kind of motion used. HOWEVER:

Test 3- It is found that in the previous test 2, when a rectangular magnet is rotated with RIEC, the intensity of the emf is proportional to the mass of magnet contained in an imaginary cylinder inscribed within the rectangle. The "extra" corners of the rectangle's mass behave as if they were ineffective or even "harmful" to the induction. This point was clearly evidenced by repeating experiment 8C with rectangular magnets of progressively smaller widths as illustrated in the diagrams. The remarkable thing about this result is that the intensity of the magnetic field over which IR is oscillating remains practically constant when the magnet is decreased laterally. (Actually there is a small decrease of field intensity as illustrated in the upper curve of the plot in the diagram). Yet, in spite of this, the induced emf's decreased most dramatically and seem to extrapolate to a zero value when the magnet, otherwise maintaining its strength, becomes very thin. Do these findings violate in any way Maxwell's flux rule of electromagnetic induction? I leave this question for our final discussion.

That Maxwell's flux rule does not cover the entire jurisdiction of electromagnetic phenomena is something that some physicists believe, as I have indicated at the beginning of this review. In 1949 Cohn noted that in Faraday's disk the magnetic field is parallel to the plane area enclosed by the circuit, (see first illustration again). By definition of magnetic flux, (product of circuit area by the magnetic field perpendicular to this area), there is NO flux passing through circuit RIEC in Faraday's disk. Hence, no emf should be expected according to Maxwell's rule, which states that the emf is proportional to the change of flux per unit time. But experience shows, indeed, that there is a positive emf. So the "flux rule" seems to fail in this case.

Against such a negative interpretation, Savage, Panofsky & Phillips, and Scanlon et al. among others, have stipulated that in computing the flux

Fig. 5 <

change through circuit RIEC one should allow the radius IR to move as the disk rotates. Then a certain amount of flux will be "cut" by this radius as the circuit distorts itself from configuration RIEC, (see diagram) to configuration RR'IEC. But Feynman said in 1964 that the actual path of the electrons in Faraday's disk is "fixed in space". That is, the current passes through RI and not through R'I, in spite of the rotation. The "true complication" here, according to Scanlon is that we do not really know which is the "physically relevant contour".

One advantage of my experiments over Faraday's disk in this respect is that the electric circuit is uniquely defined. It is then seen that the flux rule does predict the correct results. In case 8C, for example, all the lines "cut" by IR in the gap bend themselves perpendicularly into the circuit's area as they enter the upper steel wing. Even case 8D, (TABLE I), though yielding no net motional emf, actually produces a small effect predictable by the flux rule as well. This is due to a small change in the magnetic "resistance", (reluctance), of the wings as they become slightly shortened or enlarged when RM oscillates back and forth. The shortened wing decreases its reluctance and, therefore, the number of field lines passing through it increases. The reality of this "flux change" inside the wing is demonstrated by embracing it with a loop of wire as shown in the diagram and noting the current induced in it as a consequence of the flux change. (This is called "transformer induction"). The rectangular loop, RIEC, also receives the same kind of induction. The magnitude of this effect, however, is about five times smaller, (in the system used), than the positive motional emf found in the parallel case 8C.

From a mathematical viewpoint, therefore, the flux rule is strictly valid in the previous experiments. Physically, however, as Feynman also suggests, the rule is not capable of disclosing the distinctive physical factors that are at work in the various cases of electromagnetic induction. Also the non-physical nature of the "magnetic line" concept, as we saw before, gives some unreal flavor to the flux rule. We ought to remember what Einstein has said: "as far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain they do not refer to reality". This warning stimulates us to go beyond the flux rule and try to look more directly into the real physical causes at work.

The diagram (at...) shows the crucial case we should analyze. As the rectangular magnet rotates together with wire IR an electric field is

Excuse my forbearing so "pedantic". I wrote this article for general scientists, so I had to "educate" them.

Fig. 6

Fig. 7

as I am  
by Einstein  
go beyond  
Einstein.

Fig. 8

developed: (a) in the wire; (b) proportional to the length of wire contained in the inscribed (dotted) circle. This is consistent with the idea that the lines within the circle, (perpendicular to the plane of the paper), do not rotate as Tate said and, hence, are "cut" by the portion IM of the wire. On the other hand, the lines outside the circle do move with the magnet (not in rectilinear but in circular translation) and, consequently, are not "cut" by the wire. Since in both sections of the system we have circular uniform motion of each individual particle, how is it that the lines "know" when to move and when not to move with the magnet? Of course we must recall that the lines are mere mathematical artifacts. But still we ask: why is it that section IM of the wire receives an induction, whereas section MR receives no, or much less, induction? Both sections are located at essentially identical magnetic field intensities and, if anything, there is a difference in favor of the outer portion MR, which travels at a faster rate for any given angular speed. It seems ~~like~~ if section MR "notices" the magnetic changes occurring, in space, at the edges of the magnet. These changes, technically known as  $dB/dt$  changes, (in the language of the differential calculus), produce an increase of magnetic field intensities at points near the leading edge of the magnet, ( $dB/dt > 0$ ), and produce a decrease at the trailing edge, ( $dB/dt < 0$ ). On the other hand, the rotation of the circular magnetic mass inscribed within the rectangle <sup>shaded area</sup> "does not, in any way, affect the magnetic field intensities anywhere in the universe, ( $dB/dt = 0$ ). We can infer, therefore, that the "edge effects" are somehow counteracting the line "cutting" induction produced by the wire MR, and that only the portion of magnet which rotates without producing  $dB/dt$  changes can manifest a perfect line "cutting" induction on any conductor, like IM, which happens to move together with the magnet. We get, therefore, 100% induction when the whole magnet is a perfect cylinder and rotates. This is Cullwick's "old puzzle". And we get 0% induction when no portion of the magnet rotates at all but merely translates in rectilinear fashion. This is the case studied by the special theory of Relativity.

think about this.

The explanation that I have just advanced becomes more precise with a little help from mathematics. The electric field induced by the line "cutting" phenomenon is measured by the product of field intensity, B, times the wire velocity, v, (i.e.:  $v \times B$ ). On the other hand, vectorial calculations show that in the particular case of constant velocity the  $dB/dt$  effect produced by the moving edges is also identical to  $v \times B$  but with a negative sign. Wire IM, therefore, receives the  $v \times B$  effect alone,

→ See Panofsky & Phillips, Sect. 9-5 at the end.

whereas wire MR receives the positive  $v \times B$  effect plus the negative  $v \times B$  effect due to the edges and they cancel each other in this section. Hence, only the positive induction at section IM survives and thus we can explain the linear decrease of emf as this section IM was decreased in Test 3, above.

In order for the previous explanation to work we would have to admit: (1) that the negative edge effects can be "felt" by wire MR at a distance, since this wire is not located exactly at the edges; (2) that no relative motion is required for this interaction to occur. None of these two conditions are extravagant. We have already seen how a loop, <sup>(Fig. 7)</sup> embracing the upper right hand steel plate in experiment D above, can "feel", at a distance, the flux changes occurring inside the plate, notwithstanding that the loop itself is placed in a region of space where  $B$  is practically zero and constant. A similar " $dB/dt$  action at a distance" occurs in wire MR as a negative reaction to the neighboring magnetic changes at the edges. Secondly, this reaction does not require relative motion between magnet and wire, very much like the line "cutting" induction does not require such relative motion, neither in Lorentz's prerelativistic physics nor in Einstein's relativistic electrodynamics. (What relativity theory really requires, in spite of Einstein's introductory statement in his 1905 paper, is motion relative to the "observer").

In this manner we can directly account for the differences between rectilinear and rotational unipolar induction as well as for the special virtue of a rotating electromagnetic system. As we have seen, the crucial factor is not so much the type of motion involved as the presence or absence of magnetic changes in space due to discontinuities of the field at the edges of a magnet.

There are other points intimately related to the experiments discussed in this paper, such as the basic electromagnetic force between co-moving electrical charges, the stability of plasma columns in thermonuclear research, the role of unipolar self-induction in the genesis of the Earth's magnetic field and the construction of a quarter cycle D.C. generator without sliding contacts. These, however, lie outside the scope of the present article and will be presented elsewhere.

In my article on the "Moving Charge Interactions" I speak more in detail about the instability of plasma columns due to an ignorance of fundamental principles. I was delighted to see that J.P. Wootley has had similar ideas in the ICSTA Proc. of 1971.

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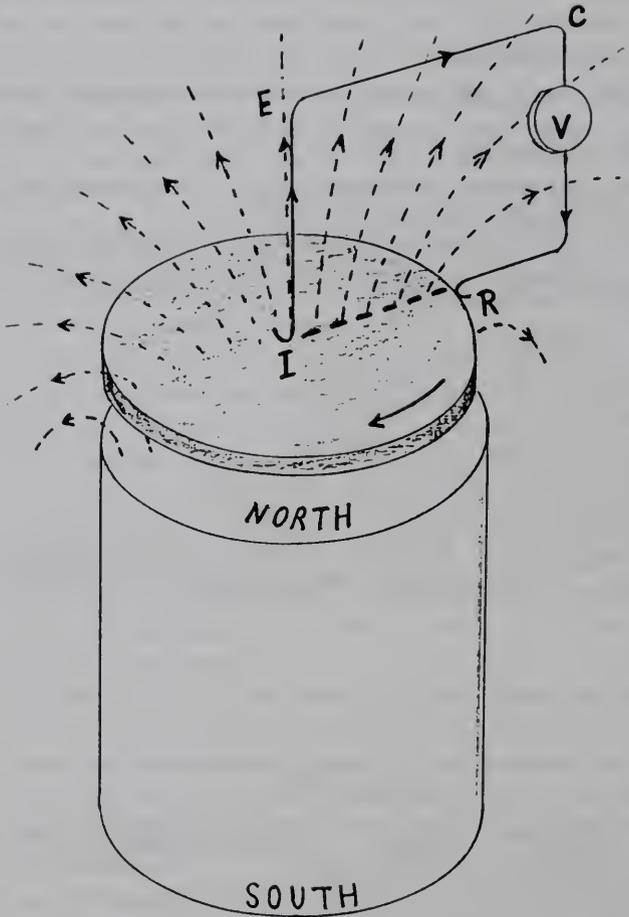
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T A B L E I (\*)

Case	Magnet CM or RM	Circuit		Qualitatively observed Emf			
		IR	ECR	A	B	C	D
1	o	o	o	0	0	0	0
2	o	o	v	+	+	0	0
3	o	v	o	+	+	+	+
4	v	o	o	0	0	0	+
5	o	v	v	0	0	+	+
6	v	0	v	+	+	0	+
7	v	v	o	+	+	+	0
8	v	v	v	0	0	+	0

(\*) v = motion; o = no motion  
 0 = no emf;(+)= positive emf



FARADAY'S DISK.- The first DC generator ever invented. A copper disk revolves near one pole of a cylindrical magnet while a fixed wire, IECE, touches its rim and center through sliding contacts. The imaginary internal radius, IR, "cuts" the magnetic lines of force invisibly surrounding the magnet according to Faraday (dotted lines). In this way an electric current is induced along IR, which can be detected by inserting a voltmeter V in the circuit.

Fig. 1

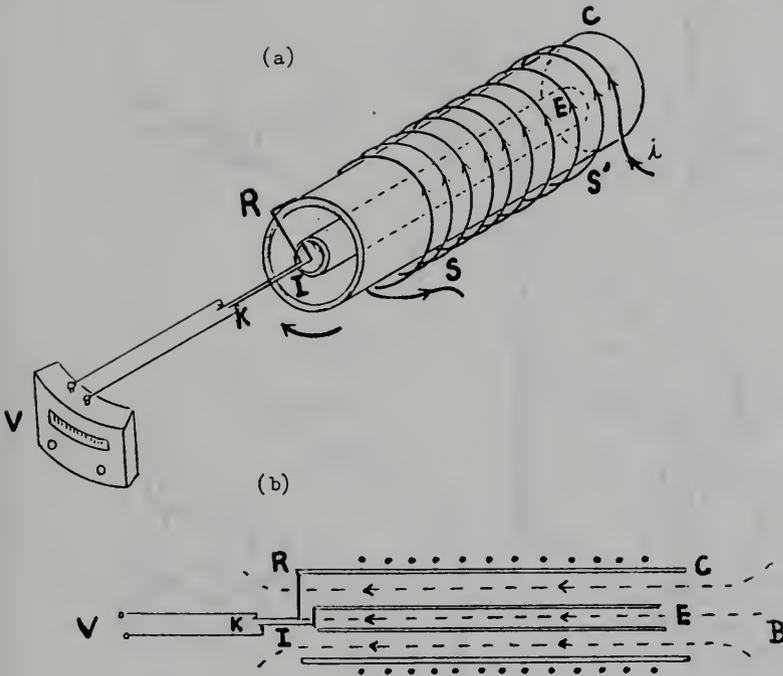
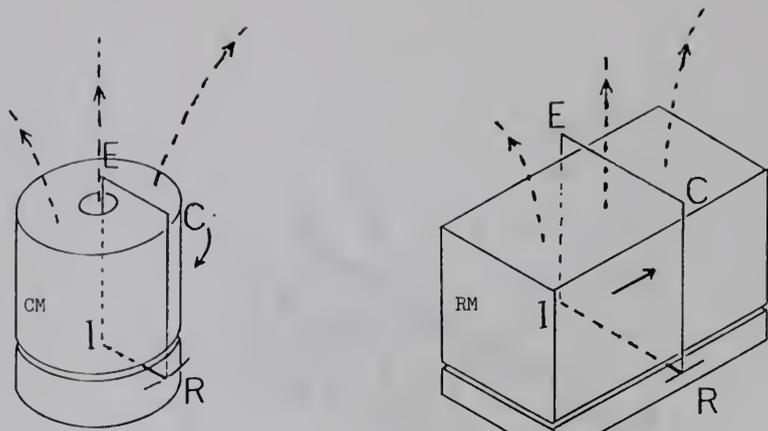
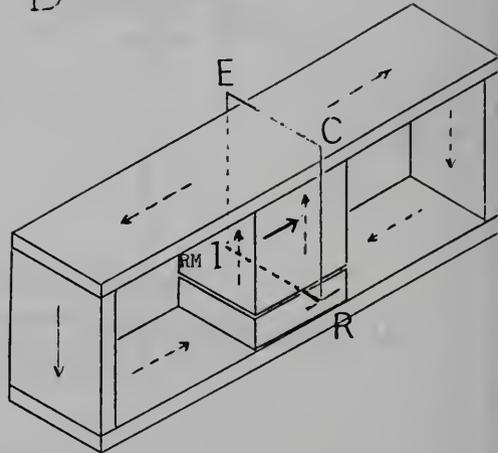
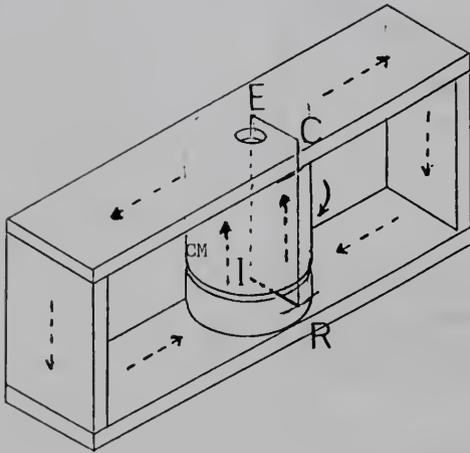


Fig. 2  
 KENNARD'S EXPERIMENT OF 1917.- (a)perspective; (b)longitudinal cross-section. Two concentric cylinders, E and C, are connected by a radial wire IR. A solenoid SS', coiled around the external cylinder but separated from it, provides a longitudinal magnetic field B, (dotted lines), when fed with a current i. Sliding contacts at K allows rotation of IR and cylinders, in which case a voltage is induced between the two cylinders as IR "cuts" the magnetic lines. The voltage is measured by electrometer V, (no induction can occur along connection KV). When the solenoid is rotated alone no induction occurred. But when the whole system rotated Kennard found the same voltage as when IR and cylinders rotated alone. Thus, electromagnetic induction without relative motion was demonstrated in a rotating system.



A

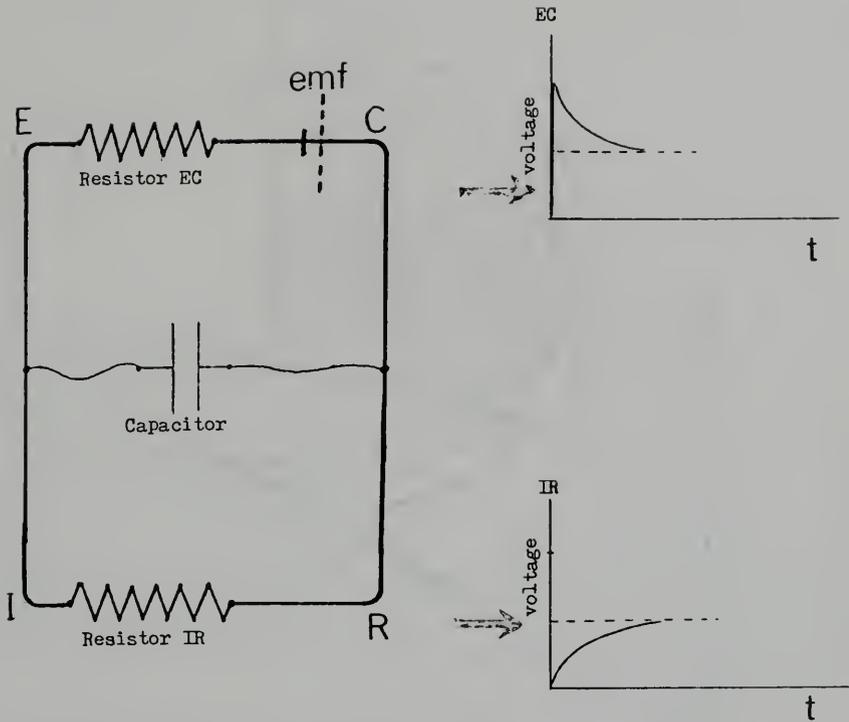
B



C

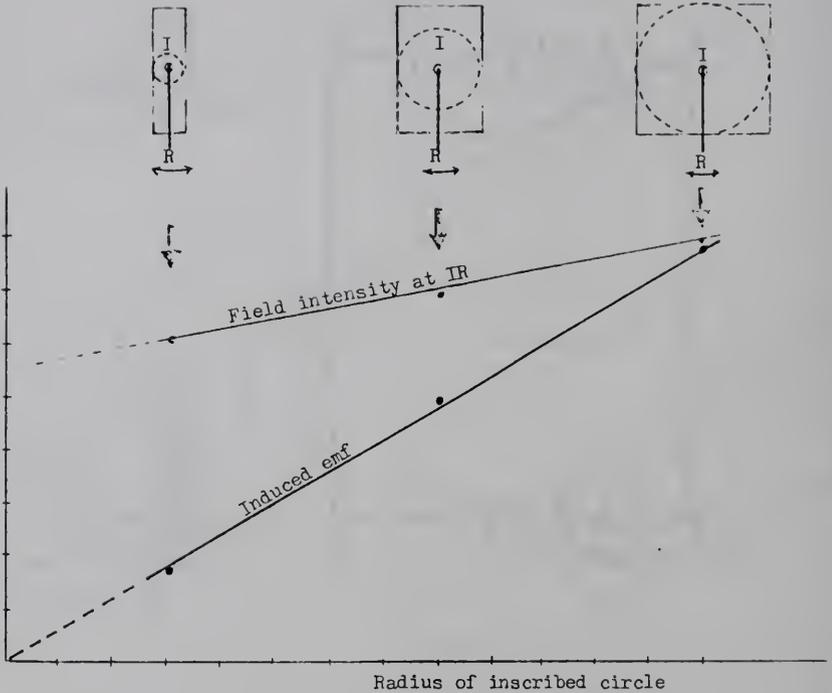
D

FIG. 3  
 FOUR VARIATIONS OF UNIPOLAR INDUCTION EXPERIMENTS.- A and B utilize open magnetic fields, whereas in C and D the field is enclosed within rectangular steel plates, ("wings"). The cylindrical magnet CM in A and C can be rotated. In B and D the rectangular magnet RM can be rectilinearly translated. If a sliding contact is introduced at R, branches of wire ECR and IR, (the latter being insulated inside a gap in the magnets), can be slightly rotated or translated independently of each other and of the magnets and "wings". The latter always remain fixed to the Lab. In all cases loop RIEC is equivalent to circuit RIEC in Faraday's disk. The qualitative results of the four experiments are given in TABLE I.



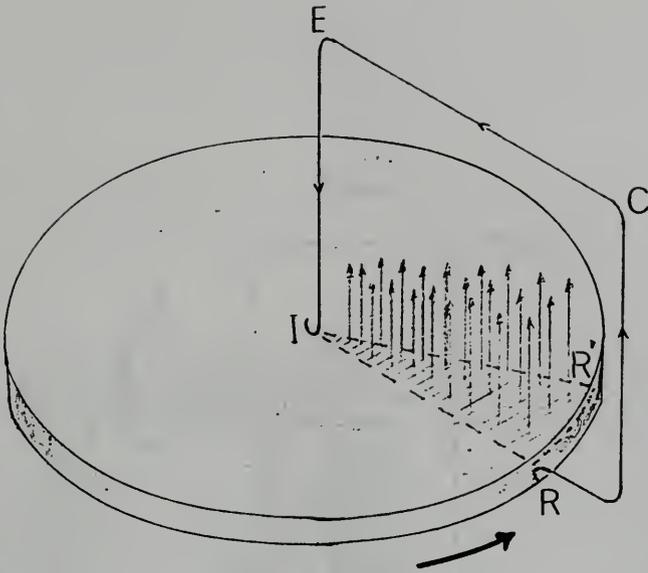
R-C-R CIRCUIT.- This simple electric circuit can be used to discriminate if the source of an electromotive force (emf) is located at branch EC or at IR. The plots at the right represent the transient state voltages appearing across each resistor when the emf is just initiated at EC. If the emf were located along IR instead, the plots would be interchanged. By noting, therefore, which resistor shows initially higher voltages it is possible to pinpoint the branch in which the "seat" of emf is located.

FIG. A



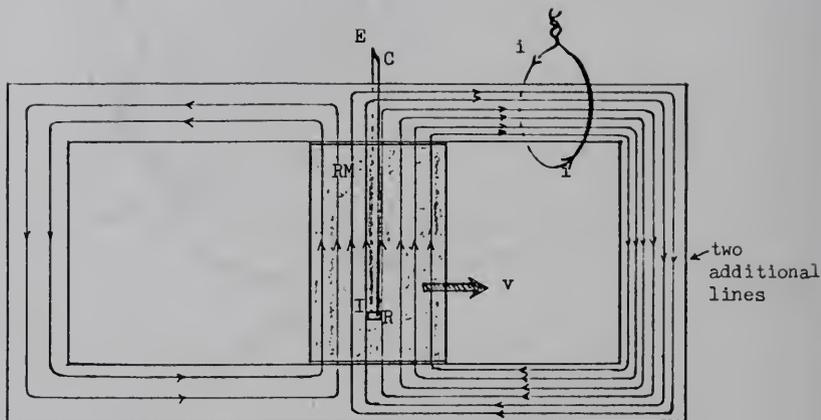
EXPERIMENT C REPEATED WITH RECTANGULAR MAGNETS OF DECREASING WIDTHS.-  
The cross sections at the top correspond to the plane of the gap in which IR can oscillate alone or with the magnet. (The steel "wings" are not shown). When oscillating alone, IR yields practically constant or slightly decreasing emf's, (upper line). These emf's can be taken as a measure of the magnetic field intensity inside the gap in each case. On the other hand, when IR plus magnet oscillate together only that portion of IR lying inside the inscribed dotted circle seems to be effective for producing unipolar induction. Hence, the emf's (lower curve) decrease as the radius of the inscribed circle is decreased.

FIG. 5



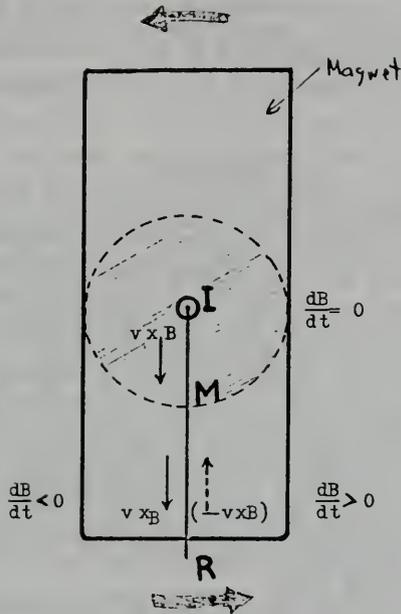
FARADAY'S DISK AND MAXWELL'S FLUX RULE.- As the disk rotates in the direction of the arrow, point R moves to R'. Some physicists stipulate that the relevant contour to apply Maxwell's flux rule is IECRR'I. In this way a magnetic flux (vertical arrows) is "cut" and linked by the circuit. (The source of magnetism is not shown). Others, however, claim that the relevant circuit is fixed in space, namely RIEC, in which case no flux is linked by the circuit.

Fig. 6



FLUX CHANGES IN EXPERIMENT 8D.- As the rectangular magnet RM moves towards the right wing more magnetic lines (two in the figure) flow through this wing on account of its decreased "resistance" (reluctance). The flux increase can be evidenced by noting the current "i" induced in a loop of wire embracing, without touching, the steel plate as shown. The rectangular loop RIEC also receives the same effect, (called "transformer induction"), but this is much smaller than the motional induction of case 8C.

Fig 7



SUMMARY OF ELECTROMAGNETIC PHENOMENA IN A ROTATING NON-CYLINDRICAL MAGNET.- The magnetic field (not shown) is perpendicular to the paper and wire IR rotates with the magnet. The experiments described in this article have shown that an electric field,  $v \times B$ , is induced in the section IM of the wire whereas almost no net induction survives along section MR due to the opposition of the line "cutting" effect ( $v \times B$ , solid arrow), and the "edge effects at a distance", ( $-v \times B$ , dashed arrow). The latter is due to the increase ( $\frac{dB}{dt} > 0$ ) and decrease ( $\frac{dB}{dt} < 0$ ) of magnetic flux at neighboring spaces as the system rotates. No change of magnetism anywhere in the universe ( $\frac{dB}{dt} = 0$ ) is produced by the rotation of the magnetic mass contained within the dotted circle.

Fig. 8

NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY  
WITH THE HELP OF THE "COUPLED SHUTTERS" EXPERIMENT

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The account is given on a new execution of my "coupled shutters" experiment. This time the following sure enough figures for the Earth's absolute velocity have been obtained: magnitude  $360 \pm 40$  km/sec with equatorial coordinates of the apex  $\delta = -24^{\circ} \pm 7^{\circ}$ ,  $\alpha = 12.5^{\text{h}} \pm 1^{\text{h}}$  (for February).

### 1. INTRODUCTION

I carried out the "coupled shutters" experiment for a first time in 1979 in Brussels<sup>1,2</sup>. The accuracy achieved with this first experiment was not sufficient for registering the Earth's absolute velocity. Thus with its help I could only establish that this velocity was not bigger than 3,000 km/sec. The "coupled shutters" experiment is relatively very simple and cheap<sup>1,2</sup>, however no scientist in the world<sup>has</sup> repeated it. The general opinion expressed in numerous letters to me, in referees' comments on my papers, and in speeches on different space-time conferences which I visited or organized<sup>3</sup> is that my experiments are very sophisticated and difficult for execution. The unique discussion in the press on the technical aspects of my experiments is made by Chambers<sup>4</sup>. Here I should like to cite the comments of my anonymous FOUNDATIONS OF PHYSICS referee sent to me by the editor, Prof. van der Merwe, on the 23 June 1983:

I was informed by (the name deleted) of the Department of the Air Force, Air Force Office of Scientific research, Bolling Air Force Base, that Dr. Marinov's experiments were to be repeated by the Joint Institute for Laboratory Astrophysics. On inquiry, I learnt that JILA is not carrying out the experiments, because preliminary engineering studies had indicated that it lay beyond the expertise of the laboratory to achieve the mechanical tolerances needed to ensure a valid result.

After presenting my objections that the fact that JILA in the USA is unable to repeat my experiments cannot be considered as a ground for the rejection of my papers dedicated not at all to measurement of absolute velocity, Prof. van der Merwe sent me on the 24 January 1984 the following "second report" of the same referee:

It is with regret that I cannot change my recommendation regarding Dr. Marinov's papers. In trying to justify the validity of his experimental

work, Dr. Marinov highlights the points which cause the rest of the community so much concern. He states, "If I in a second-hand workshop in a fortnight for \$ 500 achieve the necessary accuracy, then, I suppose, JILA can achieve it too." I know of no one in the precision measurement community who believes that measurements of the quality claimed by Dr. Marinov could be realized under such conditions and in so short a time. It will take very much more than this to change the direction of physics. I suspect that even scientists working in the most reputable laboratories in the U.S. or the world, would encounter great opposition in attempting to publish results as revolutionary as those claimed by Dr. Marinov.

In this paper I present the account on the measurement of the laboratory's absolute velocity, executed by me in Graz with the help of a new construction of my "coupled shutters" experiment. Now the apparatus was built not in seven days but in four. As the work was "black" (a mechanic in a university workshop did it after the working hours and I paid him "in the hand"), the apparatus was built predominantly at the week-end and cost 12,000 Shillings. The driving motor was taken from an old washing-machine and cost nothing.

As no scientific laboratory was inclined to offer me hospitality and possibility to use a laser source and laboratory mirrors, my first intention was to use as a light source the sun. As I earn my bread and money for continuing the scientific research working as a groom and sleeping in a stall in a small village near Graz, I carried out the experiment in the apartment of my girl-friend. The sensitivity which I obtained with sun's light (a perfect source of homogeneous parallel light) was good, but there were two inconveniences: 1) The motion of the sun is considerable during the time when one makes the reversal of the axle and one cannot be sure whether the observed effect is due to the delay times of the light pulses or to the Sun's motion. 2) One can perform measurements only for a couple of hours about noon and thus there is no possibility to obtain a 24-hours "sinusoid" (see further the paper for explanation of the measuring procedure). On the other hand, at fast rotation of the axle the holed rotating disks became two sirens, so that when my apparatus began to whistle the neighbours knocked on the door, asking in dismay: "Fliegt schon der Russe über Wien?" (Is Ivan over Vienna flying?). After a couple of altercations, my girl-friend threw away from her apartment not only my apparatus but also me.

Later, however, I found a possibility to execute the experiment in a laboratory (fig. 1). The scheme of the experiment, its theoretical background and measuring procedure are exactly the same as of the Brussels variation<sup>1,2</sup>. Since the description is extremely simple and short, I shall give it also here, noting that the mounting of the laser and of the mirrors on the laboratory table lasted two hours.

But first, following the example of NATURE which gives interesting quotations from its editions hundred years ago, I should like to give also a similar one:

If it were possible to measure with sufficient accuracy the velocity of light without returning the ray to its starting point, the problem of measuring the first power of the relative velocity of the Earth with respect to the aether would be solved. This may be not as hopeless as might appear at first sight, since the difficulties are entirely mechanical and may possibly be surmounted in the course of time.

The names of the authors are Michelson and Morley, the year of publication is 1887. This is the paper in which Michelson and Morley give their account on the historical experiment for "measurement" of the two-way light velocity. The paper is published in two journals: THE PHILOSOPHICAL MAGAZINE and AMERICAN JOURNAL OF SCIENCE. After giving this general opinion, Michelson and Morley present the proposition of an experiment which is almost the same as my deviative "coupled mirrors" experiment<sup>5,6,2</sup>. They propose to use a bridge method with two selenium cells where the null instrument is a telephone. I must emphasize that I could not succeed to find a single paper or book treating the historic Michelson-Morley experiment, where information on their one-way proposal should be given. Let me note that in the Michelson-Morley experiment one compares the two-way light velocity in two mutually perpendicular directions, but one cannot measure its value.

## 2. THEORY OF THE "COUPLED SHUTTERS" EXPERIMENT

A rotating axle driven by an electromotor, put exactly at the axle's middle, has two holed disks at its extremities. The distance from the centers of the holes to the center of the axle is  $R$  and the distance between the disks is  $d$ . Light coming from a laser is divided by a semitransparent prism and the two beams are led by a couple of adjustable mirrors to the opposite ends of the rotating axle, so that the beams can fly through the disks' holes in mutually opposite directions. Any of the beams, after being chopped by the near disk and "detected" by the far disk, illuminates a photocell. By a galvanometer one measures the difference of the currents generated by both photocells. If covering one of the cells, one measures the current produced by the other cell.

One arranges the position of the laser beam with respect to the disks' holes in such a manner that when the axle is at rest the light of the laser which passes through the near hole illuminates the half of the far hole. Then one sets the axle in rotation gradually increasing its speed. Since the light pulses cut by the near holes have a transit time in order to reach the far holes, with the increase of the rate of rotation less and less light will pass through the far holes, when the distant holes "escape" from the light beam positions, and, conversely, more and more light will pass through the far holes, when the distant holes "enter" into the light beam positions. For brevity I shall call the first kind of far holes "esca-

ping" and the second kind of far holes "entering".

If one assumes that the holes as well as the beams' cross-sections are rectangular and the illuminations homogeneous, then the current  $I_{\text{hom}}$  produced by any of the photocells will be proportional to the breadth  $b$  of the light spot measured on the surface of the photocell when the axle is rotating, i.e.,  $I_{\text{hom}} \sim b$ . When the rotational rate of the axle increases with  $\Delta N$ , the breadth of the light beam passing through "escaping" holes will become  $b - \Delta b$ , while the breadth of the light beam passing through "entering" holes will become  $b + \Delta b$ , and the produced currents will become  $I_{\text{hom}} - \Delta I \sim b - \Delta b$ ,  $I_{\text{hom}} + \Delta I \sim b + \Delta b$ . Thus

$$\Delta b = b \frac{\Delta I}{I_{\text{hom}}}, \quad (1)$$

where  $\Delta I$  is the half of the change in the difference of the currents produced by the photocells.

One rotates the axle first with  $\Delta N/2$  counter-clockwise and then with  $\Delta N/2$  clockwise, that corresponds to a change  $\Delta N$  in the rate of rotation. Since

$$\Delta b = (d/c) 2\pi \Delta N R, \quad (2)$$

for the one-way velocity of light one obtains

$$c = \frac{2\pi \Delta N R d}{b} \frac{I_{\text{hom}}}{\Delta I}. \quad (3)$$

In my experiment the holes as well as the light beams were circular and not rectangular. Consequently instead of the measured light spot's breadth one has to take certain slightly different "effective" breadth. As the breadth  $b$  can never be measured accurately, the discussion of the difference between real breadth and "effective" breadth is senseless. Much more important, however, was the fact that the illumination in the beams' cross-sections was not homogeneous: at the center it was maximum and at the periphery minimum. Thus the simplified relation (1) did not correspond to reality if under  $I_{\text{hom}}$  one would understand the measured current. I shall give here a certain amelioration of formula (1), what was omitted to be done in Ref. 1, because of a fear that the presumed referee will consider my analysis as an "artificial speculation" in a search "to adapt the observed values to the theoretical formula". Now I am no more afraid of the referee. The illumination will be assumed to increase linearly from zero on the periphery of the light beam to a maximum at its center where the beam is "cut" by the holes' rims. The real current  $I$  which one measures is proportional to a certain middle illumination across the whole light beam, while the real current  $\Delta I$  is proportional to the maximum illumination at the center of the light beam. On the other hand, one must take into account that when the holes let the light beam fall on the photocell, first light comes from the peripheral parts and at the end from the central parts. When the

half of the beam has illuminated the photocell, the "left" part of the beam begins to disappear and its "right" part begins to appear, the breadth remaining always the half of the beam. Then the holes' rims begin to extinguish first the central parts of the beam and at the end the peripheral parts. Here, for simplicity, I suppose that the cross-sections of the beams and of the holes are the same (in reality the former were smaller than the latter). Thus during the first one-third of the time of illumination the "left" half of the light beam appears, during the second one-third of the time of illumination the "left" half goes over to the "right" half, and during the last one-third of the time of illumination the "right" half disappears. Consequently, the real current,  $I$ , produced by the photocell will be related with the idealized current,  $I_{\text{hom}}$ , corresponding to a homogeneous illumination with the central intensity and generated by a light spot having the half-breadth of the measured one, by the following connection

$$I = \frac{1}{2} \int_0^1 I_{\text{hom}} x \left( \frac{2}{3} - \frac{x}{3} \right) dx = \frac{I_{\text{hom}}}{6} \left( x^2 - \frac{x^3}{3} \right) \Big|_0^1 = \frac{I_{\text{hom}}}{9}. \quad (4)$$

In this formula  $I_{\text{hom}} dx$  is the current produced by a strip with breadth  $dx$  of the light beam; at the periphery of the beam (where  $x = 0$ ) the produced current is zero and at the center (where  $x = 1$ ) it is  $I_{\text{hom}} dx$ . The current  $I_{\text{hom}} dx$  is produced (i.e., the corresponding photons strike the photocell) during time  $2/3 - x/3$ ; for the periphery of the beam this time is  $2/3 - 0/3 = 2/3$  and for the center of the beam this time is  $2/3 - 1/3 = 1/3$ . The factor  $1/2$  before the integral is taken because the measured breadth of the light spot over the photocell is twice its working breadth. Putting (4) into (3), one obtains

$$c = \frac{2\pi \Delta N R d}{b} \frac{9I}{\Delta I}. \quad (5)$$

According to my absolute space-time theory<sup>2,6,7</sup> (and according to any body who is acquainted even superficially with the experimental evidence accumulated by humanity), if the absolute velocity's component of the laboratory along the direction of light propagation is  $v$ , then the velocity of light is  $c - v$  along the propagation direction and  $c + v$  against. For these two cases formula (5) is to be replaced by the following two

$$c - v = \frac{2\pi \Delta N R d}{b} \frac{9I}{\Delta I + \delta I}, \quad c + v = \frac{2\pi \Delta N R d}{b} \frac{9I}{\Delta I - \delta I}, \quad (6)$$

where  $\Delta I + \delta I$  and  $\Delta I - \delta I$  are the changes of the currents generated by the photocells when the rate of rotation changes by  $\Delta N$ . Dividing the second formula (6) by the first one, one obtains

$$v = (\delta I / \Delta I) c. \quad (7)$$

Thus the measuring method consists in the following: One changes the rotational rate with  $\Delta N$  and one measures the change in the current of any of the photocells which is  $\Delta I \cong \Delta I \pm \delta I$ ; then one measures the difference of these two changes which

is  $2\delta I$ . I made both these measurements by a differential method with the same galvanometer, applying to it the difference of the outputs of both photocells. To measure  $2\Delta I$  I made the far holes for one of the beam "escaping" and for the other "entering". To measure  $2\delta I$  I made all far holes "escaping" (or all "entering").

### 3. MEASUREMENT OF $c$

In the Graz variation of my "coupled-shutters" experiment I had:  $d = 120$  cm,  $R = 12$  cm. The light source was an Ar laser, the photocells were silicon photocollectors, and the measuring instrument was an Austrian "Norma" galvanometer. I measured  $I = 21$  mA (i.e.,  $I_{\text{hom}} = 189$  mA) at a rotational rate of 200 rev/sec. Changing the rotation from clockwise to counter-clockwise, i.e., with  $\Delta N = 400$  rev/sec, I measured  $\Delta I = 52.5$   $\mu\text{A}$  (i.e., the measured change in the difference current at "escaping" and "entering" far holes was  $2\Delta I = 105$   $\mu\text{A}$ ). I evaluated a breadth of the light spot  $b = 4.3 \pm 0.9$  mm and thus I obtained  $c = (3.0 \pm 0.6) \times 10^8$  m/sec, where as error is taken only the error in the estimation of  $b$ , because the "weights" of the errors introduced by the measurement of  $d$ ,  $R$ ,  $\Delta N$ ,  $I$ ,  $\Delta I$  were much smaller. I repeat, the breadth  $b$  cannot be measured exactly as the peripheries of the light spot are not sharp. As a matter of fact, I chose such a breadth in the possible uncertainty range of  $\pm 1$  mm, so that the exact value of  $c$  to be obtained. I wish once more to emphasize that the theory for the measurement of  $c$  is built on the assumption of rectangular holes and light beams cross-sections and linear increase of the illumination from the periphery to the center. These simplified assumptions do not correspond to the more complicated real situation. Let me state clearly: The "coupled shutters" experiment is not to be used for an exact measurement of  $c$ . It is, however, to be used for an enough exact measurement of the variations of  $c$  due to the absolute velocity of the laboratory when during the different hours of the day the axis of the apparatus takes different orientations in absolute space due to the daily rotation of the Earth (or if one will be able to put the set-up on a rotating platform). The reader will see this now.

### 4. MEASUREMENT OF $v$ .

The measurement of  $c$  is an absolute, while the measurement of  $v$  is a relative, taking the velocity of light  $c$  as known. According to formula (7) one has to measure only two difference currents:  $2\Delta I$  (at "escaping" and "entering" far holes) and  $2\delta I$  (at "escaping" or "entering" far holes). The measurement in the air of the laboratory had two important inconveniences: 1) The dust in the air led to very big fluctuations in the measured current differences and I had to use a big condenser in parallel to the galvanometer's entrance, making the apparatus very sluggish. 2) The shrill of the holed disks at high rotational rate could lead to

the same gloomy result as when executing the experiment in the apartment of my girl-friend. Thus I covered the whole set-up with a metal cover and evacuated the air by an oil pump (this amelioration cost additional 9,000 Shilling). The performance of the experiment in vacuum has also this advantage that the people who wish to save at any price the wrong light velocity constancy dogma cannot raise the objection that the observed effect is due to temperature disturbances.

The measurement of  $\Delta I$  is a simple problem as the effect is huge. Moreover all existing physical schools cannot raise objections against the presented above theory. However, the measurement of  $\delta I$  which is with three orders lower than  $\Delta I$  has certain peculiarities which must be well understood. When changing the rotation from clockwise to counter-clockwise, the current produced by the one photocell changes, say, from  $I_1$  to  $I_1 + \Delta I_1 + \delta I_1$  and of the other photocell from, say,  $I_2$  to  $I_2 + \Delta I_2 - \delta I_2$ . One makes  $I_1$  to be equal to  $I_2$  changing the light beam positions by manipulating the reflecting mirrors micrometrically. One can difficultly receive an exact compensation, so that the galvanometer shows certain residual current  $I'$ . The current change  $\Delta I_1$  will be equal to the current change  $\Delta I_2$  only if the experiment is entirely symmetric. But <sup>it</sup> is difficult to achieve a complete symmetry (and, of course, I could not achieve it in my experiment). There are the following disturbances: On the one hand, the distribution of the light intensities in the cross-sections of both beams and the forms of the beams are not exactly the same; thus the covering of the same geometrical parts of both beams when changing the rotation of the axle does not lead to equal changes in the light intensities of both beams and, consequently, to  $\Delta I_1 = \Delta I_2$ . On the other hand, although the photocells were taken from a unique sun collector cut in two pieces, even if the changes in the illuminations should be equal, the produced currents may become different (the current gain at the different points of the photocells is not the same, the internal resistances of the cells are not equal, etc. etc). Thus after changing the rotational rate from clockwise to counter-clockwise, I measured certain current  $I'$ , but  $I'' - I'$  was not equal to  $2\delta I$ , as it must be for an entirely symmetric set-up. However, measuring the difference  $I'' - I'$  during different hours of the day, I established that it was "sinusoidally modulated". This "sinusoidal modulation" was due to the absolute velocity  $v$ . All critics of my "rotating axle" experiments vociferate at the most against the vibrations of the axle, affirming that these vibrations will mar the whole measurement. Meanwhile the axle caused me absolutely no troubles. When measuring in vacuum the axis of the apparatus pointed north/south.

I measured the "sinusoidal modulation" during 5 days, from the 9th to the 13th February 1984. As I did the experiment alone, I could not cover all 24 hours of every day. The results of the measurements are presented in fig. 2. The most sensible scale unit of the galvanometer was 10 nA and the fluctuations were never

bigger than 20 nA. The day hours are taken on the abscissa and the current differences on the left ordinate. After plotting the registered values of  $I - I'$  and drawing the best fit curve, the "null line" (i.e., the abscissa) is drawn at such a "height" that the curve has to cut equal parts of the abscissa (of 12 hours any). Then on the right ordinate the current  $2\delta I$  is taken positive upwards from the null line and negative downwards. Since 105  $\mu A$  correspond to a velocity 300,000 km/sec, 10 nA will correspond approximately to 30 km/sec. Considering the fluctuations of the galvanometer as a unique source of errors, I took  $\pm 30$  km/sec as the uncertainty error in the measurement of  $v$ .

When  $2\delta I$  has maximum or minimum the Earth's absolute velocity lies in the plane of the laboratory's meridian (fig. 3). The velocity components pointing to the north are taken positive and those pointing to the south negative. I note by  $v_a$  always this component whose algebraic value is smaller. When both light beams pass through "escaping" holes, then, in the case that the absolute velocity component points to the north, the "north" photocell produces less current than the "south" photocell (with respect to the case when the absolute velocity component is perpendicular to the <sup>axis</sup> of the apparatus), while, in the case that the absolute velocity component points to the south, the "north" photocell produces more current. If the light beams pass through "entering" holes, all is vice versa. Let me note that for the case shown in fig. 3 (which does not correspond to the real situation, as in reality  $v_a$  is negative) both velocity components point to the north and both  $v_a$  and  $v_b$  are positive. In this case the "variation curve" has no more the character of a "sinusoid"; it has 4 extrema (for 24 hours) and the "null line" must be drawn tangent to the lowest minimum.

As it can be seen from fig. 3, the two components of the Earth's absolute velocity in the horizontal plane of the laboratory,  $v_a$  and  $v_b$ , are connected with the magnitude  $v$  of the absolute velocity by the following relations

$$v_a = v \sin(\delta - \phi), \quad v_b = v \sin(\delta + \phi), \quad (8)$$

where  $\phi$  is the latitude of the laboratory and  $\delta$  is the declination of the velocity's apex. From these one obtains

$$v = \frac{\{v_a^2 + v_b^2 - 2v_a v_b (\cos^2 \phi - \sin^2 \phi)\}^{1/2}}{2 \sin \phi \cos \phi}, \quad \tan \delta = \frac{v_b + v_a}{v_b - v_a} \tan \phi. \quad (9)$$

Obviously the apex of  $v$  points to the meridian of  $v_a$ . Thus the right ascension  $\alpha$  of the apex equaled the local sidereal time of registration of  $v_a$ . From fig. 2 it is to be seen that this moment can be determined with an accuracy of  $\pm 1^h$ . Thus it was enough to calculate (with an <sup>in</sup>accuracy not larger than  $\pm 5$  min) the sidereal time  $t_{sj}$  for the meridian where the local time is the same as the standard time  $t_{st}$  of registration, taking into account that the sidereal time at a middle midnight

is as follows:

22 September - 0 <sup>h</sup>	23 March - 12 <sup>h</sup>
22 October - 2 <sup>h</sup>	23 April - 14 <sup>h</sup>
22 November - 4 <sup>h</sup>	23 May - 16 <sup>h</sup>
22 December - 6 <sup>h</sup>	22 June - 18 <sup>h</sup>
21 January - 8 <sup>h</sup>	23 July - 20 <sup>h</sup>
21 February - 10 <sup>h</sup>	22 August - 22 <sup>h</sup> .

The graph in fig. 2 shows that on the 11th February (the middle day of observation) I registered in Graz ( $\phi = 47^{\circ}$ ,  $\delta = 15^{\circ} 26'$ ) the following absolute velocity's components at the following hours (for  $2(\delta I)_a = -120$  nA,  $2(\delta I)_b = 50$  nA)

$$\begin{aligned} v_a &= -342 \pm 30 \text{ km/sec}, & (t_{st})_a &= 3^h \pm 1^h, \\ v_b &= +143 \pm 30 \text{ km/sec}, & (t_{st})_b &= 15^h \pm 1^h, \end{aligned} \quad (10)$$

and formulas (9) give

$$v = 362 \pm 40 \text{ km/sec}, \quad \delta = -24^{\circ} \pm 7^{\circ}, \quad \alpha = (t_{si})_a = 12.5^h \pm 1^h, \quad (11)$$

where the errors are calculated supposing  $\phi = 45^{\circ}$ .

The local sidereal time for the observation of  $v_a$  (i.e., the right ascension of the absolute velocity's apex) was calculated in the following manner: As for any day the sidereal time increases by 4<sup>m</sup> (with respect to the solar time), the sidereal time at midnight on the 11th February (which follows 21 days after midnight on the 21 January) was  $8^h + 1^h 24^m = 9^h 24^m$ . At 3<sup>h</sup> middle European (i.e., Graz) time on the 11th February the local sidereal time on the 15th meridian was  $9^h 24^m + 3^h = 12^h 24^m$ . On the Graz meridian the local sidereal time was  $12^h 24^m + 2^m = 12^h 26^m \cong 12.5^h$ .

Important remark. Now I establish that when calculating the local sidereal time of observation of  $v_a$  for my interferometric "coupled mirrors" experiment<sup>2,6,8,9</sup>, I made a very unpleasant error. As Sofia ( $\lambda = 23^{\circ} 21'$ ) lies westwards from the middle zonal meridian ( $\lambda = 30^{\circ}$ ), I had to subtract the difference of  $6^{\circ} 39'$ , which correspond to 27<sup>m</sup>, from the local sidereal time of the zonal meridian. Instead to do this, I wrongly added. Thus the given by me numbers are to be corrected as follows:

	wrongly calculated:	to be corrected to:
Observation on the 12 July 1975:	$(t_{si})_a = 14^h 23^m$	$(t_{si})_a = 13^h 30^m$
Observation on the 11 Jan. 1976:	$(t_{si})_a = 14^h 11^m$	$(t_{si})_a = 13^h 17^m$
Right ascension of the apex of the Sun's absolute velocity:	$\alpha = 14^h 17^m$	$\alpha = 13^h 23^m$

I beg the persons who will refer to the measurement of the Sun's absolute velo-

city done by me in 1975/76 to cite always the corrected here figures and not the wrongly calculated figures presented in Refs. 2,6,8,9,10,11 and in some other of my papers.

### 5. CONCLUSIONS

Comparing the figures obtained now by the Graz variation of my "coupled shutters" experiment with the figures obtained some ten years ago in Sofia by the interferometric "coupled mirrors" experiment, one sees that within the limits of the supposed errors they overlap. Indeed, on the 11 January 1976 I registered in Sofia the following figures

$$v = 327 \pm 20 \text{ km/sec}, \quad \delta = -21^0 \pm 4^0, \quad \alpha = 13^h 17^m \pm 20^m. \quad (12)$$

As for the time of one month the figures do not change significantly, one can compare directly the figures (11) with the figures (12). The declinations are the same. As the Graz measurements were done every two hours, the registration of the right ascension was not exact enough and the difference of about one hour is not substantial. I wish to point only to the difference between the magnitudes which is 35 km/sec. I have the intuitive feeling that the figures obtained in Sofia are more near to reality. The reason is that I profoundly believe in the mystic of the numbers, and my Sofia measurements led to the magic number 300 km/sec for the Sun's absolute velocity (which number is to be considered together with 300,000 km/sec for light velocity and 30 km/sec for the Earth's orbital velocity). The Graz measurement destroys this mystic harmony.

The presented account on the Graz "coupled shutters" experiment shows that the experiment is childishly simple, as I always asserted<sup>12</sup>. If the scientific community so many years refuses to accept my measurements and nobody tries to repeat them, the answer can be found in the following words of one of my best physical and moral teachers:

TERRIBLE IS THE POWER WHICH AN AUTHORITY EXERTS OVER THE WORLD.

Albert Einstein

I wish to add in the end that with a letter of the 29 December 1983 I informed the Nobel committee that I am ready at any time to bring (for my account) the "coupled shutters" experiment to Stockholm and to demonstrate the registration of the Earth's absolute motion. With a letter of 28 January 1984 Dr. B. Nagel of the Physics Nobel committee informed me that my letter has been received.

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## FIGURE CAPTIONS

Fig. 1 The Graz "coupled shutters" experiment during preliminary measurements in the air of the laboratory; when performing measurements in vacuum the laser was mounted in parallel with the axle and the regulator for motor's velocity (to be seen between the motor and the far disk) was taken outside the evacuated space. At the left corner of the apparatus' plate one sees the sockle for one of the reflecting mirrors for the case that sun's light should be used (the sockle of the other reflecting mirror is at the far right corner). The mechanic spent considerable time (and I lost money) for mastering the adjustable reflecting mirrors for sun's light which have not been used in the laser arrangement, so that the price of the actually used apparatus had to be less than the half.

Fig. 2 Measurement of  $2\delta I$ . The points give the measurements at the even hours for the days from the 9th to the 13th February.

Fig. 3 The Earth and its absolute velocity at the two moments when the laboratory meridian lies in the velocity's plane.

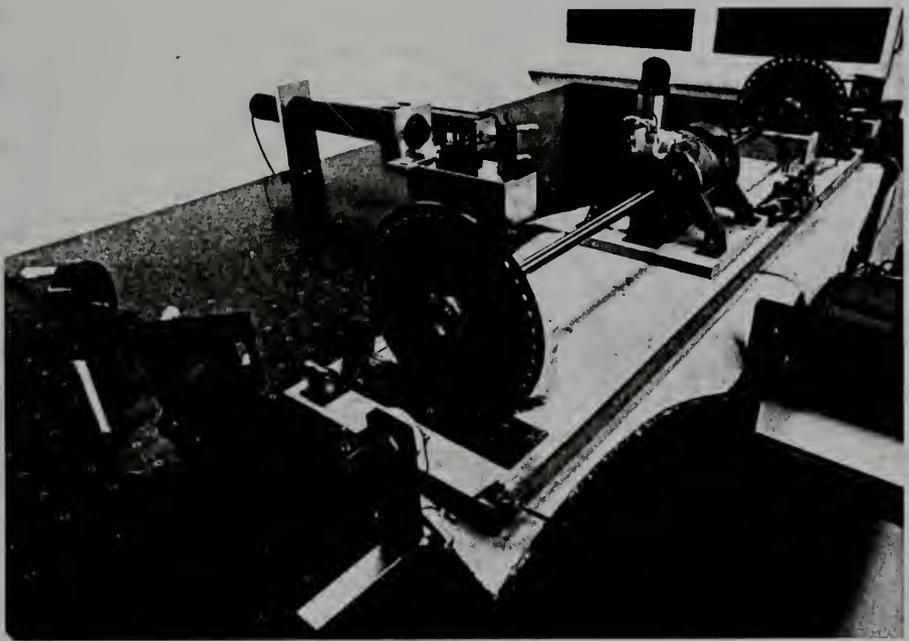


Fig. 1

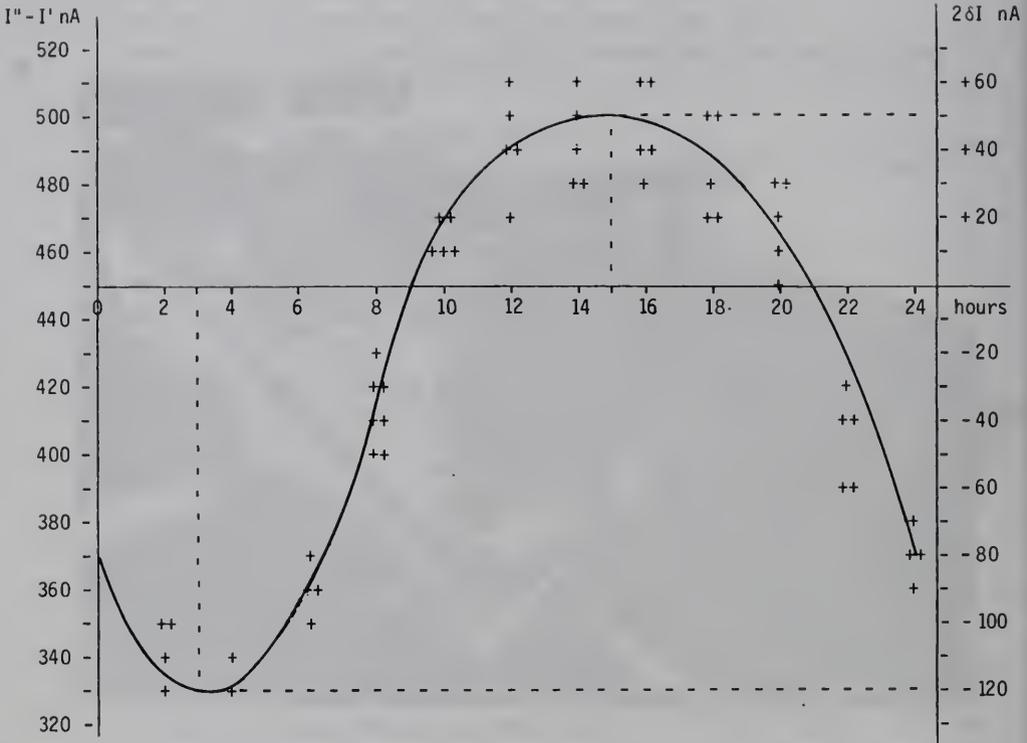


Fig. 2

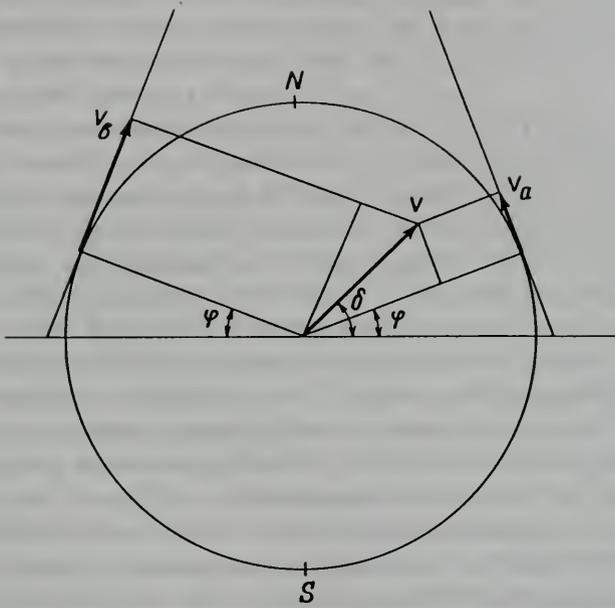


Fig. 3

ON THE ACTION AND INTERACTION OF STATIONARY CURRENTS

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Abstract. Proceeding directly from the axiomatics of my absolute space-time theory, I obtain the fundamental equation of motion in electromagnetism. I show that in electromagnetism only the full Newton's third law (introduced by me) is valid, but the simple (or traditional) Newton's third law (introduced by Sir Isaac) is violated. This violation is mathematically expressed in the Biot-Savart formula for the interaction between two current elements. I point out that conventional electromagnetism is reluctant to accept openly this extremely important aspect of the electromagnetic interactions. Certain authors assume that the interaction between current elements may violate Newton's third law, but there is none accepting that this violation can be experimentally observed. I point out to certain current interaction experiments where the violation of Newton's third law is clearly manifested. Such experiments are the cemented Barlow disk, the proposed by me "trick-track" perpetuum mobile and Ampere's "floating bridge" experiment. In the "trick-track" perpetuum mobile one will be able to observe also a violation of the energy conservation law and of the angular momentum conservation law. Further the "trick-track" perpetuum mobile will give a clear experimental rejection of Ampere's formula for the interaction between two current elements and of Maxwell's displacement current hypothesis. I show that Pappas' measurements with the "floating bridge" give an excellent confirmation of the Biot-Savart formula. I propose a variation of Pappas' experiment with which one can measure also the current jet effect predicted by me, which will give an experimental confirmation of my presumption that the energy velocity of the current conducting electrons in a metal wire (the velocity with which energy and momentum are transferred) is near to  $c$ . Finally I present an almost unknown electric motor, the so-called ball-bearing motor, and I explain its torque (which until now has remained unexplained) by the current thermal dilatation effect. I give experimental verifications of my hypothesis and I give a report on an experiment which shows that the kinetic energy of the ball-bearing motor is created from nothing in a drastic contradiction to the energy conservation law.

In 1820 Oersted discovered the magnetic manifestation of "moving electricity" and in the same year (in a final form three years later) Ampere proposed his formula for the interaction between current elements. In the same year 1820 Biot and Savart measured the force with which a long linear wire, along which a stationary current flows, acts on a magnetic needle and (with Laplace's interference) proposed the formula for the magnetic intensity produced by a stationary current. However, it was only in 1845 that Grassmann proposed the formula for the interaction of current elements based on the Biot-Savart formula for the magnetic intensity. Further, for definiteness, I shall call Grassmann's formula the Biot-Savart formula, taking into account that also the majority of the authors now-a-days do the same. More historical details and abundant references can be found in Ref. 1 and 2.

Although in the 160 years following the discoveries of Ampere and Biot-Savart-Grassmann milliards of apparatus have been constructed based on the interaction between electric currents, until now the mathematical aspect of this interaction remains covered in fog. The scientific community has generally accepted as true the Biot-Savart formula, although Maxwell defended the Ampere formula and voices in support of the latter can be heard until today<sup>(3)</sup>. The stumbling-block is that Biot-Savart's formula is at variance with the "mechanical" (according to my terminology, "simple") Newton's third law. Few authors state clearly that Newton's third law is violated at the interaction between current elements, much more cover this result of the Biot-Savart formula by ambiguous enunciations, while the majority tries to evade any mention and discussion of the topic. Meanwhile if one would consider the magnets as solenoids, then all magnetic interactions between two bodies, at the condition  $\vec{\partial}\vec{A}/\partial t = 0$ , where  $\vec{A}$  is the magnetic potential, can be considered (and calculated) as interaction between current elements. It is thus evident that the problem about the mathematical description of this interaction and of its experimental verification is of a primordial importance and any ambiguity and unclarity must be definitely removed.

The problem about the interaction between electric currents was largely discussed at the International Conference on Space-Time Absoluteness<sup>(4)</sup>, where Prof. Pappas<sup>(1)</sup> reported on his experiment for measurement of the interaction between colinear currents (according to Biot-Savart colinear currents do not interact, while according to Ampere they repel each other).

The formula for the interaction between moving electric charges as well as between stationary currents follows directly from my axiomatics of classical physics<sup>(5,6)</sup>. This axiomatics and the deduction of the fundamental equations of motion can be written (as the grammar of the language esperanto) on a post card and I shall present all this in the present paper.

I constructed whole classical physics proceeding from 10 extremely simple axioms,

operating with three undefinable notions only (space, time, energy), and considering space and time as absolute in the most common (or Newtonian) sense. With my "coupled mirrors" experiments<sup>(7,8)</sup> I succeeded to measure the absolute velocity of the Earth in a closed laboratory and showed indeed that space and time are absolute categories.

There are two types of energy: gravimagnetic and electromagnetic (the magnetic energy is a space-time companion to the space gravitational energy as the magnetic energy is a space-time companion to the space electric energy). Particles are those space points whose parameters of gravimagnetic energy (called masses) and of electromagnetic energy (called electric charges) are different from zero. If there are two particles with masses  $m, m'$  and charges  $q, q'$ , moving with velocities  $\vec{v}, \vec{v}'$ , their gravitational and magnetic energies are

$$U_g = -\gamma \frac{m m'}{c^2} \frac{c_0 c'_0}{r}, \quad W_g = -\gamma \frac{m m'}{c^2} \frac{\vec{v}_0 \cdot \vec{v}'_0}{r}, \quad (1)$$

where  $r$  is the distance between the particles,  $c_0 = c(1 - v^2/c^2)^{-1/2}$  is the proper time velocity of a particle moving with a velocity  $\vec{v}$ ,  $\vec{v}_0 = \vec{v}(1 - v^2/c^2)^{-1/2}$  is its proper space velocity,  $c$  is the velocity of light in absolute space, and  $\gamma$  is a coefficient of proportionality, called the gravitational constant.

In my theory the so-called kinetic (or better, time) energy of a particle is nothing else than its gravitational energy with the mass of the whole world <sup>taken with a negative sign</sup> <sub>q</sub>. Thus, supposing that the velocities of the celestial bodies are low (as it actually is), we can write the gravitational energy of a mass  $m$  moving with velocity  $v$  in the form

$$U_g = - \frac{m}{(1 - v^2/c^2)^{1/2}} \int \gamma \frac{dm}{r} = \frac{-mc^2}{(1 - v^2/c^2)^{1/2}} = -e_0, \quad (2)$$

where the integral is spread over whole space and thus the gravitational potential generated by all celestial bodies is equal to  $-c^2$ .

One becomes aware of the fact that it is nonsensical to think (as conventional physics does) the kinetic (time) energy of a particle is located at the particle itself, to introduce as basic notions two masses (inertial and gravitational), then during hundreds of years to search for a difference between these two masses and finally when such a difference was not established to propose "fundamental" theories (general relativity) taking as an "axiom" that the inertial and gravitational masses are "numerically equal".

The electric and magnetic energies of our two particles are

$$U_e = \frac{q q'}{r}, \quad W_e = \frac{q q'}{c^2} \frac{\vec{v} \cdot \vec{v}'}{r}, \quad (3)$$

where the coefficient of proportionality, called the electric constant, is taken equal to unity (as is accepted in the Gauss system of units CGS).

Thus the particles are "attached" to absolute space only through their masses but not through their charges. The gravimagnetic and electromagnetic energies of two particles depend only on their masses and charges, on their velocities and on the distances between them. On nothing else. Notions as "spreading of interaction", "field energy" (or density of energy in a certain volume) have no physical legitimacy and are pernicious for theory. One cannot answer the question "where energy is located", as one does not know what energy is. The unique mathematical conclusion, to which the thousands-years human experience has brought us, is the right to write formulas (1), (2), (3) and the law of conservation of energy

$$de_0 + dU_g + dW_g + dU_e + dW_e = 0, \quad (4)$$

i.e., that the total energy of a particle remains constant in time, taking its world gravitational energy with a negative sign. In other words the change of the local gravimagnetic and electromagnetic energies of a particle is equal to the change of its world gravitational energy.

As I show<sup>(6)</sup>, and as anyone can prove performing extremely simple calculations, formulas (1) - (4) lead to the following equation of motion of a particle in a system of particles

$$\frac{d}{dt} \frac{\partial(e^0 + W)}{\partial \vec{v}} = \frac{\partial(W - U)}{\partial \vec{r}}, \quad (5)$$

where  $e^0 = -e_0(1 - v^2/c^2) = -mc^2(1 - v^2/c^2)^{1/2}$  is called the Lagrange energy of the particle, while  $e_0$  is called its Hamilton energy. We supposed, for simplicity, that the gravitational energy of the particles in the system is zero; this is actually so for the energy between charged particles as their gravitational energy is extremely weak in comparison with their electromagnetic energy. Thus under  $U$  and  $W$  we mean the electric and magnetic energies of the "test" particle with the other particles of the system and we omit the index "e".

We can write the electric and magnetic energies of the particle in the form

$$U = q\phi, \quad W = \frac{q}{c} \vec{v} \cdot \vec{A}, \quad (6)$$

where the electric potential  $\phi$  and the magnetic potential  $\vec{A}$  are

$$\phi = \sum q_i / r_i, \quad \vec{A} = \sum q_i \vec{v}_i / cr_i, \quad (7)$$

$q_i$  being the  $i$ -th particle of the system moving with velocity  $\vec{v}_i$ , whose distance to the particle with charge  $q$  is  $r_i$ , and the summation is spread over the charges of the whole system.

Substituting (6) into (5), we obtain

$$m \vec{u}_0 + \frac{q}{c} \frac{d\vec{A}}{dt} = q \text{grad} \left( \frac{\vec{v} \cdot \vec{A}}{c} - \phi \right), \quad (8)$$

where

$$\vec{u}_0 = d\vec{v}_0/dt = \frac{\vec{u}}{(1 - v^2/c^2)^{1/2}} + \frac{\vec{v}}{c^2} \frac{\vec{v} \cdot \vec{u}}{(1 - v^2/c^2)^{3/2}} \quad (9)$$

is the first proper acceleration of the particle and  $\vec{u} = d\vec{v}/dt$  is its universal acceleration (my terminology).

Equation (8) is called the Newton-Lorentz equation. Its analogue in gravimagnetism which, obviously, has certain differences is called the Newton-Marinov equation (see Ref. 6).

I call<sup>(5,6)</sup> the expression on the right side of (8) the full potential force and the expression on the left side the full kinetic force of the particle. It is obvious that the availability of space-time energy (i.e., magnetic energy in electromagnetism and magretic energy in gravimagnetism) Newton's third law is to be written in its full form which follows from (8) but not in its simple form introduced by Newton who considered only a space energy. Obviously, if the time derivatives of the mutual magnetic potentials of two interacting particles are not equal to zero, then their simple kinetic forces ( $m\vec{u}_0$ ) are not equal and oppositely directed. Equal and oppositely directed are only the full kinetic forces ( $m\vec{u}_0 + (q/c)d\vec{A}/dt$ ). Further when saying "kinetic force" we shall always mean the simple kinetic force.

The time derivative of the magnetic potential can be written in the following form

$$\frac{d\vec{A}}{dt} = \frac{\partial \vec{A}}{\partial t} + (\vec{v} \cdot \text{grad}) \vec{A}, \quad (10)$$

where  $(\partial \vec{A} / \partial t) dt$  is the change of  $\vec{A}$  for a time  $dt$  at a given space point and  $(\vec{v} \cdot \text{grad}) \vec{A} dt$  is the change of  $\vec{A}$  due to the motion of the particle with velocity  $\vec{v}$  during the same time  $dt$ . Using the mathematical relation (for  $\vec{v}$  constant)

$$\text{grad}(\vec{v} \cdot \vec{A}) = (\vec{v} \cdot \text{grad}) \vec{A} + \vec{v} \times \text{rot} \vec{A}, \quad (11)$$

we can write (8) in the form

$$m\vec{u}_0 = -q(\text{grad}\phi + \frac{1}{c} \frac{\partial \vec{A}}{\partial t}) + \frac{q}{c} \vec{v} \times \text{rot} \vec{A}. \quad (12)$$

This is the equation of motion of a test charge in a dynamic system.

If we wish to have the equation of motion of a test charge in a stationary system, we have to put in (10)  $\partial \vec{A} / \partial t = 0$ , thus obtaining from (12)

$$m\vec{u}_0 = -q \text{grad}\phi + \frac{q}{c} \vec{v} \times \text{rot} \vec{A}. \quad (13)$$

If we wish to have the kinetic force of a current conducting electron in a metal wire, when only stationary currents can flow in this wire and in the other wires of the system (which thus is a stationary one), we have to put in (13)  $\phi = 0$ , as the ne-

gative charges of the current conducting electrons are balanced by the positive charges of the atomic ions, and we obtain

$$\vec{m}\vec{u}_0 = \frac{q}{c} \vec{v} \times \text{rot} \vec{A}. \quad (14)$$

Let us consider two arbitrary closed wires (loops) along which the stationary currents  $I$  and  $I'$  flow (see fig. 1 where, for further speculations, the arbitrary loops are presented as coplanar rectangles). Denoting by  $\vec{dr}$  and  $\vec{dr}'$  two arbitrary line elements of the loops  $L$  and  $L'$  which have the same orientation as the corresponding currents, we can write  $q\vec{v} = qd\vec{r}/dt = Id\vec{r}$ ,  $q'\vec{v}' = q'd\vec{r}'/dt = I'd\vec{r}'$ , calling the expressions on the right sides current elements. Thus  $\vec{A} = q\vec{v}/cr = Id\vec{r}/cr$ ,  $\vec{A}' = q'\vec{v}'/cr' = I'd\vec{r}'/cr'$  (where  $r = r'$ ) are the magnetic potentials originated by the current elements  $Id\vec{r}$  and  $I'd\vec{r}'$  at the space points where the line elements  $\vec{dr}'$  and  $\vec{dr}$  are placed. Writing further  $d(\vec{df}) = m\vec{u}_0$ ,  $d(\vec{df}') = m'\vec{u}'_0$ , where  $m$  and  $m'$  are the masses of the electric charges in the current elements  $Id\vec{r}$  and  $I'd\vec{r}'$ , we can present (14) in the form

$$d(\vec{df}') = \frac{II'}{c^2} d\vec{r}' \times \text{rot} \left( \frac{d\vec{r}}{r} \right). \quad (15)$$

On the left side we have the simple kinetic force of the current element  $I'd\vec{r}'$  and on the right side its full potential force minus the term  $(I'd\vec{r}' \cdot \text{grad})(Id\vec{r}/cr)$  appertaining to its full kinetic force (remember the above deduction of equation (12)). An equation similar to (15) gives the simple kinetic force  $d(\vec{df})$  of the current element  $Id\vec{r}$  arising from its interaction with the current element  $I'd\vec{r}'$ .

Considering  $\vec{dr}$  as a constant vector, we can write (15) in the form of the so-called differential Biot-Savart formula

$$d(\vec{df}') = \frac{II'}{c^2 r^3} d\vec{r}' \times (d\vec{r} \times \vec{r}) = \frac{II'}{c^2 r^3} \{ (\vec{r} \cdot d\vec{r}') d\vec{r} - (d\vec{r}' \cdot d\vec{r}) \vec{r} \}. \quad (16)$$

One would be able to give a direct experimental verification of this formula if one would be able to screen the magnetic action of two loops along <sup>the</sup> whole their lengths, leaving only two short parts unscreened. Making then the connection of these tiny parts with the loops spacially deformable (using, say, mercury cups or rolling contacts), one would measure their simple kinetic forces in the usual static way (by the help of springs, balancing by gravitational forces, etc.). All authors assert that it is impossible to realize such a magnetic shielding. I am inclined to accept this opinion, however for me (16) is not some "phantom" formula but an experimentally verifiable relation (see beneath).

The simple kinetic forces of two interacting current elements are not equal and oppositely directed (the one is perpendicular to the first line element while

the other is perpendicular to the second line element). This conclusion is extremely amazing for conventional electromagnetism which does not operate with the full kinetic and potential forces and with the full Newton's third law. Authors who have the scientific courage to confirm the violation of the simple Newton's third law try to solve the "dilemma" proposing untenable subterfuges. So, for example, Panofsky and Phillips<sup>(9)</sup> give the following explanation: "... one cannot exclude the possibility that momentum (i.e. the unequalized momentum in the interaction between two current elements - S.M.) will be carried away by the change in electromagnetic field."

Let us now integrate formula (15) along the loop L', i.e., let us find the kinetic force of the whole loop L' which appears as a result of its interaction with the current element  $Id\vec{r}$  of the loop L

$$d\vec{f}' = \int_{L'} d(d\vec{f}') = \frac{II'}{c^2} \int_{L'} d\vec{r}' \times \text{rot} \frac{d\vec{r}}{r} = \frac{II'}{c^2} \text{grad} \int_{L'} \frac{d\vec{r} \cdot d\vec{r}'}{r}, \quad (17)$$

while the kinetic force of the current element  $Id\vec{r}$  of the loop L which appears as a result of the interaction with the whole loop L' will be

$$d\vec{f} = \int_{L'} d(d\vec{f}) = \frac{II'}{c^2} d\vec{r} \times \text{rot} \int_{L'} \frac{d\vec{r}'}{r'}. \quad (18)$$

The result on the right side of (17), can be obtained in three different ways:

(i) The traditional way is given, say, in Ref. 10: Using the right side of formula (16) in (17), one takes into account that the integrand  $\vec{r} \cdot d\vec{r}' / r^3 = -d(1/r)$  is an exact differential, so that its integration along a closed line gives zero.

(ii) One takes the Newton-Lorentz equation not in its "Lorentz" form (12) but in its "Newton" form (8), putting there (10), imposing the conditions  $\Phi = 0$ ,  $\partial \vec{A} / \partial t = 0$ , and taking into account that along the loop L'  $\int (d\vec{r}' \cdot \text{grad}) d\vec{r}' / r = 0$ , as the  $d\vec{r}'$ -vector-gradient of any vector function along a closed line is always zero.

(iii) As any current element in the loop L' is stationary, the "total" time derivative of the magnetic potential  $d\vec{A}/dt$  at all points of a closed loop must be zero and equation (17) is obtained by an integration of equation (8).

As mentioned above, all authors are of the opinion that it is impossible to measure the kinetic forces of two interacting current elements, but concerning the possibility to measure the kinetic force of a current element interacting with a closed loop the opinions diverge. Certain authors<sup>(11)</sup> assert that this is possible, while others<sup>(12)</sup> state that also this is not possible. So Coulson<sup>(12)</sup> writes categorically: "The force on a tiny element  $ds$  cannot be measured experimentally". Meanwhile if a loop interacts with a straight wire (coming from infinity and going to infinity), then on a line element of the straight wire only the force exerted by the loop will act as the interaction between the current elements of a straight wire is null, and in this case no shielding is needed. One can even measure the force which a closed loop exerts on an element of it. Here singularities do not appear as the line element

is connected with the remaining part of the loop by "colinear" wires whose action is null. Summing the kinetic forces of many consequent current elements one can calculate the kinetic force of a part of a loop interacting with another loop, or with a part of another loop, or with a part of its own loop. Formula (16) shows that these kinetic forces are generally not equal and oppositely directed.

I shall elucidate the problem <sup>by</sup> calculating the kinetic forces of the simple loops presented in fig. 1. The size of the rectangle A'B'C'D' is taken twice the size of the square ABCD whose side is d. The currents flow counterclockwise. The wires CD and D'E' lie so close one to another that both currents annihilate mutually their magnetic action in the surrounding space and the sum of their mutually repulsive forces is null. As the currents in the wires DA and C'D' are colinear, their interaction is null. Let us choose the sizes of the rectangles enough big and neglect the magnetic action of the wires DAB on the wires E'A'B'C', as well of the wires A'B'C' on the wires DABC (however, see beneath!), and consider only the interaction of the wires BC and E'A'.

According to the Biot-Savart formula (16), the kinetic force of the current element  $I'd\vec{r}'$  of the wire E'A' appearing as a result of its interaction with the wire BC is

$$d\vec{f}' = \int_{BC} d(d\vec{f}') = \frac{II'}{c^2} \int_0^d \frac{\vec{r} \cdot d\vec{r}'}{r^3} d\vec{r}' = \frac{II'}{c^2} \int_0^d \frac{dr' \sin \alpha}{a^2 + y^2} dy \hat{y} = \frac{II'}{c^2} a dr' \int_0^d \frac{dy \hat{y}}{(a^2 + y^2)^{3/2}}, \quad (19)$$

where y (and beneath x) is the ordinate (resp., the abscissa) of the line element  $d\vec{r}'$  (resp.,  $d\vec{r}'$ ) in a plane Cartesian frame oriented as shown in the figure, whose center is at the point C (=E'),  $\hat{y}$  (resp.,  $\hat{x}$ ) is the axial unit vector,  $\alpha$  is the angle between  $d\vec{r}'$  and  $\vec{r}$ , and a is the distance of  $d\vec{r}'$  from point E'. The indefinite integral can be taken by the help of the substitution  $y = a \operatorname{sinh} t$ , so that we obtain

$$d\vec{f}' = \frac{II' dr'}{c^2 a} \frac{y \hat{y}}{(a^2 + y^2)^{1/2}} \Big|_0^d = \frac{II' dr'}{c^2 a} \frac{d}{(a^2 + d^2)^{1/2}} \hat{y} = \frac{II' dr'}{c^2 a} \hat{y}, \quad (20)$$

and analogically for the kinetic force of the current element  $I'd\vec{r}$  of the wire BC, appearing as a result of its interaction with the wire E'A' if its distance from C is a,

$$d\vec{f} = \frac{II'}{c^2} \int_0^d \frac{(-\vec{r}) \cdot d\vec{r}}{r^3} d\vec{r} = - \frac{II' dr}{c^2 a} \frac{d}{(a^2 + d^2)^{1/2}} \hat{x} = - \frac{II' dr}{c^2 a} \hat{x}, \quad (21)$$

where the results on the right sides of (20) and (21) are written for  $d = \infty$ .

The calculation by the help of formula (16) has led to a nonsensical result, namely that the loops will move into mutually perpendicular directions. If we had used the initial formula (15), we should not come to such a result. Indeed, the magnetic potential exerted by the wire BC is

$$\vec{A} = \frac{I}{c} \int_{BC} \frac{d\vec{r}}{r} = \frac{I}{c} \int_0^d \frac{dy \hat{y}}{(a^2 + y^2)^{1/2}} = \frac{I}{c} \operatorname{Arsinh}\left(\frac{d}{a}\right) \hat{y} = \infty \hat{y}, \quad (22)$$

and thus the calculation for infinitely long wires is not possible. Thus formulas (20) and (21) are valid only for very large but finite loops and if we wish to know the kinetic forces of the whole loops, we have to take into account also the magnetic action of the wires DAB on E'A'B'C' and of the wires A'B'C' on DABC.

The results obtained above can be checked experimentally very easily. Let us realize the loops in fig. 1 of solid wires fasten to the laboratory table and let us make only an element of unfastened elastic metal. Then when letting currents flow the line element of the wire E'A' must receive a bulge upwards, while the line element of the wire BC must receive a bulge leftwards. The size of the bulge can be "calibrated" replacing the loop ABCD by a horizontal wire of length 2d, at a distance 2a downwards from the loop A'B'C'D', along which the current I flows from the right to the left. Indeed, in such a case the kinetic force of the current element I'dr', at whose place we transfer the origin of the used coordinate system, will be

$$d\vec{f}' = \frac{II'}{c^2} \int_{-d}^d \frac{d\vec{r}' \cdot d\vec{r}'}{r^3} \vec{r} = \frac{II' dr'}{c^2} \int_{-d}^d \frac{(-x \hat{x} + 2a \hat{y}) dx}{(4a^2 + x^2)^{3/2}} = \frac{II' dr'}{c^2 a} \frac{d\hat{y}}{(4a^2 + d^2)^{1/2}} = \frac{II' dr'}{c^2 a} \hat{y}, \quad (23)$$

where the result on the right side is written for  $d = \infty$ .

Thus we can make the clear theoretical and experimental conclusion that the current elements along the wires BC and E'A' of the loops in fig. 1 interact with two mutually perpendicular forces which are not directed along the line connecting them.

If we shall integrate formula (17) along the whole loop L, we shall find for the kinetic force of the loop L' which appears as a result of its interaction with loop L the following, called integral Biot-Savart formula, which is entirely symmetric with respect to both loops

$$\vec{f}' = \int_L d\vec{f}' = \frac{II'}{c^2} \text{grad} \iint_{L'L'} \frac{d\vec{r}' \cdot d\vec{r}'}{r} = - \frac{II'}{c^2} \iint_{L'L'} \frac{d\vec{r}' \cdot d\vec{r}'}{r^3} \vec{r}, \quad (24)$$

while, as  $\vec{r} = -\vec{r}'$ , the kinetic force of the loop L appearing as a result of its interaction with the whole loop L' is  $\vec{f} = -\vec{f}'$ .

Ampere proposed the following formula for the kinetic force appearing as a result of the action of the current element I'dr' on the current element I'dr''

$$d(d\vec{f}) = - \frac{II'}{c^2 r^5} \{2 d\vec{r}' \cdot d\vec{r}'' r^2 - 3 (\vec{r}' \cdot d\vec{r}'') (d\vec{r}' \cdot \vec{r}'')\} \vec{r}, \quad (25)$$

which, obviously, is in accordance with Newton's third law. This formula is deduced not from the fundamental equation of motion in electromagnetism (as I do this for the Biot-Savart formula in my theory) but proceeding from four experimental observations. Ampere did not give a clear and logical deduction of his formula from the interaction phenomena observed by him. This was noted by Maxwell, who gave his own deduction of Ampere's formula on 16 pages of his *magnum opus*<sup>(13)</sup>, although, I must emphasize, Maxwell knew the exact form of the Newton-Lorentz equation, which unjustly bears the name of Lorentz.

A simple "topological" reasoning over Ampere's formula leads to a highly dubious and suspect result. Indeed, according to Ampere, two parallel current elements attract each other, while the same current elements, being colinear, repel each other with the same force if the distance between the elements is the same. Hence on a circle around one of the current elements at azimuths  $\theta \cong 45^{\circ}, 135^{\circ}, 225^{\circ}, 315^{\circ}$  (more exactly at  $\theta = \arccos(\pm\sqrt{2/3})$ , as can be found putting in (25)  $d(\vec{r}) = 0$ ,  $d\vec{r} \cdot d\vec{r}' = dr^2$ ,  $\vec{r} \cdot d\vec{r} = r dr \cos\theta$ ,  $\vec{r} \cdot d\vec{r}' = r dr' \cos\theta$ ) the force of interaction with the other current element must be null, as this force must be a continuous function of the azimuth <sup>angle</sup> and can change from attractive to repulsive only by passing through zero. Such "zero diagonals" in the interaction between current elements are highly improbable. This reasoning was given by Grassmann in his historical 1845-paper<sup>(14)</sup>.

Although the Biot-Savart's and Ampere's formulas are substantially different, the physicists, like the Buridan ass, cannot still decide which of them is adequate to physical reality. The motivation is that both formulas lead to identical results for the action of a closed loop on a current element. Recently this was shown by Ly-ness<sup>(11)</sup>. Well! But for the action of a current element on a closed loop both formulas lead to different results. The answer is that nobody has been able to measure the action of a current element (or of a part of a loop!) on a closed loop, and for two closed loops both formulas again lead to the same result given by formula (24).

Discussing the "experimental indistinguishability" between the Ampere's and Biot-Savart's formulas Jeans writes<sup>(15)</sup>:

"There are of course innumerable other possible systems of forces (besides the Ampere and Biot-Savart forces - S.M.), but none of these seem at all plausible, so that we are almost compelled to give up all attempts at explaining the action between the circuits by theories of action at a distance. We accordingly attempt to construct a theory on the hypothesis that the forces result from the transmission of stresses by the medium. This in turn compels us to assume that the energy of the system of currents resides in the medium."

Being unable to explain such a simple thing as the interaction of stationary currents, Jeans introduces highly speculative, mysterious and unclear hypotheses and notions, although as a motto of his book he has taken Newton's words:

"We are to admit no more causes of natural things than such as are both true and sufficient to explain their appearances."

To this purpose the philosophers say that Nature does nothing in vain, and more is in vain when less will serve; for Nature is pleased with simplicity, and affects not the pomp of superfluous causes."

According to me, the Biot-Savart formula is the unique true formula for describing the interaction between current elements. The Ampere (and any other) formula is wrong (I shall show beneath how can one establish experimentally the invalidity of Ampere's formula). The interaction between current elements, as well as the interaction between electric charges, is an action at a distance in the most pure New-

tonian sense and all hypotheses about a "propagation of interaction", "transmission of stresses by the medium", etc., introduced by Faraday, Maxwell and their followers, are nonsensical.

As I said, if one calculates the action of a closed loop on a current element, then the Biot-Savart and Ampere formulas lead to the same result. However, if one would calculate the Ampere force with which the infinitely large loop ABCD (i.e., the wire BC) in fig. 1 acts on the current element  $I'dr^{\rightarrow}$ , one does not obtain the result which I found for the Biot-Savart force. May be, when calculating with the Ampere formula one must take into account that the repulsive action of the wire (a) is not equal and opposite to the repulsive action of the wire ( $E'A' - a$ ), so that the current element  $I'dr^{\rightarrow}$  will also receive a push leftwards originated by the wire ( $E'A' - 2a$ ). The whole calculation is a tedious mathematical problem and I have not carried it out, as I did not consider it deserving my attention.

I shall return to Ampere's formula later. Now I wish to discuss another important topic of the interaction between stationary currents. According to me, one has to use the notion "magnetic poles" only for mnemonic reasons. Never has one to use this notion when searching to give a physical explanation of the interaction between currents. The physical explanation is to be given only by considering the interaction between the elementary currents in the loop (and I repeat once more, the permanent magnets are always to be considered as solenoids), by using the Biot-Savart formula and finding the resultant forces by integration.

I shall give a confirmation of this assertion analysing the first electromagnetic rotational experiments. In fig. 2a is shown Faraday's first <sup>electro-</sup>magnetomoving rotational experiment carried out in 1821: The south pole of a cylindrical magnet is fasten by a string to the bottom of a cup filled with mercury. If an electric current flows downwards along a vertical wire immersed in the mercury, the magnet rotates clockwise about the wire. Let me add that the magnet remains inclined because only at this position its gravitational downwards and Archimedes lifting upwards forces are in equilibrium.

In any text-book it is stated that a rotation takes place because the wire's current pushes the north pole (which has a rotational degree of freedom) along the circular  $\vec{B}$ -line originated by the current. This is not true: there is no force acting on the "north" pole. In Ref. 16 I give a graphical presentation <sup>(p. 172)</sup> of the Biot-Savart forces originated by the current elements in the vertical wire and applied to the "current elements" of the magnet (if imagining the magnet as a solenoid). The torque of all those forces about the vertical wire (assuming its diameter tending to zero) is null. The rotation of the magnet is due to the Biot-Savart forces originated by the current in the mercury and applied to the current elements of the magnet. The forces are the biggest on those parts of the magnet which are immersed in the mercury and in whose neighbourhood the mercury current is the biggest. To understand this clearly, look at the experiment shown in fig. 3a which was carried by Faraday in the same year 1821:

A magnet, on whose "south bottom" a piece of platinum is fasten (so that it can swim in mercury in a vertical position), rotates about the central current wire B connected with the positive electrode of the battery, from which the electric charges propagate radially in the mercury to the copper ring D and from there to the negative electrode of the battery. In this experiment again the rotation is due to the action of the current in the mercury, as shown clearly in fig. 3b. This can be verified by fastening the wire B solidly to the magnet: the rotation will remain the same. Indeed, in the experiment shown in fig. 3c, which was carried out by Ampere in 1822, the magnet is solidly attached to the vertical wire abc. In Ampere's experiment the magnet is substituted by a current loop g wound about a cylindrical insulator which swims in the mercury almost touching the insulated bottom of the cup, so that practically, there is no current under the cylinder.

Now returning to the experiment in fig. 2a, we can imagine the inclined magnet as substituted by two magnets: the one long vertical having its axis along the wire and the other short horizontal. As the vertical magnet will rotate about its own axis, its motion is immaterial, and only the motion of the horizontal magnet, whose south pole is fasten by the string will be effective. The electrons streaming in the mercury up-down will execute on the current elements of the horizontal magnet exactly the same action as in the experiment from fig. 3a.

The conclusion is: there is no action of the magnetic field on the "poles" of a magnet. The interaction is always "point-to-point" interaction between the current elements of the one magnetic system on the other magnetic system (current wires, magnets), where the "current wire" can be a current conducting liquid or gas, and the "magnet" is always to be substituted by current wires (in the way in which Faraday's magnet in fig. 3a is substituted by the Ampere's current wire in fig. 3c).

It is important to note that the magnets in figs. 2a, 3a, and 3c exert on the mercury an equal and oppositely directed torque. If we suppose that the viscosity of the mercury is much greater than the viscosity "mercury-cup" and "mercury-magnet", that the last two viscosities are negligible, and that the moments of inertia of the magnets are equal to the moments of inertia of the mercury, then when the magnets will be set in rotation clockwise, the mercury will be set in rotation counter-clockwise with the same angular velocity, so that the angular momentum of the whole system will remain zero, as it was before current has begun to flow.

In 1821 Faraday invented another electromagnetic rotational apparatus where a wire along which current flows rotates about a cylindrical magnet (fig. 2b). This experiment is electromoving and can be considered as an analogue to the magnetomoving experiment from fig. 2a. For current flowing downwards, the wire rotates clockwise because the vectors of the magnetic intensity crossing the wire point to the left. (use formula (14)).

The theoretical explanation of the experiment shown in fig. 2b becomes more simple if we transform the rotating bias wire to a horizontal wire rotating above the pole of a cylindrical magnet and having a sliding contact along a circle described by its end. Replacing then the cylindrical magnet by a circular current, we can present

Faraday's experiment by the schematical drawing in fig. 4. The circular loop AB and the rectangular loops ACFD and BCFE are presented as a single circuit, but they can be divided also into three separated loops. The loop BCFE is drawn only for symmetry and further I shall speak only about the loop ACFD.

Let us consider the interaction of the circular horizontal loop AB with the vertical rectangular loop ACFD. As the wire CF is along the rotational axis, it cannot display a rotational moment. If we suppose that the wire DF is far enough from the circular loop, its action as very feeble can also be neglected. Thus the circular loop will act only on the radial wire AC and on the vertical wire AD. I presume that it can be shown mathematically that the moments of force displayed by these two wires are equal and oppositely directed (the calculation is complicated involving elliptical integrals). This conclusion can be verified qualitatively by the Fleming rule, taking into account that the magnetic field of the circular loop crossing the wire AC is vertical (upwards for the indicated current direction), while the magnetic field crossing the wire AD is horizontal (leftwards for the indicated current direction). I verified the equality of the rotational moments exerted by the circular loop AB on the linear wires AC and AD experimentally (fig. 5) establishing that loops of the form of that presented in fig. 4 and similar do not acquire rotational moments when one lets current flow. I did the experiments with direct and alternating currents taking into account that the latter have the same ponderomotive action as the former for the loops considered. Thus neither the loop ACFD can set the loop AB in rotation nor vice versa, and this result follows directly from the integral Biot-Savart formula (24).

The circular loop AB cannot set in rotation the rectangular loop ACFD, but it can set in rotation parts of it. So if making the contacts at points A, C and D sliding, the wire AC will begin to rotate counter-clockwise, while the wire AD will begin to rotate clockwise. This result is very strange for Newtonian physics: the wires AC and AD interact with the loop AB, however the sacred Newton's "actio-reactio" balance is done not between the wires of the loop ACFD and the loop AB, but between the wires of the loop ACFD which do not interact with one another (easily can be seen that the magnetic actions of the wire AC on the wire AD and vice versa do not lead to rotational moments about the vertical axis). If Sir Isaac could hear what am I now affirming, he would turn over in his grave.

Let us consider the case where the wires ADFC are kept <sup>solid to the laboratory</sup> and sliding contacts are put only at the points A and C. As said, the wire AC will begin to rotate. If the radial wire AC is solidly connected to the circular wire AB, the latter will also take part in the rotation. Similar experiments have been carried out in the decennial following Oersted's discovery by Barlow, Faraday, Ampere and others. One made the sliding contact along the circumference AB by the help of a circular trough filled with mercury or instead of a radial wire one took a copper disk and the sliding contact was only at one point on the circumference (at point A).

For definiteness, I call the rotation of a copper disk in the field of a cylindrical magnet a Barlow disk. When the cylindrical magnet is kept solid to the laboratory, this is called the uncemented Barlow disk and when the cylindrical magnet is solid to the copper disk, this is the cemented Barlow disk.

According to the Biot-Savart formula, the potential forces with which the current

elements of the circular wire AB act on the current elements of the radial wire AC are perpendicular to the latter and, consequently, display a rotational moment. However, the potential forces with which the current elements of the radial wire AC act on the current elements of the circular wire AB, which are also perpendicular to the latter, do not display a rotational moment, as all of them point to the center. Thus the cemented Barlow disk gives an indisputable violation of Newton's third law, as a solid body is set in rotation only because of the action of unbalanced internal forces.

I wish especially to stress and emphasize that in the Barlow disk it is not the action of the wires ADFC which sets disk and magnet in rotation. However, mankind has not understood this clear thing, or, better say, mankind evaded understanding the mechanism of rotation of the cemented Barlow disk, because otherwise it had to openly recognize the experimental violation of Newton's third law. I shall give here as an example only one citation. So, F. Auerbach writes<sup>(17)</sup>:

"Von prinzipiellem Interesse ist auch Faradays rotierender Magnet (i.e., the cemented Barlow disk), weil hier der Magnet AB mit dem rotierenden Stromteil AC fest verbunden ist, die zwischen ihnen wirksamen Drehmomente sich also nach dem Wechselwirkungsprinzip aufheben. Es bleibt aber noch die Wirkung der Stromteile ADFC übrig, und dadurch kommt der Magnet mitsamt der Scheibe in kontinuierliche Drehung."

In fig. 6 I give an experiment which can show that the action of the current in the wires ADFC is not relevant for the rotation of the cemented Barlow disk. In this experiment there are only the radial wire AC and the circular wire AB which are connected at point A. The point C of the radial wire is connected with a metal cylinder having a small radius, while the point (let us call it point A') of the circular wire, at which one comes completing one or more circles, is connected with another metal cylinder having a radius bigger than the radius of the circular wire. Both metal cylinders build a condenser with an enough big capacity. Another radial wire (let us call it A'C) connects directly the outer and inner metal cylinders and an electric battery is inserted in the wire A'C. The whole system represents a rigid body and can rotate about an axle perpendicular to the plane of the figure. A synchronously operating chopper connects either A' with C (fig. 6a) or A with C (fig. 6b). The apparatus works in two stages. First (fig. 6a) one connects A' with C (at disconnected A and C) and the battery charges the outer cylinder with positive electricity and the inner cylinder with negative electricity. Then (fig. 6b) one disconnects A' and C and connects A with C. Now the positive charges from the outer metal cylinder flow along the circular wire AB and the radial wire AC to neutralize the negative charges on the inner cylinder (as a matter of fact the electrons flow in the opposite direction). The magnetic interaction between the currents in the circular and radial wires leads to a rotation of the whole system in a clockwise direction. Then one repeats both steps and the whole rigid system comes into a continuous rotation which will be eternal when the driving power will become equal to the friction power. Electromagnetic energy is consumed for covering of the Ohmic

losses only and thus if the apparatus is put at a liquid helium temperature its mechanical energy will be produced from nothing.

The above consideration is valid when the inductance  $L$  of the system is practically equal to zero. If this inductance is considerable, the electromagnetic system will at the second stage begin to oscillate with a period

$$T = 2\pi\sqrt{LC}, \quad (26)$$

where  $C$  is the capacitance of the system. Now the chopper must operate with a frequency  $1/T$ , so that the duration of any of the stages will be  $T/2$ , and exactly at the moment when the inner cylinder will be charged positively points  $A$  and  $C$  will be disconnected. The driving rotational moment is proportional to the capacitance of the condenser, to the frequency of chopping, to the voltage of the battery, and, of course, depends on the geometry of the wires  $CABA'$ . Maybe, for small periods  $T$  the driving rotational moment will no more increase with the frequency of chopping as the electrons will not flow simultaneously in the circular and radial wires.

If the oscillating system is without Ohmic and radiation losses, the battery will serve only for the initial charging of the metal cylinders; then the apparatus will rotate at a continuously closed line  $AC$  because of the oscillation of the electrons between both cylinders as their "Biot-Savart action" is always clockwise.

I call this apparatus the "trick-track" perpetuum mobile. It violates not only the energy conservation law but also the law for conservation of the angular momentum as an isolated system is set in rotation only by the action of internal forces.

If the outcome of the experiment shown in fig. 6 will be positive (rotation of the system), my view-point will be splendidly confirmed. If the outcome will be negative (the system does not come into a continuous rotation), there are possible two explanations:

- 1) The Biot-Savart formula is wrong and the right formula describing the interaction between current elements is Ampere's.
- 2) The Biot-Savart formula is the right one, but the introduced by Maxwell displacement current is not some fictitious notion but a real current with exactly the same properties as the current of moving charges. According to Maxwell, during the charging and discharging of the metal cylinders through the wires  $A'C$  or  $A'BAC$  always a "displacement current" with density  $\vec{j} = (1/4\pi)\partial\vec{E}/\partial t$  will flow, where  $\vec{E}$  is the electric intensity generated by the charged cylinders in the space between them. Thus if the result of the experiment is negative, we can accept that the displacement current not only exerts magnetic ponderomotive action on other currents but it also "absorbs" the magnetic ponderomotive action of other currents, as the impulse received by the current in the wire  $AC$  is balanced by the impulse received by the displacement current. We see that the negative outcome of this experiment can be considered as a splendid confirmation of present-days field electromagnetic theory with all its non-sensical (according to me) attributes.

My probability predictions are: 1) Ampere's formula: 0%, 2) Biot-Savart formula with Maxwell's conceptions: 3%, 3) Biot-Savart formula with Marinov conceptions: 97%.

Of course in the case of a negative outcome of the experiment one has to make an additional analysis to be able to choose between the first two alternatives. Thus one sees that the crucial experiment shown in fig. 6 is of a tremendous importance for science as it chooses between three rival theories and gives an experimental violation of two fundamental conservation laws.

Now I shall analyse the historic "floating bridge" experiment performed by Ampere (see fig. 7a) which gives a splendid confirmation of the Biot-Savart formula (16) for the case of interaction of parts of wires in the same loop, and where the violation of the simple Newton's third law can clearly be observed. The experiment consisted of two troughs of mercury connected with each other by a floating bridge of copper wire. When an electric current flows as shown in the figure, the bridge is set in motion in the direction indicated. To exclude possible forces on the surface between copper and mercury, Tait substituted later the copper bridge by a glass-tube filled with mercury; the effect remained the same.

This experiment was carried out recently very carefully by Pappas<sup>(1)</sup>. In Pappas' arrangement there is a possibility to measure quantitatively the appearing force of repulsion. Its description is as follows (fig. 7b): The ends of a  $\Pi$  shaped wire BCDE are placed in two cups of mercury. The wire is suspended by thin threads. Current from a 12 volt battery is led to the mercury cups along the wires indicated by AB and FE. When letting current flow through the circuit the suspended wire receives a repulsive push and moves until the horizontal component of the wire's weight (consider the suspended wire as a pendulum) balances the repulsive force (see also fig. 8).

Later Moyssides and Pappas<sup>(18)</sup> measured the pushing force not by registering the deflection angle of the suspended frame but by an electronic balance and achieved a much higher accuracy. I shall base my analysis on the results published in Ref. 18.

Let us denote the lengths of the "legs" BC and ED by  $d$  ( $= 77$  cm) and the length of the "shoulder" DC by  $b$  ( $= 48$  cm). As the kinetic forces of any of the legs are equal and oppositely directed, only the pushing kinetic force of the shoulder will come to light. This force can be calculated by integrating the elementary force  $d\vec{f}$  in equation (20) for a changing  $a$  from 0 to  $b$  and taking  $dr' = da$ . As for  $a = 0$  the integrand has a singularity, Pappas bent to  $90^\circ$  the ends of the legs by  $a_0$  ( $= 1$  cm and 2 cm) and so annulled the push over distance  $a_0$  at the angles C and D. Thus the "effective" length of the shoulder was reduced to  $b - 2a_0$  and the integration in formula (20), when considering the  $y$ -axis parallel to ABC, is to be carried out for the change of  $a$  from  $a_0$  to  $b - a_0$ . To simplify the integration, I took approximately  $d/(b^2 + d^2)^{1/2} \cong 1$ . The error introduced for Pappas geometry can be not bigger than  $1 - d/(b^2 + d^2)^{1/2} = 0.15 = 15\%$ , so that the calculated result will be bigger than the real one with about 5 - 10%.

Thus the kinetic force of the shoulder will be (take into account that there are two legs)

$$f = \frac{2I^2}{c^2} \int_{a_0}^{b-a_0} da/a = \frac{2I^2}{c^2} \ln \frac{b-a_0}{a_0}. \quad (27)$$

In table 1 I give certain of the forces measured by Pappas and the calculated by me

theoretical predictions. Pappas carried out much more measurements and obtained a very good linear dependence of the pushing force  $f$  as function of the squares of the currents  $I^2$ . Extremely important is to note that the linear plot crosses the x-axis (the  $I^2$ -axis) not at the frame origin, i.e., not for  $I^2 = 0$  but at  $I_1^2 = 3800 \text{ A}^2$  for bending  $a_0 = 1 \text{ cm}$  and at  $I_2^2 = 3500 \text{ A}^2$  for bending  $a_0 = 2 \text{ cm}$ . This effect is due to the well known in mechanics "rest friction". Thus as "effective" currents one has to take the differences  $I_{\text{eff}}^2 = I^2 - I_{1,2}^2$ , for  $a_0 = 1$ , respectively,  $a_0 = 2 \text{ cm}$  bendings. If the current is taken in ampere, as 1 ampere =  $3 \times 10^9$  abampere, to have the force in gram, we have to make the calculation according to the formula

$$f = \frac{2}{980} \frac{I^2}{100} \ln \frac{b-a_0}{a_0} = K I^2, \quad (28)$$

where  $g = 980 \text{ cm/sec}^2$  is the Earth's gravitational acceleration in Athens.

TABLE 1

Bending $a_0 = 1 \text{ cm};$ $\ln \frac{b-a_0}{a_0} = 3,850;$		$I_1^2 = 3800 \text{ A}^2$ $K = 7.86 \times 10^{-5} \text{ g/A}^2$		Bending $a_0 = 2 \text{ cm};$ $\ln \frac{b-a_0}{a_0} = 3.135$		$I_2^2 = 3500 \text{ A}^2$ $K = 6.40 \times 10^{-5} \text{ g/A}^2$			
$I^2 \text{ (A}^2\text{)}$	$I^2 - I_1^2 \text{ (A}^2\text{)}$	$f \text{ (g)}$ meas.	$f \text{ (g)}$ calc.	diff. in %	$I^2 \text{ (A}^2\text{)}$	$I^2 - I_2^2 \text{ (A}^2\text{)}$	$f \text{ (g)}$ meas.	$f \text{ (g)}$ calc.	diff. in %
12400	8600	0.629	0.676	7	13000	9500	0.554	0.608	9
18500	14700	1.044	1.155	10	19400	15900	0.884	1.018	13
23900	20100	1.459	1.580	8	23100	19600	1.095	1.254	13
27900	24100	1.775	1.894	6	29200	25700	1.450	1.645	12

The deviations of the predicted force from the measured force are calculated according to the formula  $(f_{\text{calc}} - f_{\text{meas}})/f_{\text{calc}}$ . In Ref. 18 can be found many other details, as the exclusion of the action of Earth's magnetism, the dependence of the effect on the cross-section of the wire, the calibration of the measuring implement, etc. However in their calculations Moysides and Pappas come to the conclusion that the measured force is with at least 33% less than the calculated by them theoretical value. As I showed with my calculation, the coincidence is almost perfect.

This experiment shows clearly that the propulsion of the bridge (see fig. 7a) is due only to the interaction of particles which are in the bridge. Such a propulsion is reactionless with respect to the bridge!!! It is true that the resultant force in the whole circuit is null, but in a part of the circuit it is not null. According to Newton not only the resultant force of an ensemble of interacting particles, but also the resultant force of any two of them must be null.

Pappas experiment can be used for the observation of another extremely interesting effect which was discovered by me and called the "current jet" effect. When the end of the legs are not bent and look as in fig. 7a and 7b, then the bridge will receive

an additional push due to the change of the momenta of the current conducting electrons from  $m_e v$  to  $-m_e v$ , where  $m_e$  is the mass of the electron and  $v$  its velocity. As 1 A of current transfers 1 C electric charge in a second and the charge of the electron is  $q_e = 1.6 \times 10^{-19}$  C, then  $N = 1/q_e = 6.25 \times 10^{18}$  electrons enter and leave the suspended frame in a second when the current is 1 A. If the current is I ampere, the momentum transferred by the current conducting electrons to the crystal lattice of the suspended frame in a second, i.e., the pushing force, will be  $f = N I m_e v$  (I write the proper velocity  $v$ , but most probably the universal velocity  $v$  is to be written!)

$$f = N I \frac{2 m_e v}{(1 - v^2/c^2)^{1/2}}, \text{ thus } v = \frac{c f}{(4N^2 I^2 m_e^2 c^2 + f^2)^{1/2}} \quad (29)$$

For a current  $I = 100$  A, supposing that the velocity of the current conducting electrons is  $v = c/10 = 3 \times 10^9$  cm/sec, and denoting again by  $g$  the Earth's gravitational acceleration, we obtain  $f = 2 N I m_e v / g \approx 3.5$  g. This is a force of the same order as the Biot-Savart force observed by Pappas. One can measure the current jet force in the following manner: First one measures the push with an arrangement as in fig. 7b, registering a force  $f_1 = f_B + f_C$ , where  $f_B$  is the Biot-Savart force and  $f_C$  is the current jet force. Then one measures the push with an arrangement as in fig. 9 (in fig. 10 I show how the wires at the line CD are to be executed). Now the registered force will be  $f_2 = f_B - f_C$ , where the Biot-Savart force  $f_B$  is caused by the interaction of the currents in the wires FDCA and points to the left, while  $f_C$  is the same current jet force, so that  $f_C = (f_1 - f_2)/2$ .

According to me, this experiment, where only the momentum conservation law is used and no model for the character of motion of the current conducting electrons is presumed, will give for the velocity of the latter a value near the velocity of light, i.e., hundreds of thousands of kilometers per second. On the other hand, many other experiments (as, for example, the Hall effect) lead to the conclusion that the velocity is of the order of millimeters per second. How these two contradicting results are to be reconciled? - The explanation is very simple.

It is well known that the so-called valence electrons of the metal atoms (which are the current conducting electrons) are loosely connected with the ions, jumping continuously from one atom to another and forming a kind of an "electron gas" throughout the solid "ions' lattice". If there is no voltage applied to the wire, the motion of the valence electrons is chaotic and their average velocity is zero. When an electric tension is applied to the wire (imagine, for simplicity, an electric pulse applied to the left end of a straight wire by supplying a surplus of electrons), the chaotically moving electrons from the left end, where their concentration exceeds the concentration of the valence electrons, begin to move with a preferred average velocity to the right, where the electron concentration is less. The average "drift velocity" of the electrons  $v_{dr}$ , is of the order of mm/sec. However the velocity,  $v_{en}$ , with which the "electrons' concentration" propagates through the wire is of the order of  $c$ . Thus, after a second the exceeding electrons which were supplied to the left wire's end will be transferred to 1 mm, however after a second the electrons' concentration will be exceeding at a distance 300,000 km. (If the wire is not closed, as we supposed, then the electrons' concentration will be reflected from the right end and returning back will be reflected

ted from the left end, and so on, until the surplus electrons will be distributed uniformly throughout the wire.) As the electrons are absolutely identical and indistinguishable one from another, we must conclude that in a second the exceeding electrons were transferred at a distance 300,000 km. (Indeed, if 100 electrons in file move on 1 cm each in a second or the first electron moves on 100 cm, while the other 99 remain at rest, the physical result is the same.) This aspect is not only "theoretical". Pappas' experiment will show that Nature also will consider it as the physically adequate one. Thus there is no an "interaction" which propagates. There are only electrons which propagate, respectively there is energy, i.e., mass, which propagates through the wire with a velocity  $v_{en} \cong c$ , if there is a consumer at the right end of the wire. It is true that the energy is transferred not by the same electrons, however, because of the indistinguishability of the electrons one from another the material objects (experimental arrangements) react in a manner as if the electrons propagate with the velocity  $c$ . It must be clear that the velocity of the single electrons is neither the "drift velocity",  $v_{dr}$ , nor the velocity of "energy transfer",  $v_{en}$ . Any electron moves chaotically. It is possible that some of the supplied surplus electrons may cover the whole wire with a velocity  $c$  and be always in the "electrons' surplus concentration". The probability for such a case is  $v_{dr}/v_{en}$ . Even in a wire without electric tension there is a possibility that some electron will cross it from the one end to the other with a velocity  $c$ , however the probability for such a case is zero. Although the electric pulse transferred along a wire is something material and can be measured in joules and calories, conventional physics speaks about a foggy "propagation of interaction", being unable to explain what "interaction" is and with which measuring unit has one to measure this quantity. For certain physicists the "interaction" propagates through the metal, for other it surrounds the conductor similarly to the aura which surrounds the human body according to the assertions of the Indian yogas. According to me, <sup>in fig 9</sup> the current jet effect <sup>in the experiment</sup> will show that the myth about the mysterious "propagation of interaction" has to crumble to pieces.

As already said (p. 95), an unbalanced electromagnetic torque was observed for the first time in the cemented Barlow disk, where a radial current interacts with a cylindrical magnet (keep in mind that a flat cylindrical magnet can always be considered as a circular current). P. de Heen <sup>(19)</sup> was the first who replaced the cylindrical magnet in the cemented Barlow disk by a circular current wire. Instead to wind many circular windings (to increase the magneti field) and then to connect their end with the center by a radial wire, P. de Heen wound the wire as a spiral. In the last case the interaction is the same as between a radial current wire and an equal number of concentric circular current wires.

The same type of a current conducting spiral (fig. 11) was investigated recently by Serra-Valls and Gago-Bousquet <sup>(20)</sup> who gave the respective formula for the appearing torque and constructed an apparatus for demonstration of the torque.

I showed that human ignorance about the interaction of electric currents is cata-

strophic. The followers of Einstein have a large deal of responsibility for this ignorance and I should like to give the following citation of Essen<sup>(21)</sup> (p.1856):

The theories which are given such prominence in scientific and general literature (Essen means the relativity theories - S.M.) may have retarded the progress of electromagnetic theory by directing interest away from the original source of difficulty, the magnetic effects of moving charges, and also by introducing irrational concepts into the teaching of science.

I shall conclude this article by considering another very interesting effect caused by the action of stationary electric current. This effect, first, is known to a very limited number of persons and, secondly, has until now remained unexplained.

If one sends current (dc or ac) through an axle mounted on ball-bearings (figs. 12, 13) giving an initial push to it to the left or to the right, the axle continues to rotate. One obtains a bigger torque with the same ball-bearings, if one should rotate the outer races, i.e., if the axle is solid to the laboratory and the outer races of the ball-bearings are connected by a metal cylinder (hull). Two such ball-bearing motors (with a small and big bores) are photographed in fig. 14.

The history of the discovery of the ball-bearing motor represents rather a curiosity. In 1966 I was imprisoned in a psychiatry in Sofia and cured by horse doses of neuroleptics (Mageptil) because of my unorthodox political thinking. In the psychiatry was imprisoned and forcedly cured another, obviously absolutely normal man. He was a very able mechanic who, refusing to work for a salary in a state plant, executed special works on his laths and milling tools installed in his living room and the apartments of his relatives. He has earned good money and, evidently, the envy of his neighbours has brought him to the loony bin to be liberated of his vicious individualistic behaviour. This man asked me once in the toilet (as a very dangerous lunatic, I was kept locked the whole day in an isolator and watched by a policeman, so that I could speak with other human beings only in the toilet): "Well, Stefan, if you are a physicist, explain why an axle on ball-bearings rotates when current flows through it." I could not give an answer, and the mechanic shook his head: "What are teaching you the professors in the universities if they cannot explain to you such a simple thing." At that time I did not know that this simple experiment was unknown to the professors, as the first publication on this effect<sup>(22)</sup> appeared a year later (ergo when this extremely important effect was discussed by the idiots in the toilet of a Bulgarian psychiatry, it still was not registered in the scientific annals of the physical world). Milroy describes the effect without giving an explanation for the appearing torque. Eleven years later Gruenberg<sup>(23)</sup> repeated Milroy's experiment and tried to give an explanation. Although a very sophisticated mathematical apparatus is used, Gruenberg's starting hypotheses are physically nonsensical. Further three years later Weenink<sup>(24)</sup>, in a big article, proceeding from the same nonsensical starting hypotheses, made the conclusion that "the nonzero torque in first order found by Gruenberg is shown to be due to an algebraic error" (p. 171). Another theoretical paper was published further two years later by van Doorn<sup>(25)</sup> who tried to explain the torque by electrostatic forces, but concluded that "this torque, however, is too small to keep a ball-bearing motor running" (p. 327). In 1980 Mills<sup>(26)</sup>, in a popular journal, gave a photograph of a ball-bearing motor constructed by him and reported almost the same effects as Milroy and Gruenberg. Those are all papers dedicated to the ball-bearing effect.

I established that the driving torque in the ball-bearing motor is due to the thermal dilatation of the balls because of the Ohmic heating at the points of contact of the balls with the races, in result of which the balls become ellipsoids with major axis along the line of current flow. Thus the ball-bearing motor is a thermal engine! Here the expanding substance is steel, meanwhile the expanding substance in all thermal engines used by humanity is gaseous. There is, however, another much more important difference: the motion in the conventional thermal engines is along the direction of expansion of the heated substance, while in the ball-bearing thermal engine it is at right angles to the direction of expansion of the heated substance. Consequently, in gaseous thermal engines, the gas cools during the ex-

pansion and the kinetic energy acquired by the "piston" is equal to the heat lost by the expanding gas. This is not the case in the ball-bearing motor. Here not the whole ball becomes hot but only a small part of it which touches the race at a "point contact" where the Ohmic resistance is much higher than the resistance across the ball. Only this small "contact part" of the ball dilates and the dilatation is very small, only a few microns. As the balls and the races are made of a very hard steel, a slightly ellipsoidal ball produces a huge torque when one of the races rotates with respect to the other. If there is no initial rotation, the ball-bearing motor does not rotate. It starts spontaneously only occasionally (with a greater probability at greater bores) because the surface of the races is not absolutely smooth. At an absolute smoothness and geometrical perfection a spontaneous starting is impossible. I call this very interesting effect the current thermal dilatation effect.

During the rotation the ball's "bulge" moves from the one race to the other, the local overheating is absorbed by the ball and the radius of the "bulge" becomes equal to the radius of the whole ball. At the new contact, when again current passes and Ohmic heat is produced, the radius of the "contact point" becomes again bigger and again a driving torque appears. Thus, as a result of the mechanical motion, the ball is not cooled and HEAT IS NOT TRANSFORMED INTO KINETIC ENERGY. The whole heat which the current delivers remains in the metal substance of the machine. If the Ohmic resistance between balls and races is the same at rest and rotation, the heat produced and stored in the metal of the machine will be the same at rest and rotation. This resistance, however, increases with the rotation, first significantly and then very slowly.

I established that the ball-bearing motor produces at rest and rotation the same amount of heat in the following manner: I measured for a definite time the temperature increase in a calorimeter in which the motor from fig. 15 in ref. 16 was maintained at rest applying a definite tension  $U$  and registering the flowing current  $I$ , thus when the resistance of the motor was  $R = U/I$ . Then I started the motor and applied such a tension  $U'$  that at the new resistance  $R'$  the flowing current  $I' = U'/R'$  was such that  $UI = U'I'$ , i.e., in both cases I applied exactly the same electric power. According to the energy conservation law, as in both cases the same amount of electric energy was put in the machine, the temperature increase of the calorimeter had to be the same. I registered, however, that in the second case the temperature increase was higher. Thus I concluded that in both cases the produced Ohmic heat was the same, but in the second case there was also heat coming from the friction of the rotating ball-bearings. The temperature increase in the second case was with 8% higher, while the mechanical energy produced (see the calculation in ref. 16) was about 10% of the input electrical energy.

Even if the friction of the ball-bearing motor is very low (let us assume zero), there is always a maximum velocity which the motor cannot surpass. At this maximum velocity the heat from the "bulge" cannot be absorbed by the ball, and the ball obtains more or less a spherical form. Let us suppose (fig. 13) that the axle rotates clockwise and that for the time  $\Delta t$  in which point E will come to the lower position the ball's "bulge" is cooled. Writing  $DE = 2\pi RN\Delta t$ , where  $R$  is the radius of the shaft and  $N$  the number of its revolutions per second, and putting  $DE \leq \pi r$ , where  $r$  is the radius of the ball, we obtain  $N \leq r/2R\Delta t$ .

Initially I thought that the current jet effect (p. 98) is responsible for the torque in the ball-bearing motor. To check whether this hypothesis is true, I replaced the ball-bearings by "spoke-bearings" which can be seen in fig. 14 on the left and right sides of the big motor. Such an apparatus had no torque. Another proof is the following: The torque of brass ball-bearings (taken from old nazi torpedoes), whose resistance and hardness are lower in comparison to those of steel ball-bearings, was substantially weaker. I gilded the brass ball-bearings, diminishing thus further the resistance and the hardness, and the torque disappeared completely. The resistance of the gilded ball-bearings was about 1 m $\Omega$ . Currents even of 400-500 A could not bring it to rotation. Thus I abandoned thoroughly the hypothesis that the current jet effect is responsible for the torque.

The ball-bearing motor has a higher efficiency at the following conditions:

- greater hardness,
- bigger coefficient of the thermal dilation,
- lower specific heat,
- big bore,
- big balls,
- pressed ball-bearings.

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## FIGURE CAPTIONS

- Fig. 1. - Two interacting current loops.
- Fig. 2. - The historic Faraday's magnetomoving and electromoving rotational experiments:  
 a) Rotation of an anchored magnet swimming in a cup of mercury.  
 b) Rotation of a current wire about a magnet.
- Fig. 3. - Rotation of a magnet freely swimming in a cup of mercury:  
 a) Faraday's experiment.  
 b) Faraday's experiment looked from above.  
 c) Ampere's experiment.
- Fig. 4. - A circular current loop interacting with rectangular current loops.
- Fig. 5. - The author scrutinizes the interaction between circular and linear currents.
- Fig. 6. - The "trick-track" perpetuum mobile.
- Fig. 7. - Ampere's "floating bridge" experiment:  
 a) The historical Ampere's set-up.  
 b) Pappas' variation.
- Fig. 8. - The author (r.) observes the experiment of Prof. Pappas (l.) in the laboratory of the latter in Athens.
- Fig. 9. - Marinov's proposal for a variation of Pappas' experiment for measuring the current jet effect.
- Fig. 10. - Detail of the experiment shown in fig. 9.
- Fig. 11.- The double current conducting spiral of Serra-Valls and Gago-Bousquet constructed as a propulsion machine on rails. The force  $F_N^i$  arises from the interaction of the currents in the rails with the current in the axle  $OO'$ , and its driving torque  $\Gamma_N^i = F_N^i \overline{OP}$  is small with respect to the torque  $\Gamma_N$  arising from the interaction of the current elements in the spirals ( $N$  refers to the number of the windings). The force  $F_N^i$  can be cancelled if putting between points  $r$  and  $r'$  a battery with the same voltage as this of the battery between points  $Q$  and  $Q'$ .
- Fig. 12. - The ball-bearing motor with rotating inner races.
- Fig. 13. - Cross-section of an axle on ball-bearings.
- Fig. 14. - Photograph of two ball-bearing motors (big and small) with rotating outer races.

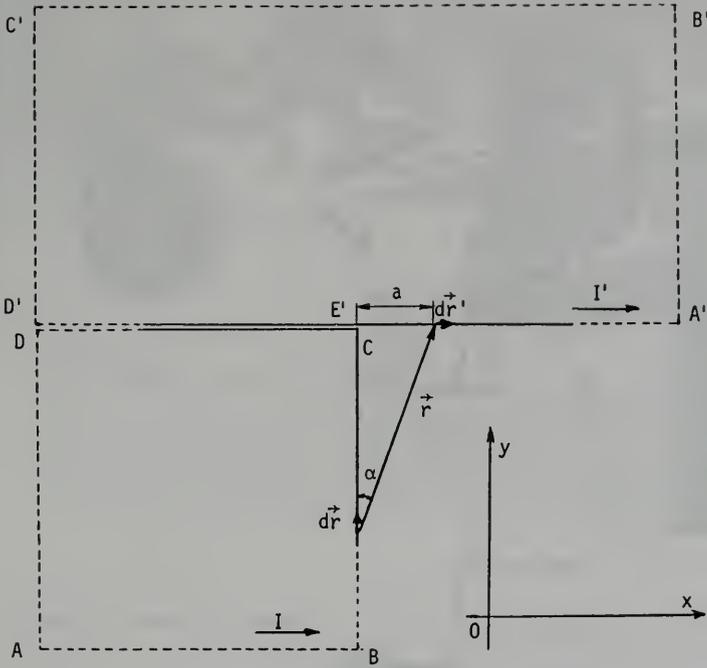


Fig. 1

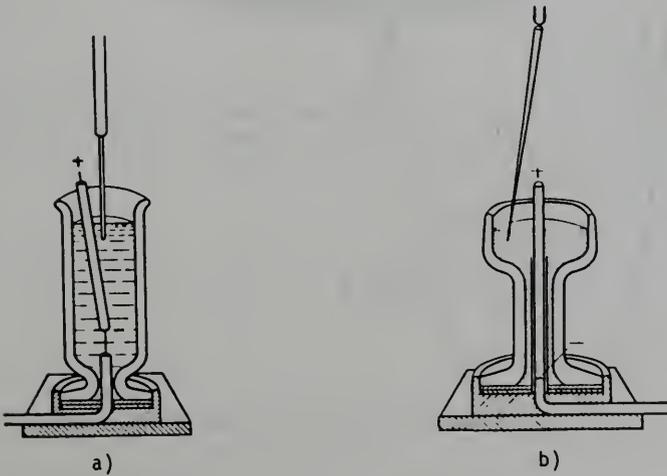
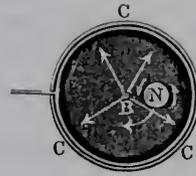


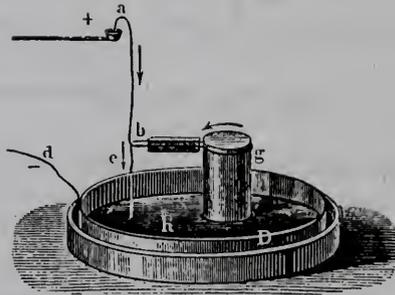
Fig. 2



a)



b)



c)

Fig. 3

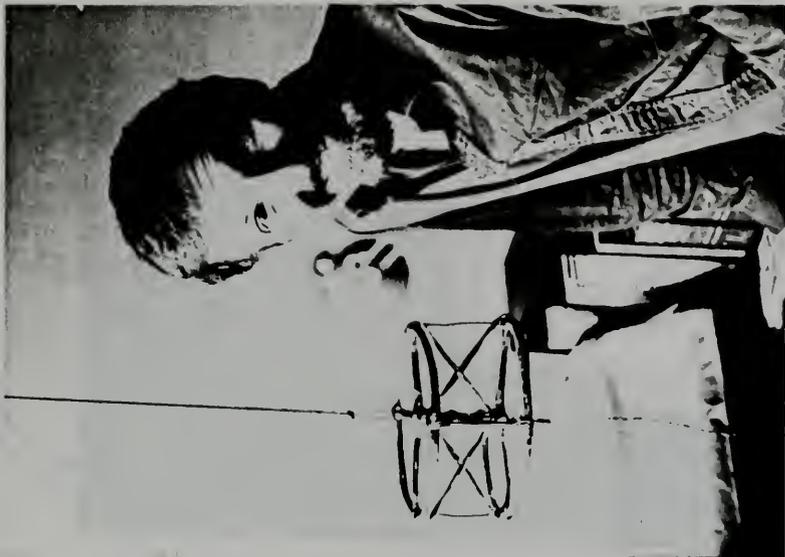


Fig. 5

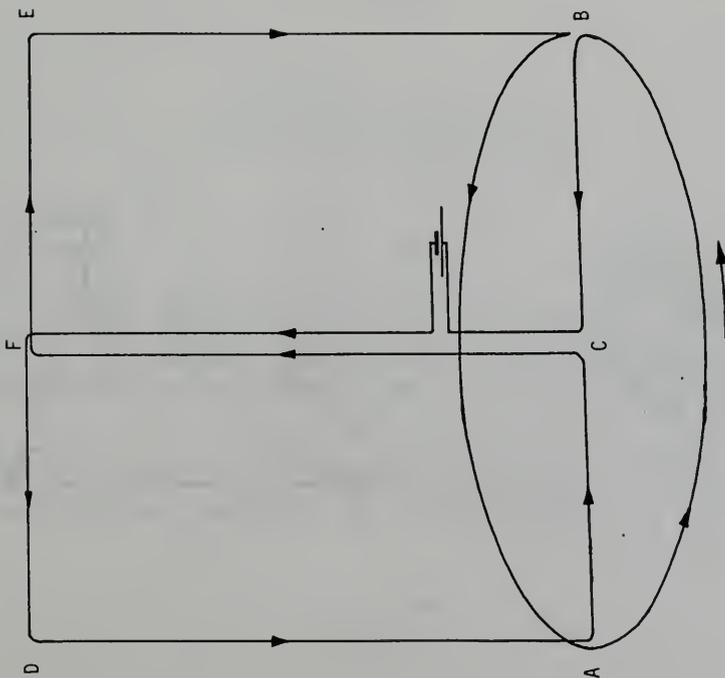


Fig. 4

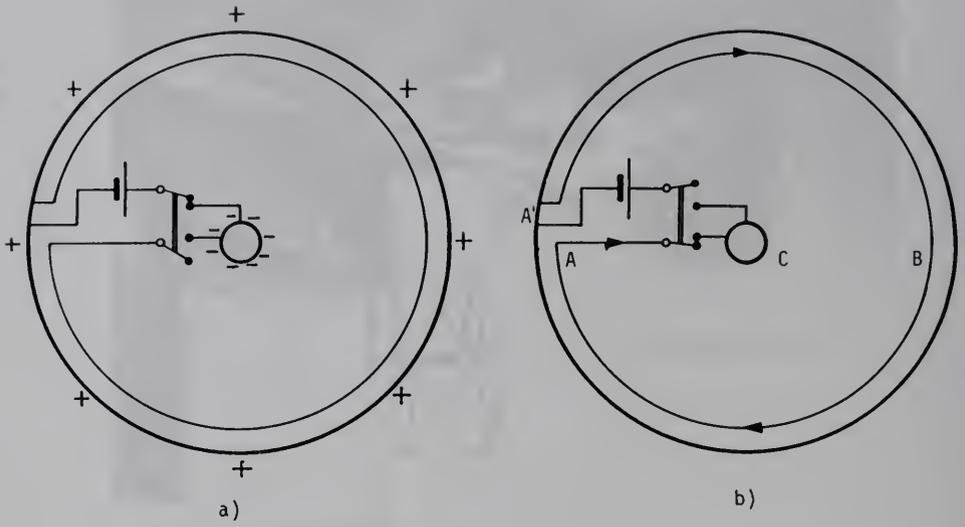


Fig. 6

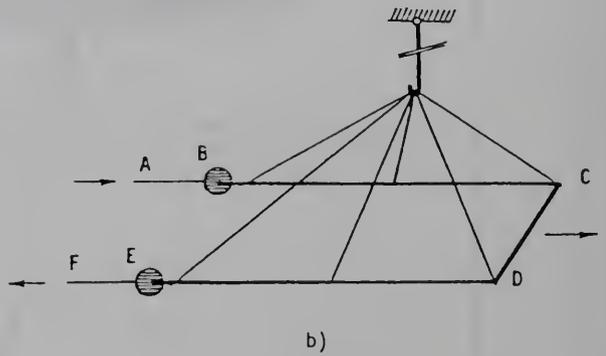
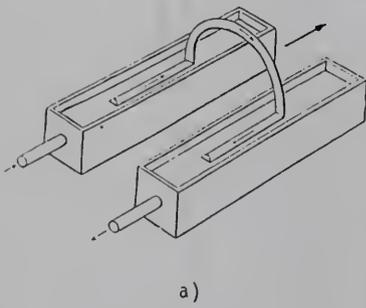


Fig. 7



Fig. 8

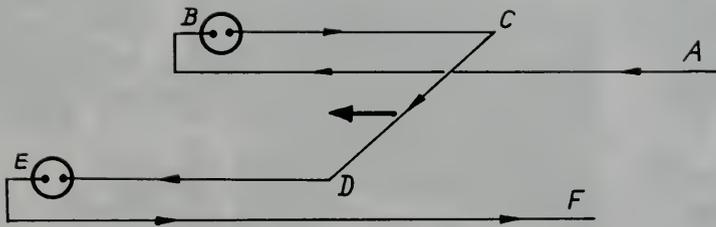


Fig. 9

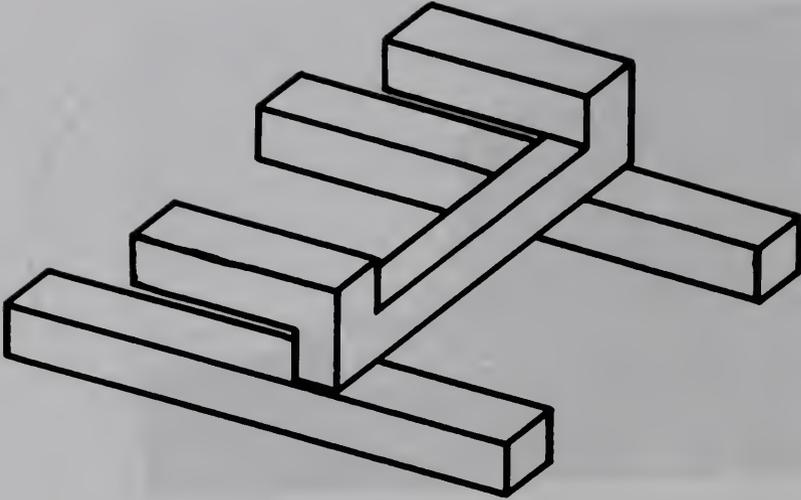


Fig. 10

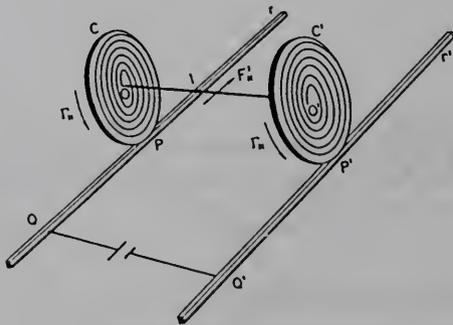


Fig. 11

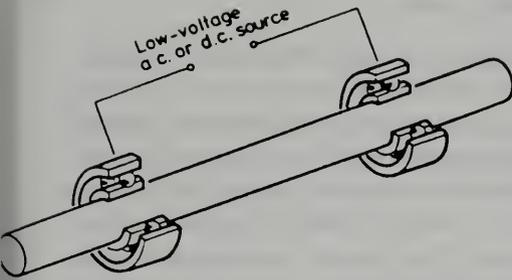


Fig. 12

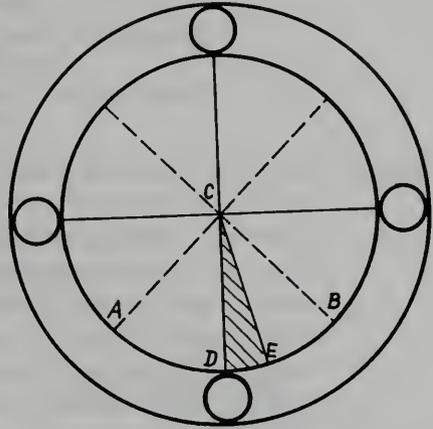


Fig. 13

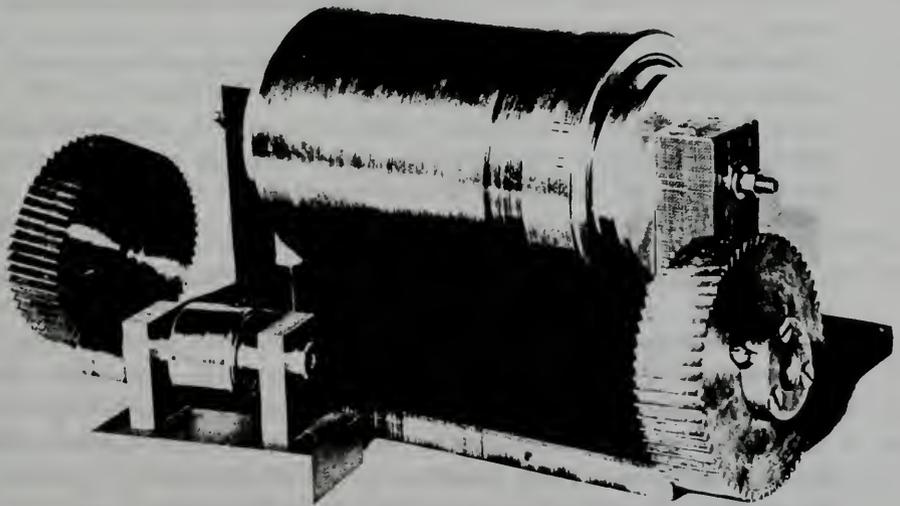


Fig. 14

## COUP DE GRACE TO RELATIVITY AND TO SOMETHING ELSE

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Abstract. Proceeding from the axiomatics of my absolute space-time theory, I derive the equation of motion of an electric charge when considered in a laboratory moving in absolute space (I call it the relative Newton-Lorentz equation). I show that the electromagnetic phenomena depend on the velocities of the particles with respect to distant matter but not with respect one to another, as the theory of relativity asserts. I present the description and the explanation of a generator and motor for direct current, constructed recently by me and called "bul-cub", which has no collector or brushes. The analysis of the bul-cub generator and motor, which can be called one-and-a-half polar machines, throws abundant light to the phenomenon "electromagnetic induction", and shows clearly its definite absolute and point-to-point interaction character. I make a new systematization of the dc machines, calling the unipolar machines (the Faraday and Barlow disks) half polar, namely open half polar machines. Then I describe the closed half polar and the unipolar machines invented recently by me. I invented two types of unipolar machines: with magnets arranged as spokes (calling this a Marinov ring) and with closely arranged magnets (calling this a Müller ring). I investigate further the unifilar and cylindricofilar machines (as called by me), and I show that the interaction between current wires and magnets can be relevantly explained only on the basis of the differential Biot-Savart formula which violates the simple Newton's third law. Conventional electromagnetism explains wrongly many such experiments, and I point out how important <sup>it</sup> is to be able to localize the seats of the electromoving and ponderomoving forces. Finally I give the reports on three apparatus showing "perpetuum mobile effects", i.e., where creation of energy out of nothing can be observed: the coupled N-machine, the machine ADAM and the machine CUREC. However, as most perspective perpetuum mobile I consider the machine MAMIN COLIU designed by me which represents a non-polar electromagnetic machine, i.e., a machine which can be only generator but no motor. This machine is under construction. The present paper shows clearly that one must abandon the "field", "closed current lines" and "near-action" concepts of the Saxon Faraday-Maxwell school and return to the "point-to-point", "current elements" and "far-action" concepts of the German Gauss-Weber school.

И строго ложатся слова...

Б. ОКУДЖАВА

### 1. The absolute and relative Newton-Lorentz equations

In my absolute space-time theory, proceeding from ten extremely simple and clear axioms, and making use of very simple mathematical speculations, I obtain<sup>1,2,3</sup> the following equation of motion of a particle which has electric charge  $q$ , mass  $m$ , and moves with a velocity  $\vec{v}$  in absolute space

$$\frac{d}{dt} \frac{m \vec{v}}{(1 - v^2/c^2)^{1/2}} + \frac{q}{c} \frac{d\vec{A}}{dt} = -q \text{grad}(\Phi - \frac{\vec{v} \cdot \vec{A}}{c}). \quad (1)$$

The quantities

$$\Phi = \sum_{i=1}^n q_i / r_i, \quad \vec{A} = \sum_{i=1}^n q_i \vec{v}_i / cr_i \quad (2)$$

are the electric and magnetic potentials of the system of  $n$  particles surrounding our test charge  $q$ , where  $q_i$  are their electric charges,  $\vec{v}_i$  are their absolute velocities, and  $r_i$  are the distances between  $q_i$  and  $q$ .

In the "total" time derivative  $d\vec{A}/dt$  the change of the magnetic potential  $d\vec{A}$  is due, on one hand, to the change of the velocities and positions of the charges of the system during the time  $dt$  and refers to the space point, where at the moment considered, the test charge can be found, and, on the other hand, to the change of the position of the test charge during the time  $dt$  with  $\vec{v} dt$ . One must be careful when calculating this "total" time derivative, remembering that in mathematics there is a total differential of a function of several variables but there is no "total derivative". The terminology and symbolism which we use in physics sometimes deviate from the rigorous mathematical terminology and symbolism, and one must be very attentive,

keeping always in mind Einstein's words: "As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality."

Thus we can present the "total" time derivative of the magnetic potential as follows

$$\frac{d\vec{A}}{dt} = \frac{\partial\vec{A}}{\partial t} + (\vec{v} \cdot \text{grad})\vec{A}, \quad (3)$$

where  $(\partial\vec{A}/\partial t)dt$  is the change of  $\vec{A}$  for a time  $dt$  at a space point where at the moment considered the test charge can be found and  $(\vec{v} \cdot \text{grad})\vec{A} dt$  is the change of  $\vec{A}$  due to the displacement of the test charge during the time  $dt$  over a distance  $\vec{v} dt$ . Substituting (3) into (1) and taking into account the mathematical relation

$$\text{grad}(\vec{v} \cdot \vec{A}) = (\vec{v} \cdot \text{grad})\vec{A} + (\vec{A} \cdot \text{grad})\vec{v} + \vec{v} \times \text{rot}\vec{A} + \vec{A} \times \text{rot}\vec{v} = (\vec{v} \cdot \text{grad})\vec{A} + \vec{v} \times \text{rot}\vec{A}, \quad (4)$$

where the right side is written for  $\vec{v} = \text{Const}$ , we obtain the equation of motion in the form

$$\frac{d}{dt} \frac{m\vec{v}}{(1 - v^2/c^2)^{1/2}} = -q \text{grad}\phi - \frac{q}{c} \frac{\partial\vec{A}}{\partial t} + \frac{q}{c} \vec{v} \times \text{rot}\vec{A}. \quad (5)$$

Introducing the notations  $\vec{E} = -\text{grad}\phi - (1/c)(\partial\vec{A}/\partial t)$ ,  $\vec{B} = \text{rot}\vec{A}$ , called electric and magnetic intensities, we can write (5) in the form

$$\frac{d}{dt} \frac{m\vec{v}}{(1 - v^2/c^2)^{1/2}} = q\vec{E} + \frac{q}{c} \vec{v} \times \vec{B}. \quad (6)$$

In my theory, the equation of motion of the test particle (1) (or (5), or (6)) is considered in absolute space. The equation of motion considered in a laboratory which moves with a constant velocity  $\vec{V}$  in absolute space has not the same form. So I call (1) the absolute Newton-Lorentz equation, and now I shall deduce the relative Newton-Lorentz equation. The latter is to be used when observing the motion of an electric charge in a laboratory attached to the Earth, which, as I established experimentally, moves with 300 km/sec in absolute space.<sup>4,5</sup>

Thus let us suppose that the velocities of the test charge and of the charges of the surrounding system in the laboratory are respectively  $\vec{v}'$  and  $\vec{v}'_i$ . I shall obtain the relative Newton-Lorentz equation within an accuracy of the first order in  $V/c$ , so that the Galilei formulas for velocity addition can be used

$$\vec{v} = \vec{v}' + \vec{V}, \quad \vec{v}_i = \vec{v}'_i + \vec{V}. \quad (7)$$

If working with a higher accuracy (i.e., accuracy of any order in  $V/c$ ), the Marinov formulas for velocity addition are to be used.<sup>1,2,6</sup>

Taking into account (7), we can write

$$\phi - \frac{\vec{v} \cdot \vec{A}}{c} = \sum \frac{q_i}{r_i} - \frac{\vec{v}' \cdot \vec{V}}{c} \cdot \sum \frac{q_i (\vec{v}'_i + \vec{V})}{c r_i} = \sum \frac{q_i}{r_i} (1 - \frac{V^2}{c^2}) - \sum \frac{q_i}{r_i} \frac{\vec{v}' \cdot \vec{V}}{c^2} - \sum \frac{q_i \vec{v}'_i \cdot \vec{v}'}{c r_i} - \sum \frac{q_i \vec{v}'_i \cdot \vec{V}}{c r_i} =$$

$$\phi' (1 - \frac{V^2}{c^2}) - \phi' \frac{\vec{v}' \cdot \vec{V}}{c^2} - \frac{\vec{v}' \cdot \vec{A}'}{c} - \frac{\vec{V} \cdot \vec{A}'}{c} \cong \phi' (1 - \frac{\vec{v}' \cdot \vec{V}}{c^2}) - \frac{\vec{v}' \cdot \vec{A}'}{c} - \frac{\vec{V} \cdot \vec{A}'}{c}, \quad (8)$$

where  $\phi'$  is the relative electric potential which is equal to the absolute electric potential, as the electric potential is not velocity dependent,  $\vec{A}' = \sum q_i \vec{v}'_i / c r_i$  is the relative magnetic potential, and the expression on the right side is written within an accuracy of first order in  $V/c$  (I already stated that the analysis in the present paper will be carried out within that accuracy). In Ref. 7 I proposed the "cauldron" experiment with the help of which one can measure the variations  $(\Delta V / c^2) \phi$  in the electric potential between two charged spheres during half a year when the absolute velocity of the laboratory changes with  $\Delta V = 60$  km/sec.

I beg the reader to take into account two substantially different invariances: the Lorentz invariance and the Marinov invariance. One works with the Lorentz invariance (well known from the theory of relativity) when an observer considers the motion of a particle which first moves with a velocity  $\vec{v}$  in absolute space and then with another velocity  $\vec{v}'$ , while one works with the Marinov invariance when the motion of a particle moving always with the same velocity  $\vec{v}$  is considered by an observer who first is at rest in absolute space and then moves with a velocity  $\vec{V}$ . Thus the Lorentz invariance is to be applied when the observed particle changes its character of motion with respect to distant matter, while the Marinov invariance is to be applied when the observer changes his character of motion with respect to distant matter. For the Lorentz invariance there is a change in the momentum and energy of the observed particle and it involves 4-dimensional invariants, while for the Marinov invariance there is no change in the momentum and energy of the observed particle and it involves 3-dimensional invariants. For the theory of relativity it is of no significance whether the observed particle or the observer changes its (his) character of motion, however, unfortunately, these two cases are physically substantially different, as the reader will become aware upon reading this article to the end.

The "total" time derivatives of the absolute and relative magnetic potentials must be equal, i.e.,

$$d\vec{A}/dt = d\vec{A}'/dt', \quad (9)$$

because  $d\vec{A}/dt$  depends only on the changes of the relative velocities of the charges of the system with respect to the test charge and on the changes of the distances between the former and the latter which are also "relative". To be able to operate with the changes in  $\vec{A}$  due, on one hand, to the changes occurring with the "system" and, on the other hand, to the changes occurring with the test charge, we divided in formula (3)  $d\vec{A}/dt$  in two terms and there  $\partial\vec{A}/\partial t$  refers no more to the test charge but to the space point "crossed" by the test charge at the moment of observation. For  $\partial\vec{A}/\partial t$  this point is taken in absolute space and in this case  $\vec{v}$  in formula (3) is the absolute velocity of the test charge  $\vec{V}$ , while for  $\partial\vec{A}'/\partial t'$  the reference point is taken in the laboratory space and in this case  $\vec{v}$  in a formula similar to (3) must be the laboratory velocity  $\vec{v}'$  of the test charge.

Keeping in mind the mathematical relation (4) and formula (3), we obtain substituting (8) and (9) into (1)

$$\frac{d}{dt} \frac{m(\vec{V} + \vec{V})}{(1 - (\vec{V} + \vec{V})^2/c^2)^{1/2}} = -q(\text{grad}\Phi + \frac{1}{c} \frac{\partial \vec{A}}{\partial t}) + \frac{q}{c} \vec{V} \times \text{rot} \vec{A} + \frac{q\vec{V} \cdot \vec{V}}{c^2} \text{grad}\Phi + \frac{q}{c} \vec{V} \times \text{rot} \vec{A} + \frac{q}{c} (\vec{V} \cdot \text{grad}) \vec{A}, \quad (10)$$

where the space and time derivatives are taken with respect to the laboratory, as we work only within an accuracy of the first order in  $V/c$ , and, for brevity, we write all laboratory quantities in the last equation (and further in this paper) without primes.

Comparing formulas (5) and (10), we see that the "potential" (i.e., right) parts of these equations differ with the three last terms in equation (10). We see that the electric (i.e., related to  $\Phi$ ) absolute effects are proportional to  $v/c$  and for this reason they are small. I repeat, in Ref. 7 I proposed a method for measuring such effects. However, the magnetic (i.e., related to  $\vec{A}$ ) absolute effects are not only comparable with the relative magnetic effects but are even much bigger, because the former are proportional to  $V/c$ , while the latter are proportional to  $v/c$  and for macroscopic charged bodies  $V$  is always much bigger than  $v$ . Later I shall show the reasons for which absolute magnetic effects have not been observed until now.

Conventional electromagnetism treats only the electric and magnetic intensities,  $\vec{E}$  and  $\vec{B}$  (see their mathematical expressions through the potentials in the text after the formula (5)), as real physical quantities. For conventional electromagnetism, the electric and magnetic potentials,  $\Phi$  and  $\vec{A}$ , are "second quality" auxiliary quantities which can be changed at will using the so-called gauge transformation to the degree that the intensities calculated with the new potentials remain always the same. This is a terrible aberration which reins in physics since a century (see also p. 124).

Indeed, the last term in formula (10) shows clearly that the  $\vec{V}$ -vector-gradient of the magnetic potential takes part in the potential force acting on the test charge, i.e., that the magnetic potential is an "observable physical quantity". Throughout this paper the extreme importance of the last term in formula (10) will be revealed, so that the potentials will be again enthroned as the legitimate electromagnetic king and queen of noble German descent and the intrusive intensities of a Saxon mean birth will be chased away.

Let us suppose that the magnetic intensity is uniform (constant), i.e.,

$$\vec{B} = \text{rot} \vec{A} = \text{Const}, \quad (11)$$

in a certain space domain. In such a case the following mathematical relation takes place

$$\text{rot}(\vec{B} \times \vec{r}) = -(\vec{B} \cdot \text{grad}) \vec{r} + \vec{B} \text{div} \vec{r} = -\vec{B} + 3\vec{B} = 2\vec{B}, \quad (12)$$

where  $\vec{r}$  is the radius-vector of an arbitrary space point in this domain. Substituting (12) into (11), the following relation can be established between a constant magnetic intensity and its magnetic potential

$$\vec{A} = \frac{1}{2} \vec{B} \times \vec{r} + \vec{A}_0, \quad (13)$$

where  $\vec{A}_0$  is an arbitrary vector whose rotation is equal to zero, i.e.,  $\text{rot} \vec{A}_0 = 0$ . Putting now (13) into the last term of equation (10), we obtain, if choosing  $\vec{A}_0 = 0$ ,

$$\frac{q}{c} (\vec{V} \cdot \text{grad}) \vec{A} = \frac{q}{2c} (\vec{V} \cdot \text{grad}) (\vec{B} \times \vec{r}) = \frac{q}{2c} \vec{B} \times (\vec{V} \cdot \text{grad}) \vec{r} = \frac{q}{2c} \vec{B} \times \vec{V} = -\frac{q}{2c} \vec{V} \times \vec{B} = \frac{q}{2c} V B \hat{y}, \quad (14)$$

where the result on the right side is written for the case that  $\vec{V}$  is directed along the x-axis and that  $\vec{B}$  is directed along the z-axis. When  $\vec{B}$  is directed along the z-axis, the first term on the right side of (13) can be presented in components as follows  $(1/2) \vec{B} \times \vec{r} = (-yB/2, xB/2, 0)$ . Such is the magnetic potential in a long cylindrical solenoid whose axis is along the z-axis, and I say that the magnetic potential has a circular symmetry. If we choose now the vector  $\vec{A}_0$  in (13) as follows  $\vec{A}_0 = (yB/2, xB/2, 0)$ , we see that its rotation is equal to zero, and for the vector  $\vec{A}$  we obtain  $\vec{A} = (0, xB, 0)$ . Such is the magnetic potential in a long rectangular solenoid whose yz-sides are much larger than its xz-sides, and I say that the magnetic potential has a rectangular symmetry. Putting the last magnetic potential  $\vec{A}$  (i.e., this one with a rectangular symmetry) into the last term of equation (10), we obtain, at the above assumption that  $\vec{V}$  is directed along the x-axis,

$$\frac{q}{c} (\vec{V} \cdot \text{grad}) \vec{A} = \frac{q}{c} V \frac{\partial}{\partial x} (xB\hat{y}) = \frac{q}{c} V B \hat{y}, \quad (15)$$

and one can assume that for  $B = \text{Const}$  the last two terms in (10) cancel each other.

The results (14) and (15) are not identical. Meanwhile, as it can be easily seen<sup>2</sup>, the transformation from the magnetic potential with a circular symmetry to a magnetic potential with a rectangular symmetry is a gauge transformation which leaves the intensities without change, and conventional electromagnetism largely operates with such transformations considering them as physically admissible. Our analysis shows that the gauge transformations are not always admissible, because in certain cases, as I have just shown, they lead to physical contradictions.

The above analysis leads to another extremely important conclusion. The value of the magnetic intensity at a certain space point is not enough for the calculation of the force acting on the test charge, as this force depends also on the boundary conditions of the magnetic field. However the value of the magnetic potential at a certain space point is enough for the calculation of the force acting on the test charge at this very point. The reader sees clearly that at the light of these conclusions many dogmas of conventional electromagnetism are to be discarded as wrong.

In Ref. 2, analysing the recent Werner's experiment on the Sagnac effect with neutrons and the historical Bucherer's experiment (on the deviation of electrons in a magnetic field which are selected by letting them pass through crossed electric and magnetic fields) together with the "theorem on the rotating disk" deduced by me<sup>3</sup>, I showed that the existence of the term  $q(\vec{v} \cdot \vec{V}/c^2) \text{grad} \phi$  can be considered as experimentally verified (the third term in equation (10)).

However the scientific community will abandon the wrong and pernicious (for theory and praxis) relativity dogmas only when clear and simple (for understanding and execution) experiments will show that relativity is wrong. For rotational motion this was shown by many experiments (for example, the historical Harress-Sagnac experiment and the different variations of the "rotating disk" experiment executed by other authors and by me as the Harress-Dufour, Harress-Fizeau, and Harress-Marinov experiments<sup>1,2,8</sup>). In front of these decisive experiments, the followers of Einstein try to save the relativity ship from sinking asserting that their theory works only for inertial motion. I showed for the first time, measuring the Earth's absolute velocity in a closed laboratory with two different variations of the "coupled mirrors" experiment<sup>4,5</sup>, that for inertial motion relativity is also wrong. Here the relativists raise the following objections (as was the case on the last three International Conferences on General Relativity and Gravitation where I took part): since my experiments have not been repeated by other scientists, the positive effects reported by me are "unbelievable" and they "certainly are due to side causes". These objections, however, are raised always in an oral form, but never in a written form. Other relativists object that my experiments are "too sophisticated and difficult for execution". Meanwhile the new variation of the "coupled shutters" experiment<sup>9</sup> recently carried out by me was built in four days (its first variation was carried out five years ago in Brussels<sup>10</sup>). The magnitude and the equatorial coordinates of the apex of the Earth's absolute velocity which I measured with the Graz variation<sup>9</sup> in the days between the 9th and 13th February 1984 were the following:  $V = 360 \pm 40 \text{ km/sec}$ ,  $\delta = -24^\circ \pm 7'$ ,  $\alpha = 12.5^h \pm 1^h$ . The most interesting aspect in the whole story is that when I invite the relativists to see my experiments and to check their reliability, they refuse to come<sup>11</sup>.

## 2. Motional, transformer, and motional-transformer inductions

The present paper is dedicated only to basic problems in electromagnetism. I shall show that the conventional theory explains many electromagnetic phenomena with conceptions and formulas contradicting the physical reality. I shall illustrate my criticism and present confirmation of my conceptions and formulas considering several crucial known and unknown experiments and electromagnetic apparatus as the BUL-CUB machine (a generator and motor for direct current without collector, constructed recently by me, for which I applied for a patent<sup>12</sup>), the Faraday-Barlow machine, the König-Marinov machine, and Marinov's motional-transformer inductor. Some of these machines lead to violation of the energy conservation law and to the possibility of constructing a perpetuum mobile. I observed a violation of the energy conservation law also in the so-called ball-bearing motor which although being an electrical machine is, as a matter of fact, a thermal engine, where the expanding substance is steel. Concerning the violation of the energy conservation law let me say here only two words. I introduce only one (besides space

and time) axiomatical physical quantity, namely the quantity "energy". Any other physical quantity (as, for example the quantity "force") is obtained as mathematical derivative of energy, space, and time, and for this reason does not need any additional explanation. One has to explain only what energy is. This, however, is impossible, because there is <sup>no</sup> some more fundamental quantity with the help of which energy can be mathematically defined. Thus energy is a mystery. And now when I have shown that energy can be created out of nothing this "mystery" becomes a mystic mystery.

Although the 4-dimensional formalism (which is largely used in my absolute space-time theory<sup>2</sup>) requires to consider  $-\vec{\partial}\vec{A}/c\partial t$  as an "electric intensity", I firmly defend the opinion that  $-\vec{\partial}\vec{A}/c\partial t$  is a "magnetic force" and not an "electric force" (although it can exert action also on charges at rest!), understanding "electric forces" to be those whose potentials depend on the time currents,  $qc$ , of the charges producing them, and "magnetic forces" to be those whose potentials depend on the space currents,  $q\vec{v}$  (the terms "time current" and "space current" are introduced by me<sup>2</sup>).

According to Einstein if there is a magnet and a coil, then the produced induction current depends only on the relative motion between them, and with this solemn assertion he opens his historical 1905-paper\* which gave birth to the theory of relativity. I shall show that this Einstein's assertion is not true: the induced electric intensity depends on the laboratory velocities of the magnet and the wire, thus on their velocities with respect to distant matter, as the laboratory must be inertial.

Before giving a simple verification of the above assertion, let me note that the rotation of a cylindrical magnet about its axis does not introduce any change in the electromagnetic aspect of the system. As I showed<sup>3</sup>, although the so-called "drift" velocity,  $v_{dr}$ , of the current conducting electrons in a wire is of the order of mm/sec, their "energy" velocity,  $v_{en}$ , with which momentum and energy are transferred, is of the order of  $c$ . The magnetic field is originated by the energy velocity of the current conducting electrons and not by their drift velocity. Thus if one begins to rotate the cylindrical electromagnet, one will possibly slightly increase or slightly decrease the magnetic field originated (depending on the directions of current and rotation). The possible effect will be of the order of  $v/v_{en} \cong v/c$ , where  $v$  is the peripheral velocity of rotation of the cylindrical magnet. I must emphasize, however, that according to my theory<sup>2</sup> the rotation of the magnet will not change the magnetic field originated by it, as the electrons' velocity with respect to absolute space (viz. to the laboratory) will remain equal to  $c$ . One may object that when rotating the magnet not only the velocity of the current conducting electrons changes but also

\* As announced by N. Rudakov<sup>13</sup>, an amount of several million dollars has been paid for a copy of the 1905-paper handwritten by Einstein; meanwhile the British museum purchased the fourth-century Codex Sinaiticus, one of the three earliest New Testament manuscripts, for 200,000 dollars.

the velocity of the positively charged ions of the metal crystal, so that the appearing both opposite magnetic fields will annihilate one another. This objection is irrelevant as the current conducting electrons moving with velocity  $c$  are those which outweigh the valence electrons balanced by the positive ions. If the number of electrons and ions in a wire is equal, current cannot flow. Without entering in detail, I shall only add that all remains the same if the electromagnet will be substituted by a permanent magnet or by a magnetized metal. More on my conceptions about the transmission of current in a wire and about the physical essence of the drift and energy velocities of the current conducting electrons see in Ref. 3, p. 100.

Let us now have a system of closed wires (loops) along any of which a constant electric current flows. Permanent magnets or materials magnetized by those currents can also be included, but, for simplicity in the delineation, the latter will always be imagined substituted by equivalent current wires which originate the same magnetic fields. The electric potential of the system,  $\Phi$ , as well as the laboratory's absolute velocity,  $\vec{V}$ , will be assumed equal to zero. Under these conditions, the kinetic force<sup>2</sup>,  $\vec{f}$ , of an arbitrary "test" charge (which we shall imagine as a current conducting, i.e., valence electron in a closed or unclosed piece of wire) will be equal to the following potential force<sup>2</sup>,  $\vec{F}$  (see the Newton-Lorentz equations (5) or (10)),

$$\vec{f} \equiv m\vec{u} = -\frac{q}{c} \frac{\partial \vec{A}}{\partial t} + \frac{q}{c} \vec{v} \times \text{rot} \vec{A} \equiv \vec{F}, \quad (16)$$

where  $\vec{u} = d\vec{v}/dt$  is the acceleration of the charge,  $m$  and  $q$  are its mass and electric charge, and  $\vec{A}$  is the magnetic potential originated by all current loops of the system at the space point where at the moment considered our test charge is located.

On the left side of equation (16) we have the kinetic force of the electric charge  $q$  and on the right side we have the potential force acting on this charge as a result of its magnetic interaction with the currents in all loops of the surrounding system. The potential force  $-(q/c)(\partial \vec{A}/\partial t)$  will accelerate the electron (which has a negative charge!) along the direction of  $\partial \vec{A}$  and if parts of the wire are parallel to this direction, electrons will begin to flow along. I call this "transformer induction", as it can appear if one changes only the current in the surrounding loop, which as well as our "test" wire remain at rest. The potential force  $(q/c)(\vec{v} \times \text{rot} \vec{A})$  will accelerate the positive charges along a direction perpendicular to  $\vec{v}$  and  $\vec{B} = \text{rot} \vec{A}$ , so that  $\vec{v}$ ,  $\vec{B}$ ,  $\vec{u}$  are oriented as the first three fingers of the right hand (i.e., the electrons in the opposite direction!) and if parts of the wire are parallel to this direction, electrons will begin to flow along. I call this "motional induction", as it can appear only if the electric charges in the test wire have a certain velocity in the laboratory.

The motional induction (i.e., the motional inductive electric intensity)

$$\vec{E}_{\text{mot}} = (\vec{v}/c) \times \text{rot} \vec{A} \quad (17)$$

is clear enough, however the transformer induction (i.e., the transformer inductive electric intensity)

$$\vec{E}_{tr} = - (1/c)(\partial\vec{A}/\partial t) \quad (18)$$

has many subtle aspects, certain of which have not been noticed by conventional electromagnetism, as the reader will soon see. To be clear, I shall divide the transformer induction into a rest transformer induction (which appears when an electromagnet and a wire are at rest and only the current feeding the electromagnet changes, and which will be ignored in this paper as I assume all currents stationary) and into a motional-transformer induction (which appears when the magnet moves with respect to the wire, so that the magnetic potential produced by the former at the space points where the latter is located changes) and which, for brevity, I shall often call shortly transformer induction, as according to the above assumption the rest transformer induction will be ignored in this paper. The term "motional-transformer induction" is introduced by me. Conventional electromagnetism wrongly considers the motional-transformer induction as opposite to the motional induction and wrongly uses for its calculation the formula for the motional induction taken with a negative sign.

The calculation of the motional induction can be done directly by formula (17). The calculation of the rest transformer induction can be done also directly by formula (18), as in this case  $\vec{A} = \vec{A}(t)$  depends directly on time. However, one cannot calculate the motional-transformer induction directly by formula (18), as in this case

$\vec{A} = \sum_{i=1}^n \vec{A}_i\{r_i(t)\}$  is a function of the distances  $r_i$  between the  $i$ -th current element<sup>3</sup> of the system's wires and the point of location of the test charge and only because these distances change due to the motion of the respective wire,  $\vec{A}$  changes, becoming thus a composite function of time. Thus for the case of the motional-transformer induction (considering for brevity the electric intensity induced by the motion of the  $i$ -th current element of the system, but for simplicity in the writing omitting the index "i") the calculation must be performed as follows

$$\vec{E}_{mot-tr} = - \frac{1}{c} \frac{\partial \vec{A}\{r(t)\}}{\partial t} = - \frac{1}{c} \left( \frac{\partial \vec{A}}{\partial r} \frac{\partial r}{\partial x} \frac{\partial x}{\partial t} + \frac{\partial \vec{A}}{\partial r} \frac{\partial r}{\partial y} \frac{\partial y}{\partial t} + \frac{\partial \vec{A}}{\partial r} \frac{\partial r}{\partial z} \frac{\partial z}{\partial t} \right) = \frac{1}{c} (\vec{v} \cdot \text{grad}) \vec{A}, \quad (19)$$

where  $\vec{v} = - \partial r / \partial t$  is the velocity of the  $i$ -th current element of the system and  $\vec{A}$  is the magnetic potential originated by this current element at the space point where the test charge is located. To obtain the whole motional transformer inductive electric intensity, one must sum up all elementary inductive intensities (19), thus obtaining

$$\vec{E}_{mot-tr} = \frac{1}{c} \sum_{i=1}^n (\vec{v}_i \cdot \text{grad}) \vec{A}_i. \quad (19')$$

The calculation with formula (19') is difficult and only in simple cases can be carried out. So if the electromagnet represents a rigid body moving with a translational velocity  $\vec{V}$ , formula (19') reduces to the following one

$$\vec{E}_{mot-tr} = \frac{1}{c} (\vec{V} \cdot \text{grad}) \vec{A}. \quad (19'')$$

Now I shall give a very simple and clear example for the use of formula (19') which is unknown to conventional electromagnetism. The exact mathematical calculation<sup>14</sup> of the magnetic potential and magnetic intensity produced by a long cylindrical solenoid with radius R gives

$$\begin{aligned} A_\phi &= 2\pi n I \rho / c & B_z &= 4\pi n I / c & \vec{A} &= \frac{1}{2} \vec{B} \times \vec{\rho} & (\text{for } R > \rho) \\ A_\phi &= 2\pi n I R^2 / \rho c & B_z &= 0 & & & (\text{for } R < \rho), \end{aligned} \quad (20)$$

where I is the electric current flowing in the solenoid, n is the number of its turns on a unit of length,  $\vec{\rho}$  is the polar radius of the reference point in a cylindrical frame of reference whose z-axis coincides with the solenoid's axis, and  $\vec{A}$  is parallel to the nearest current element. Let us suppose that the solenoid rotates about its axis. According to formula (19') and the formula for the vector-gradient written in cylindrical coordinates<sup>2</sup>, we shall have, taking into account that  $v_i = v$  and  $\sum \vec{A}_i = \vec{A}$ ,

$$\vec{E}_{\text{mot-tr}} = \frac{1}{c} \sum_{i=1}^n (\vec{v}_i \cdot \text{grad}) \vec{A}_i = \frac{v}{c \rho} \frac{\partial}{\partial \phi} \left( \frac{2\pi n I \rho}{c} \right) \vec{\phi} = 0. \quad (21)$$

Thus if there is a "radial" wire put in the inner space of the solenoid, the induced motional-transformer electric intensity will be null. If, however, there is the opposite case: the magnet is at rest and the "radial" wire rotates, a motional inductive electric intensity will appear given by formula (17), where  $\vec{v}$  is the laboratory velocity of a certain line element of the wire. Hence the motional and motional-transformer inductions are not reciprocal! The same electric intensity (17) different from zero will be induced even if there is no relative motion between magnet and wire, but both rotate together. In this case the induction is again motional, as the rotation of the cylindrical magnet about its axis is immaterial.

The electric intensity,  $\vec{E}$ , is the potential force acting on a unit charge and appearing as a result of its magnetic interaction with the current elements of the loops of the surrounding system. If this force will be multiplied scalarly by a certain path, we obtain the energy which the <sup>unit</sup> charge will acquire by covering this path. This energy is called electric tension and is designated by U.

We saw that when a wire rotates about the axis of a cylindrical magnet (without or with the magnet), the electric intensity induced along it is different from zero, and thus the electric tension along its line elements is different from zero, too. If, however, the wire represents a closed loop, then the summary tension along the whole loop is always equal to zero. I shall give a demonstration of this assertion, formulating it more generally: If a loop rotates about an axis which is an axis of rotational symmetry of an external magnetic field, then the electric tension induced along the whole loop is always zero.

Indeed, according to formula (17), using the notation (11) for the magnetic intensity, we have

$$U = \oint \vec{E}_{\text{mot}} \cdot d\vec{l} = \int \text{rot} \left( \frac{\vec{v}}{c} \times \vec{B} \right) \cdot d\vec{s} = \int \left\{ \left( \frac{\vec{v}}{c} \cdot \text{grad} \right) \vec{B} + \frac{\vec{v}}{c} \text{div} \vec{B} \right\} \cdot d\vec{s}, \quad (22)$$

where the Stokes theorem is used and the integration in the linear integral is carried out along the loop, while the integration in the surface integral is taken over an arbitrary surface spanned on the loop. On the other hand, taking a divergence from both sides of the definition equality (11), we obtain, remembering the identical relation  $\text{div}(\text{rot} \vec{A}) = 0$ ,

$$\operatorname{div} \vec{B} = 0, \quad (23)$$

which represents one of the so-called Maxwell-Lorentz equations (equations (23) and (26) are called first pair of the Maxwell-Lorentz equations). Substituting now (23) into (22), and taking into account equation (3) equalized to zero (as  $d\vec{A}/dt = 0$  if the magnetic field has rotational symmetry along the axis of rotation of the loop), we obtain

$$cU = \int (\vec{v} \cdot \operatorname{grad})(\operatorname{rot} \vec{A}) \cdot d\vec{s} = \int \operatorname{rot}\{(\vec{v} \cdot \operatorname{grad})\vec{A}\} \cdot d\vec{s} = - \int \operatorname{rot}\left(\frac{\partial \vec{A}}{\partial t}\right) \cdot d\vec{s} = 0, \quad (24)$$

as also  $\partial \vec{A} / \partial t = 0$ .

If the loop rotates about an axis which is not an axis of rotational symmetry of the external magnetic field, then motional electric tension may be induced in the loop. This tension, however, is always alternating and the average tension for a whole rotation (over  $360^\circ$ ) is equal to zero. The demonstration of this more general theorem is similar as above, taking into account that for a whole rotation the average total time derivative of the magnetic potential is zero.

Thus if a loop rotates together with a cylindrical magnet about the axis of the latter, the induced summary tension is null, but the tensions induced in parts of the the loop may be different from zero. This fact is extremely amazing, as a single isolated body rotating with respect to absolute space produces electric tensions and offers a possibility for obtaining electric current and consequently energy.

Let me note here that a static electric tension produced by a wire rotating together with the magnet was measured for the first and last time by Kennard in 1917, however only few persons have taken into account this fascinating experiment<sup>15</sup> which demonstrated to any thinking person the failure of relativity during WWI. Let me cite the summary of Kennard's paper:

An experiment is described showing that a cylindrical condenser (whose electrodes are connected by a radial wire - S.M.) rotating inside a magnetized coaxial solenoid becomes charged as required by the theory of Lorentz. Rotation of the solenoid has no effect (Barnett).

The disproof of the moving-line theory is thus completed; electromagnetic induction depends in part upon absolute rotation in the mechanical sense. Analysis in terms of electrons seems to make necessary the existence of a stationary aether in order to explain the observed effect; so that the phenomenon seems to present difficulties for those relativists who reject the aether.

Kennard had a solenoid (i.e., cylindrical magnet) and a wire (i.e., coil, or winding which, however, is not closed) placed along the radius of the solenoid. He realized the following combinations:

1. Solenoid (magnet) at rest, wire (coil) rotating. Kennard measured a motional induction tension.
2. Wire (coil) at rest, solenoid (magnet) rotating. Kennard measured no tension as a rotating cylindrical magnet does not produce transformer induction.
3. Wire (coil) and solenoid (magnet) rotating together. Kennard measured (!!!!!!!!!)

a motional induction tension, as the rotation of a cylindrical magnet about its axis is immaterial.

After the heavy strokes given to relativity by Sagnac's experiment in 1913 and by Kennard's experiment in 1917, the theory survived further 70 years. Unbelievable blindness of hundreds of thousands of scientists!

It is evident (in the light of equation (24)) that one cannot make Kennard's motional inductive tension produce current in a closed wire rotating solidly with the cylindrical magnet, because in other parts of the loop oppositely directed motional inductive tensions will balance Kennard's tension. However, if one lets a certain part of the loop rotate with the magnet, leaving the other part at rest and introducing sliding contacts between the rest and moving wires, an induced electric current can be produced. Such was the case of a copper disk rotating together with a cylindrical magnet about the axis of the latter. The relevant experiment was done 75 years before Einstein wrote his relativity paper and represented the historical Faraday's unipolar generator which was the first electromagnetic generator ever built in human history. Let me cite section 218 of Faraday's "Electricity":

218. ... a copper disk was cemented upon the end of a cylinder magnet with paper intervening; the magnet and the disk were rotated together, and collectors (attached to the galvanometer) brought in contact with the circumference and the central part of the copper plate. The galvanometer needle moved .... and the direction of motion was the same as that would have resulted, if the copper only had revolved, and the magnet been fixed. Neither was there any apparent difference in the quantity of deflection. Hence, rotating the magnet causes no difference in the result; for a rotatory and a stationary magnet produce the same effect upon the moving copper.

I call Faraday's generator when the magnet is at rest and the disk rotating the uncemented Faraday disk, and when magnet and disk rotate together the cemented Faraday disk. Conventional electromagnetism, burdened by the relativity prejudices, has not clearly understood the essence of these machines.

Thus the motional and motional transformer inductions are not reciprocal. But in the overwhelming majority of cases they are reciprocal, i.e., if we have the cases: (i) wire moving, magnet at rest and (ii) wire at rest, magnet moving with the opposite velocity, then the appearing inductive tension is the same. Now I shall show the mathematical aspect of this reciprocity.

Let us have a wire (imagine always for simplicity a wire's line element) and a current loop (magnet) moving together with the velocity  $\vec{v}$ . We can consider this motion as composite, consisting of the following two motions: a) the magnet at rest, the wire moving, and b) the wire at rest, the magnet moving with the same velocity. For the composite motion there will be no change of the magnetic potential originated by the magnet at the points of location of the wire's electrons, and we can write  $d\vec{A}/dt = 0$ . Putting this in equation (3) and taking a rotation from it, we obtain, using (23),

$$\frac{\partial(\text{rot}\vec{A})}{\partial t} + (\vec{v} \cdot \text{grad})(\text{rot}\vec{A}) \equiv \frac{\partial\vec{B}}{\partial t} - \text{rot}(\vec{v} \times \vec{B}) = 0. \quad (25)$$

Taking a rotation from both sides of the definition equality for the electric intensity  $\vec{E}$  (see the formula in the text after formula (5)), we obtain, remembering the mathematical formula  $\text{rot}(\text{grad}\phi) = 0$ ,

$$\text{rot}\vec{E}_{\text{tr}} = -\frac{1}{c}\frac{\partial\vec{B}}{\partial t}, \quad (26)$$

which represents another one of the Maxwell-Lorentz equations (see the text after formula (23)). Equation (26) can be obtained directly from the definition equality (18) for the transformer induction. On the other hand, taking a rotation from the definition equality (17) for the motional induction, we obtain

$$\text{rot}\vec{E}_{\text{mot}} = \text{rot}\left(\frac{\vec{v}}{c} \times \vec{B}\right). \quad (27)$$

Comparing the last three formulas, we conclude

$$\text{rot}\vec{E}_{\text{tr}} = -\text{rot}\vec{E}_{\text{mot}}. \quad (28)$$

It is important to note that from this equation we cannot make the conclusion  $\vec{E}_{\text{tr}} = -\vec{E}_{\text{mot}}$ . We can only say that for closed loops we shall always have  $U_{\text{tr}} = -U_{\text{mot}}$ . Indeed, integrating equation (28) along such a loop, denoting it by L and its line element by  $d\vec{l}$ , we obtain, using Stokes' theorem

$$U_{\text{tr}} \equiv \oint_L \vec{E}_{\text{tr}} \cdot d\vec{l} \equiv \int_S \text{rot}\vec{E}_{\text{tr}} \cdot d\vec{s} = - \int_S \text{rot}\vec{E}_{\text{mot}} \cdot d\vec{s} \equiv - \oint_L \vec{E}_{\text{mot}} \cdot d\vec{l} \equiv -U_{\text{mot}} \quad (29)$$

where S is an arbitrary surface spanned on the loop L and  $d\vec{s}$  is its surface element.

Formula (28) can be obtained also as a mathematical corollary from formulas (17) and (19) if taking rotation from both of them and making use of formula (23).

A rest transformer induction can exist at points where  $\vec{B} = 0$ , but  $\partial\vec{A}/\partial t \neq 0$  (remember the transformer consisting of two long concentric solenoids in which the inner solenoid is the primary one). Conventional electromagnetism does not know that motional-transformer induction can also exist at points where  $\vec{B} = 0$ , but  $\sum(\vec{v}_i \cdot \text{grad})\vec{A}_i \neq 0$ . Indeed, consider again a long solenoid and a circular wire concentric with the solenoid and lying in its outer space. Let interrupt the wire at the opposite ends of one of its diameters and move the solenoid at right angles to this diameter and in parallel to the wire's plane from the left to the right. Then the magnetic potential along the left half-circular wire will begin to diminish and along the right one to increase (see the first equation (20)). Consequently equal and opposite motional-transformer electric tensions will be induced along the two half-circular wires. Thus, as a result of the motion of the magnet, the tension induced in the whole loop will be null, but in any of its halves it will be different from zero, and one can measure it by the method presented in section 15. The physicists have not done such measurements, because, simply, they do not expect that an effect will be observed. However, if one will move the circular wire with respect to the magnet, no tension in no part of the wire will be induced, as everywhere  $\text{rot}\vec{A} = 0$ . We have here again a patent violation of the principle of relativity. The real, primordial and fundamental physical quantities are the potentials (see their analytical expressions (2)), the intensities are simple mathematical products of them (see their expressions after formula (5)). Conventional physics comes even to the grotesque statement that the magnetic potential can be physically observed only in quantum physics (the Aharonov-Bohm effect). It asserts that, as the intensities are obtained by space and time differentiations from the potentials, and as the potentials are mathematical products of the intensities (in the same way as the mother is a product of the child), there is a certain freedom in the choice of the potentials which finds its expression in the so-called gauge transformations<sup>2</sup>. Al-ways where energy (potentials) is replaced by force (intensities) there is a mess!

### 3. Electromotive and ponderomotive effects

The motion of the valence electrons with respect to the wire under the action of the three potential forces on the right side of equation (5) is called the electromotive effect. I call the three respective electric intensities as follows:

1) Coulomb electric intensity

$$\vec{E}_{\text{Coul}} = - \text{grad}\phi. \quad (30)$$

2) Motional electric intensity (formula (17)).

3) Transformer electric intensity (formula (18)), which is to be divided into a rest transformer electric intensity (the same formula (18)) and a motional-transformer electric intensity (formula (19) and equality (28) in which under the index "tr" one has to understand "mot-tr").

The tensions  $U_{\text{Coul}}$ ,  $U_{\text{mot}}$ , and  $U_{\text{tr}}$ , produced by the intensities (30), (17), and (18), are called, respectively, Coulomb, motional, and transformer electric tensions. The tensions produced by chemical, thermal, <sup>and</sup> mechanical <sup>causes</sup> (separation of the charges, say, by friction, or by pressure and extension of the bodies) are always Coulomb tensions and are called also external electric tensions, while the motional and transformer electric tensions are called induced electric tensions (one can use also the symmetric term "internal electric tensions").

Conventional electromagnetism calls the external and induced tensions "electromotive forces". I am strongly against the term "electromotive force", as the notion "electric tension" signifies "potential difference" (see beneath which is the difference between those two notions) and its dimensions are  $\text{g}^{1/2} \text{cm}^{1/2} \text{s}^{-1}$  (in the CGS-system of units), while "force" is a completely different quantity whose dimensions are  $\text{g cm s}^{-2}$ . Let me further note that the term "electric tension" is not largely used in the English literature. Some prefer to use the term "potential difference", the American use the term "voltage", but if following the American trend we have to call the electric current "amperage" and the magnetic intensity "teslage" (the German and the Russian use for "tension" the right words "Spannung" and "напряжение").

The terminology and symbolism in physics are of high importance for understanding its problems. Unfortunately in conventional electromagnetism the situation is very bad.

I shall point here shortly to another big, I should say even, "tragic" confusion. Conventional electromagnetism uses two notions for "magnetic intensity": the "magnetic intensity" denoted by the symbol  $\vec{H}$  and the "magnetic induction" denoted by the symbol  $\vec{B}$ , being  $\vec{B} = \mu \vec{H}$ , where  $\mu$  is the permeability of the magnetized matter. If considering the magnetized matter as additional current loops, one sees that there is not any

physical (qualitative) difference between  $\vec{B}$  and  $\vec{H}$ , as  $\vec{B}$  is the initial intensity produced by the current loops and  $\vec{B}_{\Sigma} = \mu \vec{B}$  is the sum of this initial intensity plus the additional intensity produced by the magnetized matter put in the neighbourhood of those loops. The tragedy is that in the system of units SI one introduced the highly pernicious

cious notion "permeability of free space" and in this measuring system the quantities  $\vec{H}$  and  $\vec{B}$  have even different dimensions (!).

Now I shall explain the physical essence of the electromotive effect due to the induced electric tensions. Let us have an unclosed wire (at rest or moving) put in a magnetic field (stationary or changing and thus producing a pure transformer as well as motional-transformer induction). The electric intensities  $\vec{E}_{\text{mot}}$  and  $\vec{E}_{\text{tr}}$  will push the valence electrons, separating them, so that at one extremity of the wire the number of the electrons will increase, while at the other end decrease. As a consequence, between the extremities of the wire a Coulomb tension appears which increases until it will become equal to the induced tension. At this moment we shall have  $U_{\text{coul}} = U_{\text{ind}}$  and  $\vec{E}_{\text{coul}} = \vec{E}_{\text{mot}} + \vec{E}_{\text{tr}} = \vec{E}_{\text{ind}}$ . If the extremities of the wire will be connected by a wire put outside the magnetic field, an electric current  $I$  will begin to flow and if the Ohmic resistance of the whole loop is  $R$ , we shall have  $U_{\text{coul}} = U_{\text{ind}} = IR$ .

If there is no magnetic field but our unclosed wire is under the action of chemical, thermal, mechanical or other factors which produce an electromotive effect and separation of the charges at the extremities of the wire, i.e., if there is an external tension in the wire, the separation will continue until the external tension will become equal to the produced Coulomb tension, and we shall have  $U_{\text{coul}} = U_{\text{ext}}$ ,  $\vec{E}_{\text{coul}} = \vec{E}_{\text{ext}}$ . If here again the extremities of the wire will be connected by another wire, an electric current will begin to flow and similarly as above we shall have  $U_{\text{ext}} = IR$ .

We see that the induced and external tensions are one thing and the produced by them Coulomb tension is another thing. To make a clear distinction between these two quantities, we can call the Coulomb tension "potential difference". Thus the tensions are always equal to the potential differences produced by them. The tensions are caused by magnetic, chemical, thermal and other causes, while the potential difference is a resulting phenomenon, appearing to balance the tensions and to stop the separation of the charges (for unclosed wires) or for driving the charges along the "external wire" (for a closed loop). If we denote the potential difference by  $\Delta\phi$ , we shall always have  $\Delta\phi = U$ .

This equality has a similar form as the equality between the potential force,  $\vec{F}$ , and the kinetic force,  $\vec{f}$  (see, respectively the right and left sides of equation (16)), which are always equal one to another. As in equation (16), also in the last equation, the quantity on the right side is the cause and the quantity on the left side the result. Many people do not clearly understand that the potential and kinetic forces are two different quantities and I recommend to them the reading of my Classical Physics<sup>2</sup>. But I am afraid, nobody understands all aspects of the difference between tension and potential difference. Shortly (when discussing the ponderomotive effect) I shall give a striking example. Let us turn our attention to this effect.

We know that the interaction of the electrons in a wire (closed or unclosed, along which current may or may not flow) with an external electromagnetic field

leads also to a motion of the whole wire, what is called the ponderomotive effect. Only the motional electric intensities can lead to a ponderomotive effect. The transformer electric intensity leads only to an electromotive effect but cannot lead to a ponderomotive effect. I beg the reader to pay a special attention to this statement.

The explanation of the ponderomotive effect due to the Coulomb intensity is commonly known: If a body is charged by more electric charges than in neutral state, it is repulsed (or attracted) by another body charged by the same (or opposite) charges, as the electric charges cannot leave the body.

Another special case of a ponderomotive effect due to none of the potential forces (17), (18) and (30) is the following: If a body is charged by electrons which begin to leave the body through a pointed extremity (or for other reasons, as the cold or hot emission), the law of momentum conservation leads to a push of the body in the opposite direction. I called<sup>3</sup> this effect the "current jet" effect. The same effect for electrons streaming in a wire at a change of their direction was discovered by me<sup>3</sup>.

Let us now analyse the ponderomotive effect due to the motional electric intensity. If a current loop (in which the current is produced by some external tension) is put in a magnetic field, on any of its current conducting electrons, moving with the energy velocity  $\vec{v} = \vec{c}$ , the inductive motional electric intensity (17) will begin to act. Let us suppose for simplicity that the external magnetic intensity  $\vec{B} = \text{rot}\vec{A}$  is perpendicular to the wire. As  $\vec{E}_{\text{mot}}$  will push the unit charges perpendicularly to  $\vec{v}$  and  $\vec{B}$ , on the one wall of the wire, which is parallel to the plane  $(\vec{v}, \vec{B})$ , the number of the electrons will begin to increase and on the opposite wall decrease until the moment when the generated potential difference will become equal to the induced tension. This is called the Hall effect and the induced tension is called the Hall tension. The Hall effect, obviously, is an electromotive effect. What will, however, succeed if the wire has a motional degree of freedom in a direction perpendicular to its length? - On the current conducting electrons two forces will act: a repulsive force from the part of the exceeding electrons on the one wall and an attractive force from the part of the exceeding positive ions on the other wall. The sum of these two forces will be balanced by the magnetic force (17) which acts in the opposite direction. But on the exceeding electrons and positive ions on the walls only the Coulomb repulsive, respectively attractive, forces from the part of the current conducting electrons will act. As the exceeding electrons cannot leave the wire and the positive ions are solidly connected to the "wire", the whole wire will begin to move. It is clear that this explanation can "work" only if the current conducting electrons outweigh the valence electrons of the neutral wire. I have met nowhere in the literature this explanation of the ponderomotive effect due to the motional induction. I shall give only one citation for the commonly presented explanation: Scott<sup>14</sup>, after stating that on the electrons

flowing in a wire which is put in a magnetic field the force (17) acts, <sup>(p.276)</sup> writes: "The force is transmitted to the wire itself by the metallic binding forces." Fullstop.

In the Hall effect the external magnetic field pushes the electrons, in the electromagnetic motors it pushes the wires. The causes are exactly the same, the results are completely different. Any student asks: "Why is this difference?" But nobody gives an answer.

#### 4. The generator and motor Lenz rules

An electromagnetic machine which delivers electric energy when set in motion by kinetic energy, i.e., when driven by an external force which I call driving force, or (for rotation) driving torque, is called an electromagnetic generator. An electromagnetic machine which delivers kinetic energy when electric energy is supplied to it, i.e., when feeded by an external tension which I call driving tension, is called an electromagnetic motor.

According to conventional electromagnetism, any generator has a motor effect, and the kinetic energy which one has to consume from an outside source to overwhelm this motor effect is equal to the electric energy delivered by the generator; I call this the mechano-braking effect, or kinetic energy consuming effect. Similarly, any motor has a generator effect, and the electric energy which one has to consume from an outside source to overwhelm this generator effect is equal to the kinetic energy delivered by the motor; I call this the electro-resisting effect, or electric-energy consuming effect.

The essence of the mechano-braking effect was revealed by Lenz in the early era of electromagnetism (1834) and can be formulated as the generator Lenz rule (I give the formulation assuming that the magnets are fed by stationary currents): The current induced by a magnet in a wire because of their motion caused by external forces has such a direction that the appearing magnetic interaction brakes the initial motion. The motor Lenz rule can be formulated in a similar manner: The current induced by a magnet in a current wire because of their motion caused by their mutual magnetic interaction has such a direction that it diminishes the initial current.

The physical explanation of the generator Lenz rule is the following: In any electromagnetic generator the driving force sets a wire in motion producing a convection current, the carriers of which are all valence electrons. These valence electrons moving en bloc with the low velocity  $\vec{v} = \vec{v}_{\text{wire}}$  of the wire interact with the external magnetic field and the appearing electromotive force sets them in motion perpendicular to their convection velocity (see formula (17)). A potential difference appears at the extremities of the wire which stops the flow. However, if the extremities are closed up by another wire, for maintaining of the potential difference a continuous flow of electrons does appear in which takes part a very small fraction (the fraction is  $v_{\text{wire}}/c$ ) of the valence electrons moving with the energy velocity  $\vec{v} = \vec{v}_{\text{en}} = \vec{c}$ . Now the electrons in the conduction current interact for a second time with the external mag-

netic field (see formula (17)), which sets them in motion perpendicular to their conduction velocity, i.e., perpendicular to the wire. The appearing potential difference between the wire's walls stops the flow, and the electromotive force is transformed into a ponderomotive force which acts in a direction exactly opposite to the direction of action of the driving force. As  $\vec{q}\vec{v} = I\vec{dr}$ , where  $q$  is the electric charge moving with a velocity  $\vec{v}$  in the line element  $\vec{dr}$ , and  $I$  is the flowing current, according to formula (17), the braking force of the generator is

$$\vec{f}_{br} = \frac{I}{c} \vec{dr} \times \vec{B} \equiv \frac{U_{gen}}{cR} \vec{dr} \times \vec{B}, \quad (31)$$

where  $U_{gen}$  is the generated tension and  $R$  is the Ohmic resistance of the wire  $\vec{dr}$  (we suppose that the resistance of the closing wire is zero).

The physical explanation of the motor Lenz rule is the following: In any electromagnetic motor the driving tension sets the electrons in a wire in motion producing a conduction current whose carriers move with the energy velocity  $\vec{v} = \vec{c}$ . These current conducting electrons interact with the external magnetic field and the appearing ponderomotive force (see p. 127) sets the wire in motion perpendicular to their conduction velocity. The motion of the wire leads to the appearance of a convection current of all valence electrons with the low velocity  $\vec{v} = \vec{v}_{wire}$ . Now the electrons in the convection current interact (for a first time!) with the external magnetic field and an induction current is produced which is exactly opposite to the initial conduction current. Similarly as above, according to formula (17), the driving force of the motor is

$$\vec{f}_{dr} = \frac{I}{c} \vec{dr} \times \vec{B} \equiv \frac{U_{dr}}{cR} \vec{dr} \times \vec{B}, \quad (32)$$

where  $U_{dr}$  is the driving tension and  $R$  is the Ohmic resistance of the wire  $\vec{dr}$  (we suppose that the resistance of the source of the driving tension is zero).

Comparing formulas (31) and (32), we conclude:  $\vec{f}_{br} = \vec{f}_{dr}$  if  $U_{gen} = U_{dr}$ , and vice versa.

Many authors have tried, with a smaller or bigger success, to deduce the Lenz rules from the energy conservation law. Thus an electromagnetic perpetuum mobile can exist if one of the Lenz rules, and consequently the energy conservation law, would be violated.

I observed (section 13) a violation of the generator Lenz rule in the cemented Faraday disk. This signifies that for the Faraday disk the left side of equation (31) is less than its right side, understanding under  $\vec{f}_{br}$  not the force acting on the electrons in the piece of metal  $\vec{dr}$ , but the force acting on the metal itself. Thus I presume that the electrons in the Faraday disk do not transmit to the disk the whole momentum acquired by them at the magnetic interaction with the cylindrical magnet, because a certain part of the momentum is transmitted to the sliding contacts which are solid to the laboratory. Analogically, I expect that for the Barlow disk the left side of equation (32) is less than its right side, understanding under  $\vec{f}_{dr}$  the force acting on the metal itself. Since, however,  $\vec{f}_{br}$  in formula (31) is a secondary force, while  $\vec{f}_{dr}$  in formula (32) is a primary force (see p. 131), there is a violation of the energy conservation law for the Faraday disk, but not for the Barlow disk (see also p. 150).

(The description of the Barlow disk is given in the next section.)

### 5. The Faraday disk (generator) and the Barlow disk (motor)

The uncemented Faraday disk is shown in fig. 1 on the left and the cemented Faraday disk on the right. The copper disk 1 is solidly attached to the axle which can rotate on two ball-bearings. Its magnet 2 and the yoke 3 are solid to the laboratory. The yoke 3 can be removed; it is drawn in fig. 1 for the single reason that my perpetuum mobile described in section 12 was constructed with a yoke and thus fig. 1 can serve as a scheme for this machine. The copper disk 4 is solid to its magnet 5 and both are solidly attached to the rotating axle. If the polarization of the magnets and the rotation of the axle are as shown in the figure, the peripheries of the disks are charged positively and their centers negatively. In fig. 1 two brushes slide on the peripheries of the uncemented and cemented disks which are electrically connected; the centers of the disks are connected electrically through the metal axle.

If current should be sent along the radii of the disks 1 and 4, they will begin to rotate (when the current flows from the periphery to the center, the rotation will be as shown in the figure). I call the motor on the left the uncemented Barlow disk, and the motor on the right the cemented Barlow disk (Barlow carried out the uncemented variation in a slightly different arrangement in 1823).

The cemented and uncemented Faraday and Barlow disks have been constructed in the early age of electromagnetism but then the cemented Faraday and Barlow disks have fallen in oblivion (first of all in the books of the relativists). Recently Das Gupta<sup>16</sup> repeated the forgotten experiments systematizing them very well. One can consider Das Gupta's dynamic experiments as an analogue to Kennard's static experiments. Das Gupta observed all induction (Faraday) effects observed by Kennard (cf. p. 122), namely:

1. Magnet at rest, disk rotating. Das Gupta measured a motional induction tension.
2. Disk at rest, magnet rotating. Das Gupta measured no electric tension, as a rotating cylindrical magnet does not produce a transformer induction.
3. Disk and magnet rotating together. Das Gupta measured (!!!!!!!) a motional induction tension, as the rotating cylindrical magnet produces the same magnetic field as in the case when the magnet is at rest.

However, besides the Faraday effects, Das Gupta measured also the relevant <sup>motor</sup> (Barlow) effects (what, of course, Kennard could not do), sending electric current along the radius of the disk and registered the following results:

1. If the magnet is kept at rest, the disk rotates.
2. If the disk is kept at rest, the magnet does not rotate.
3. If the magnet is solidly connected to the disk, both rotate.

All these three combinations can easily be explained taking into account<sup>3</sup> that at the interaction of a radial and a circular current the radial wire displays a rotational moment of force about a vertical axis going through the center of the circular wire but the circular wire does not display such a rotational moment (see fig. 4 in ref. 3 for more clarity).

The effect in the Barlow disk can easily be explained (in a manner similar as in section 3) if we should imagine the disk substituted by a radial wire which slides on a circular contact whose radius is equal to the wire's length (there can be, of course, many radial wires like the spikes in a wheel). When, however, the disk is homogeneous, the appearing torque is due to the current-jet effect of the electrons which are accelerated tangentially by the motional electric intensity (17) and pushed radially by the driving Coulomb electric intensity (30), so that the tangential momentum acquired by the electrons during the crossing of the disk's radius is transmitted to the disk.

The big surprise comes, however, from the fact (observed first by Bruce de Palma<sup>17,18,19</sup>) that the cemented Faraday disk has <sup>(or has a small)</sup> no <sup>mechano-braking effect</sup>, i.e., that in the cemented Faraday disk the generator Lenz rule is violated. This fact is very strange. If the cemented Barlow disk has a "rotating effect", then the cemented Faraday disk must have a "braking, i.e., counter-rotating, effect". <sup>Further</sup> according to me, if the cemented Faraday disk has no braking effect, it is logical to predict that the uncemented Faraday disk also must not have a braking effect. However, humanity has built many "homopolar", or "unipolar" generators, which are, as a matter of fact, uncemented Faraday disks, and the lack of a braking effect had to be observed. On the other hand, both the cemented and uncemented Barlow disks do have electro-resisting effect (see section 12).

I should like to point only to the following difference between the "electro-resisting effect" in a motor and the "mechano-braking effect" in a generator. As shown in section 4, in the generator, the magnetic field acts twice on the same electrons: first to produce "conduction electrons" from the "convection electrons", and secondly to produce from the "conduction electrons" a tension leading to the appearance of a potential difference that transforms the electromotive effect into a ponderomotive effect. In the motor, however, the magnetic field acts once on the "conduction electrons" producing a tension leading to the appearance of a potential difference which transforms the electromotive effect into a ponderomotive effect and then the magnetic field acts on the "convection electrons", which appear as a result of the mechanical rotation, producing from them "conduction (induction) electrons" whose velocity is exactly opposite to the velocity of the initial "conduction (driving) electrons".

Further detailed experimental and theoretical investigations are needed, so that a clear physical explanation can be given for the braking effect in the Faraday disk and for the rotating effect in the Barlow disk. I present my explanation for the braking effect in the Faraday disk <sup>once more</sup> in section 11. I constructed several machines with cemented Faraday disks (described in sections 12, 13, and 14) which demonstrated "perpetuum mobile" effects.

6. The BUL-CUB generator

The bul-cub machine is a generator and motor for direct current with many windings and without collector. The scheme of the machine is shown in fig. 2; in fig. 3 a scheme with only one winding (viz. in two different positions) is shown. In fig. 4 one variation of the constructed machine is shown. The position corresponds to the position of the apparatus in fig. 3. In fig. 5 a detail of the bul-cub machine corresponding to the position in fig. 2 is given. Concerning the name BUL-CUB see the acknowledgement.

The bul-cub machine consists of a cylindrical magnet (I had an electromagnet but a permanent magnet can also be used), a yoke of soft iron, and a coil wound, as shown in the figures, on a cylindrical corn of soft iron with a cylindrical axial hole. The winding goes along the generatrix of the cylinder, along the radius of one of its bases, along the generatrix of the axial hole, along the radius of the other basis, and then again along the generatrix of the cylinder, tightly to the previous winding, until the whole cylinder is covered by windings. For an easier explanation, I note by "ab" the "radial" wires of the coil and by "cd" the parts of the "cylindrical" wires which "enter under the yoke". The coil's wires between the marginal points p and q (resp., p' and q') are "under the yoke" and between the marginal points p and p' (resp., q and q') are "outside the yoke". In fig. 3, for further speculations, the core is shown not as a cylinder. In fig. 2 the direction of the magnetic intensity in the iron of the magnet, core, and yoke is sketched by dashed lines. I assume  $\vec{B} \neq 0$  only in the magnet's and both yoke's gaps.

I showed that the rotation of a cylindrical magnet about its axis is irrelevant with respect to the magnetic field produced by it. If the magnet is not a cylinder but, say, a parallelepiped, then by rotating it only the field produced by the cylinder inscribed in the parallelepiped will remain without change, while the outlying parts will originate an alternating magnetic field. Thus, as the rotation of the cylindrical magnet in figs. 2 and 3 is irrelevant, I shall call the magnet and yoke by the common name "magneto-yoke" and consider them always solidly connected (for construction reasons, in fig. 4 the magnet and yoke are not solidly connected).

In this section I shall consider the generator aspects of the bul-cub machine and in section 7 its motor aspects. I shall calculate the tensions induced in the different wires of the coil if the coil, <sup>and y</sup>respectively the magneto-yoke, will be rotated by an outside torque. If looking at figs. 2, the reference frame is taken as follows: The x-axis is horizontal parallel to the core's axis pointing to the left, the y-axis is horizontal pointing to the reader, and the z-axis is vertical pointing upwards.

1. Magneto-yoke at rest, coil rotating. The following motional inductive electric intensity will appear along the wires cd in the yoke's gaps ( $\vec{v}$  is their velocity)

$$(\vec{E}_{mot})_y = \vec{v} \times \vec{B} = \frac{1}{c} (\hat{v}y) \times (B\hat{z}) = \frac{vB}{c} \hat{x} \tag{33}$$

and the following along the wires ab in the magnet's gap

$$(\vec{E}_{mot})_m = \vec{v} \times \vec{B} = \frac{1}{c} (\Omega r \hat{y}) \times (-B\hat{x}) = \frac{\Omega r B}{c} \hat{z}, \tag{34}$$

where  $\Omega$  is the angular velocity of rotation of the coil and  $r$  is the distance of the wire's element from the coil's axis. The average inductive electric intensity along the wires  $ab$  will be  $(\vec{E}_{\text{mot}})_{\text{m}} = (\Omega R/2c)B\hat{z} = (v/2c)B\hat{z}$ , where  $R$  is the radius of the coil.

Let us assume that the cross-section of the yoke is rectangular with a side  $s$  parallel to the wires and a side  $h$  perpendicular to the wires. To make the calculations simpler, I shall suppose  $h$  much smaller than  $R$ , consequently  $s$  much bigger than  $R$ , as the cross-sections of the magnet's gap and of both yoke's gaps will be supposed equal (in this case the magnetic intensity in all gaps will be the same!). Thus, at this assumption, the cylindrical surface of the coil in the yoke's gaps can be considered as a plane rectangle. If  $n$  wires pass through a unit of length on the circumference of the coil's cylinder, we find that the length of the wire in both yoke's gaps is  $l_y = 2(nh)s = 2nsh$ , so that the tension induced in the yoke's gaps will be

$$U_y = \int_{l_y} (\vec{E}_{\text{mot}})_y \cdot (d\vec{x}) = (E_{\text{mot}})_y l_y = \frac{vB}{c} 2nsh = 2nsh \frac{v}{c} B = n \frac{v}{c} \Phi, \quad (35)$$

having taken (here and below) a positive orientation along the wire in the direction  $d-c-b-a$ , and denoting by  $\Phi = 2shB$  the magnetic flux produced by the magnet.

To calculate the induced tension in the magnet's gap, we must multiply scalarly the average inductive intensity  $(\vec{E}_{\text{mot}})_{\text{m}}$  by the oriented length (positive from  $b$  to  $a$ ) of the wire in the magnet's gap which is  $l_m = n(\pi R)2R = 2\pi nR^2 = 4nsh$ , as  $\pi R^2 = 2sh$ . Thus the tension induced in the magnet's gap will be

$$U_m = \int_{l_m} (\vec{E}_{\text{mot}})_{\text{m}} \cdot (-d\vec{z}) = - (E_{\text{mot}})_{\text{m}} l_m = - 2nsh \frac{v}{c} B = - n \frac{v}{c} \Phi. \quad (36)$$

As  $U_y$  and  $U_m$  are equal and oppositely directed, the motional induced tension produced by the whole coil will be zero.

2. Coil at rest, magneto-yoke rotating. I showed in section 2 that for a loop the motional-transformer inductive tension is exactly equal to the motional inductive tension, if the motion of the loop is exactly opposite to the motion of the magnet (see formula (29) which is valid for the case when the motion of the loop is the same as the motion of the magnet). However, the distribution of the inductive intensities along the line elements of the loop for these two cases may not be the same (see formula (28) and the text after it). For simple cases one can find the motional-transformer intensity along the line elements of the loop, but for more complicated cases (when one has to work with formula (19')) the calculation may become very difficult. See, for example, the difficulties met by Müller<sup>20</sup> when he tried to establish where the "seat" of the motional-transformer induction in his different experiments<sup>15</sup>, especially for the cases presented in his figures 10 – 20. If one looks at the literature dedicated to the electromagnetic induction, one can see that until the present time people present "puzzles" which "cannot be deciphered". The explanation of the electromagnetic induction by the Faraday-Maxwell "force lines" conceptions which are not

"point-to-point" but "closed line" conceptions leads very often to blind alleys and the torments of students and professors are well known. I should like to repeat the words of Bewley<sup>21</sup> which are already referred by Müller<sup>22</sup>. Speaking about the problems posed by the electromagnetic induction, Bewley stated in 1964: "The interest to this matter has erupted again, and it does so every few years like a slumbering volcano!" The present eruption will be tremendous. I think, however, that concerning the general aspects of the motional-transformer induction one cannot say much more than it is said in this paper. And I hope that the calculations and the experimental measurements for any special case will confirm the general aspects revealed by me.

As an example I shall look at the "seat" of the motional-transformer induction in the line elements of the winding abcd at its position shown in fig. 3. For completeness and clarity, I shall look also at the seat of the motional induction, a problem which does not pose difficulties even to conventional electromagnetism. The sign "o" signifies that there is no motion of the respective element and there is no tension in the winding. The sign "Ω" signifies that the respective element rotates (moves) and the sign "+" signifies that there is an induced tension in the winding.

Table 1

	Motion of:			Measured tension	Seat of the induction	Kind of the induction
	magneto-yoke	wire ab	wire cd			
1.	o	o	o	o		
2.	o	o	Ω	o		
3.	o	Ω	o	+	ab	motional
4.	o	Ω	Ω	+	ab	motional
5.	Ω	o	o	+	cd	motional-transformer
6.	Ω	o	Ω	+	cd	motional-transformer
7.	Ω	Ω	o	o	cd ab	motional-transformer motional (opposite)
8.	Ω	Ω	Ω	o	cd ab	motional-transformer motional (opposite)

The motion of the parts ab and cd can be realized by connecting those two wires by a sliding contact. On the right side of fig. 3 a realization of such a sliding contact by the help of a mercury trough is shown. Using this arrangement, Müller<sup>23</sup> has slightly oscillated the part ab by one hand, keeping the part bcd at rest by the other hand, and vice versa. So Müller has established the motional tension induced in the whole wire abcd. For measurement of the motional-transformer inductive tension, Müller has oscillated also the magneto-yoke together with one, both, or none of those two wires.

The seat of the motional induction is, obviously, along the wire ab, as this wire moves in a domain where  $B \neq 0$ , while the wire cd moves in a domain where  $B = 0$ .

Müller<sup>23</sup> writes (p. 303) that his measurements in 1979 have given for the cases 5 and 6 a seat of the induced tension along the wire ab, but he considers his measurements not as absolutely reliable, although he confirmed them on my request even by a telegram. I firmly sustain the concept that the induction in the cases 5 and 6 is motional-transformer and the seat is along the wire cd. Furthermore, as cases 5 and 6 clearly show, the motional-transformer induction depends only on the motion of the magnet in the laboratory, but not on the motion of the wire cd, because it is referred to a given space point and the motion of the wire there is immaterial. When a relativist will understand this aspect of the motional-transformer induction he, surely, will be struck by an apoplexy of the heart.

The calculation of the motional induction in formulas (33) and (34) was an easy task. The calculation of the motional-transformer induction, as I already said, is very dif-

ficult. Thus I shall give here only a simplified calculation of the motional-transformer induction in the cases 5-8, considering cd in and outside the yoke's gap.

On p. 116 I gave the relations between a constant magnetic intensity and its magnetic potential for the cases of circular and rectangular symmetry of the constant magnetic field. As we have assumed that our yoke has a rectangular cross-section with length,  $s$ , much larger than breadth,  $h$ , the symmetry of the magnetic field in the yoke's gaps is rectangular and the magnetic potential there expressed through the magnetic intensity is  $\vec{A} = (-yB, 0, 0)$ , as the breadth is perpendicular to the  $x$ -axis and the length is perpendicular to the  $y$ -axis. I make the calculations for the upper yoke's gap in fig. 2 and 5 where the magnetic field is along the  $z$ -axis (upwards) and consequently we have  $A_x < 0$  for  $y > 0$ , and  $A_x > 0$  for  $y < 0$ .

Using now this expression for  $\vec{A}$ , we can express the motional-transformer electric intensity induced in and outside the yoke's gaps through the magnetic intensity in the yoke's gaps as follows (analyse attentively fig. 5 where the arrows show the directions of the magnetic potential at the edges of the yoke's gaps and use formula (18))

$$(E_{tr})_y = -\frac{1}{c} \frac{+By - (-By)}{h/v} \hat{x} = -\frac{vB}{c} \hat{x}, \quad (E_{tr})_{out} = -\frac{1}{c} \frac{-By - (+By)}{(\pi R - h)/v} \hat{x} = \frac{vB}{c} \frac{h}{\pi R - h} \hat{x}, \quad (37)$$

as  $h = 2y$  is the breadth of the yoke's gaps and  $\pi R - h$  is the distance between the yoke's gaps along the cylindrical circumference of the coil.

The tensions induced along the wires cd in and outside can be calculated exactly in the same manner as for the case of the motional induction, taking into account that the length of the wires cd in the yoke's gaps is  $l_y = 2ns$  and outside is  $l_{out} = 2ns(\pi R - h)$ . So we obtain for the motional-transformer electric tensions induced in the wires cd in and outside the yoke's gaps  $U_y = -2nshvB/c = -nv\phi/c$ ,  $U_{out} = 2nshvB/c = nv\phi/c$ , which are exactly opposite to the tensions (35) and (36). I repeat, this numerical equality of the motional and motional-transformer induced tensions gives us the right to calculate the motional-transformer tensions by the formulas for the motional tensions for the case when the magnet is at rest and the coil rotating in the opposite direction.

As already said, formulas (35) and (36) show that the motional and motional-transformer tensions induced in the whole coil are equal to zero. To show that the tensions (35) and (36) are really existing and to make the apparatus in fig. 2 an effective d.c. generator, I applied the following trick: I made the upper parts of the wires cd naked and I put brushes in parallel to both yoke's wings, so that the latter made a short circuit between all wires which are in the yoke's gaps. This short-circuiting can be made by a non-contact way using magnetic anchors with springs (as in the electrical bells) which are attracted by the yoke's wings when they pass over the anchors (in the case of a rotating magneto-yoke) or the anchors pass under the yoke's wings (in the case of a rotating coil). Another method of non-contact short-circuiting consists of making the isolation between the wires cd of a photoresisting material and by illuminating only the wires which are in the yoke's gaps. The most elegant and industrially prospective way is to make the isolation between the wires cd by a magneto-resisting material, so that the short-circuiting will be made directly by the magnetic field in the yoke's gaps. Here one must find a material with an optimal ratio  $R_0/R_B$ , where  $R_0$  is the resistance for  $B = 0$  and  $R_B$  for  $B \neq 0$ . If the semiconductor technology will solve this important problem and the production of such a magnetosensitive isolation will be cheap, then the d.c. machines in the future will

be of the bul-cub type, as they have no collector and for the case of a coil at rest no sliding contacts at all. In another model built by me (fig. 4) the wires are in sections led to copper lamellae and the short-circuiting is made by brushes. I call the machines without short-circuiting the uneffective bul-cub machine, and with short-circuiting the effective bul-cub machine.

Let me note that alternating rectangular tension is induced in the single windings of the uneffective bul-cub generator, and interrupted direct tension in the single windings of the effective bul-cub generator. For comparison it is to be noted that alternating sinusoidal tension is induced in the windings of the conventional bipolar generators and direct tension in the Faraday disk. To make the sinusoidal tension direct pulsating, one uses a collector and brushes in the conventional bipolar machines.

Let us now find the tension produced in the effective bul-cub generator. I shall suppose that a 100% short-circuiting is made for the wires cd in the yoke's gaps. Taking into account formula (36), we obtain for the produced tension

$$U = U_m - (U_m)_{pq} = U_m - U_m \frac{h}{\pi R} = n \frac{v}{c} \phi \frac{\pi R - h}{\pi R}. \quad (38)$$

If the short-circuitage is made for the wires cd outside the yoke's gaps, taking into account formulas (35) and (36), we obtain for the produced tension

$$U = U_y + (U_m)_{pq} = U_y + U_m \frac{h}{\pi R} = -n \frac{v}{c} \phi \frac{\pi R - h}{\pi R}. \quad (38')$$

### 7. The BUL-CUB motor

First I shall analyse the motor effects for the uneffective bul-cub machine, supposing that an electric current  $I$  flows through the windings of the coil along the direction d-c-b-a. As the rotation of the cylindrical pole is immaterial, we have to consider only two cases (the cylindrical magnet can be solidly connected either to the yoke or to the coil, but for brevity I shall consider it always connected to the yoke):

1. Magneto-yoke at rest, coil with a possibility for rotation. Thus we suppose that the magneto-yoke is solid to the laboratory and the coil has a rotational degree of freedom about its axis. Proceeding from the fundamental equation (16), where we put  $\vec{\partial A} / \partial t = 0$ , and where we consider  $m$  as the mass of the current conducting electrons crossing the wire in a unit of time and  $q$  as their electric charge, we can write  $\vec{I} dr = q \vec{v}$ , and consider  $\vec{F}$  as the kinetic force of those electrons obtained because of their interaction with the magnetic field  $\vec{B}$  of the magnet's and yoke's poles. This kinetic force is transferred from the electrons to the metal atoms and sets the wire in motion. Thus writing  $\vec{f} = \vec{F} dr$ , where  $\vec{F}$  is the kinetic force of a unit of length of the wire, equation (16) gives for the forces exerted on a unit of length of the wires cd and ab, respectively in the yoke's and magnet's gaps

$$\vec{F}_y = \frac{1}{c} \vec{I} \times \vec{B} = \frac{1}{c} (\hat{I} \hat{x}) \times (B \hat{z}) = -\frac{1}{c} I B \hat{y}, \quad \vec{F}_m = \frac{1}{c} \vec{I} \times \vec{B} = \frac{1}{c} (-I \hat{z}) \times (B \hat{x}) = \frac{1}{c} I B \hat{y}. \quad (39)$$

The moments of force with respect to the coil's axis, applied to a unit of length of the wires cd and ab, will be, respectively,

$$\vec{M}_y = \vec{R} \times \vec{F}_y = (R\hat{z}) \times \left(-\frac{IB}{c}\hat{y}\right) = \frac{1}{c} IB R \hat{x}, \quad \vec{M}_m = \vec{r} \times \vec{F}_m = (r\hat{z}) \times \left(\frac{IB}{c}\hat{y}\right) = -\frac{1}{c} IB r \hat{x}, \quad (40)$$

where  $R$  is the radius of the coil and  $r$  is an arbitrary distance along the radius taken from the coil's axis. For the average moment of force, applied to the wires  $ab$ , we obtain  $\vec{M}_m = - (1/2c)IBR\hat{x}$ . As the length of the wires  $ab$  is twice the length of the wires  $cd$  in the yoke's gaps (see p. 133), we conclude that the summary moments of force (torques), applied to the wires in the magnet's and both yoke's gaps, are equal and oppositely directed, so that the coil will not rotate.

2. Coil at rest, magneto-yoke with a possibility for rotation. Let us imagine the magneto-yoke substituted by a system of current loops which generate exactly the same magnetic field. Then, according to the integral Biot-Savart formula<sup>3</sup>, we conclude that the force with which this system of current loops acts on our current coil will be exactly equal and opposite to the force with which the coil acts on the system of loops. Thus the moment of force acting on the magneto-yoke when it has a possibility for rotation will be equal and opposite to the moment of force acting on the coil. The moment will be zero and the magneto-yoke will not rotate.

The bul-cub motor will become effective if we short-circuit the windings passing either in the yoke's gaps (i.e., the windings between points  $p$  and  $q$  ( $p'$  and  $q'$ )) or outside the yoke's gaps (i.e., the windings between points  $p$  and  $p'$  ( $q$  and  $q'$ )). In the first case we shall totally exclude the moment  $\vec{M}_y$  and only partially (very little) the moment  $\vec{M}_m$ ; in the second case we shall exclude partially (almost the whole) the moment  $\vec{M}_m$  and the whole moment  $\vec{M}_y$  will remain to act (with respect to the partial excluding of the moment  $\vec{M}_m$  confer the calculation done in formulas (38) and (38')).

### 8. The bul-cub machine with a rotating core

I called "core" the magnetic material (soft iron) in the coil which closes the magnetic flux of the magneto-yoke. Until now the core was supposed to be solidly connected to the coil. Let us now suppose that the core has a rotational degree of freedom with respect to the coil, as it is shown in fig. 6. The coil will be supposed solid to the laboratory. In fig. 6 the magnet is solid to the coil (thus solid to the laboratory) and the yoke has a rotational degree of freedom. Of course, the magnet can be supposed solid to the yoke. As many times noted, the rotation or rest of the cylindrical magnet does not introduce some changes in the appearing phenomena. In fig. 6 the magnet is not solid to the yoke for the reason of making the construction simpler.

The yoke rotates on the two small ball-bearings on the left side of the figure (both ball-bearings are put on the one side of the yoke because such construction is more easy for execution): the outer rings are solid to the yoke and the inner rings are solid to the magnet. The outer rings of the big ball-bearings on the right side of the figure are solid to the coil and the inner rings are solid to the core. The

core has a possibility for rotation, but a rotational moment cannot be applied mechanically as the core is completely covered by the windings of the coil; a torque can be applied only magnetically. Fig.3 shows the core with more optical clarity.

It is well known that if a magnetic monopole can be created, then a perpetuum mobile can be also created. Indeed, if letting a magnetic monopole in the magnetic field of a straight current wire, the pole will begin to rotate along a circle in a plane perpendicular to the wire whose center is the point pierced by the wire, describing the respective magnetic "force line". The force acting on a magnetic pole is the product of the algebraic value of its strength (+ for a north pole) and the vector of the magnetic intensity at the space point where the pole is placed. (Let me note that the strength of the magnetic pole of a long solenoid (cylindrical magnet) is equal to its magnetic flux  $\Phi = \vec{B} \cdot \vec{s}$ , where  $\vec{B}$  is the magnetic intensity originated by the solenoid and  $\vec{s}$  is its cross section; the position of the pole is near the geometrical end of the solenoid). If a magnetic monopole will be put in the inner space of a toroidal solenoid, it will also eternally rotate along a circular path, following the respective magnetic "force line". (See, however, section 11!)

The core in fig. 6 represents to a certain aspect a magnetic monopole, because the one of its poles (pole S) is cylindric and the magnetic field cannot exert a ponderomotive action on it, so that, practically, the magnetic field acts only on the "monopole" N' (in my apparatus, for reasons of constructional symmetry, there are two such "monopoles" N').

First I shall show that the apparatus in fig. 6 has no generator effect. Indeed, since the induction is motional-transformer, integrating equation (18) for the time T of a whole rotation, we shall have (I omit the index "tr", i.e., "mot-tr")

$$\vec{E}_{av} T = \int_0^T \vec{E} dt = - \frac{1}{c} \int_0^T \frac{\partial \vec{A}}{\partial t} dt = \frac{\vec{A}(T) - \vec{A}(0)}{c} = 0, \quad (41)$$

where  $\vec{E}_{av}$  is the average electric intensity for the time of one rotation at a certain wire's point,  $\vec{E}(t)$  is the momentary intensity, and  $\vec{A}(t)$  is the momentary magnetic potential.

Thus, since the bul-cub machine in fig. 6 has no generator effect, then in the case that it will work as a motor, it will be a perpetuum mobile. Coming to the conclusion that the magnetic field of the coil exerts a torque on the poles N' of the core but does not exert a torque on its pole S, one is inclined to suppose that this apparatus will rotate as a motor. Let me add that when the core will rotate due to the magnetic torque exerted on its poles N', the latter will drag the poles S' of the yoke due to their mutual magnetic attraction and the whole yoke will follow the rotation of the core.

This conclusion, however, is wrong. The core cannot be set in rotation. One comes to the wrong conclusion that the core will rotate considering the action of the magnetic field of the coil on the "idealised poles" of the core. But the coil acts on the

whole "magnetic system" of the core and not only on its poles. To consider the action of a magnetic field on "localised poles" is a simplification which often (as in the case considered) can lead to wrong conclusions. The right consideration is as in the previous section: The magneto-core-yoke cannot set the coil in rotation and consequently neither the coil can set the magneto-core-yoke in rotation.

I dedicated so much attention to the analysis of the bul-cub machine with a rotating core because I wish to show that the speculations with the notion "poles" is dangerous, as one can easily jump to wrong conclusions. A current loop (a magnetic system) interacts with the whole other current loop (magnetic system) but not only with its "poles". The notion "pole" is simply a mnemotechnical tool. I should like to address the reader to <sup>graphical</sup> the analysis of the experiment shown in figs. 13 and 16. However, it is much more difficult to present graphically the magnetic action of the coil on the core in fig. 6. (I repeat, in section 11 are given further speculations concerning the action of a magnetic field on a "magnetic pole".)

9. Half polar, unipolar, one-and-a-half polar, and bipolar machines

Conventional electromagnetism knows only two types of dc electromagnetic machines: the bipolar (those are the so-called collector machines) and unipolar (those are the Faraday and Barlow disks). I introduce a substantial change in this classification, as I saw that it is much more reasonable to call the Faraday and Barlow disks half polar machines. I introduce the term "half polar" taking into account that a cylindrical pole can rotate a radial wire, <sup>(which is under the half of the pole!)</sup> and when rotating a radial wire a current is induced in it, however a radial wire cannot rotate a cylindrical magnet and when a cylindrical magnet is rotated current is not induced in a radial wire. Now the bul-cub machines can be called one-and-a-half polar, as here one of the poles is cylindrical acting on radial wires and the other pole (poles) is a "normal" pole.

Besides <sup>the</sup> the half polar machines executed in the form of Faraday and Barlow disks, which I call open half polar machines, I invented also the machines shown in fig. 7 which I call the closed half polar machines. The closed half polar machines, which can have an arbitrary number of solidly connected windings (in the open machines any winding must have sliding contacts) cannot perform a full rotation, as the wires encounter the magnet. A full rotation can be realized if the wires are supplied by jumping sliding contacts (see such contacts also in fig. 8) and if a conducting ring is put on the magnet at the place where the windings must jump over the magnet (in fig. 7 only one winding is drawn). If at the place of the conducting ring we shall cut out a gap in the magnet, we obtain an uneffective one-and-a-half polar machine. In the closed half polar machine, one can keep the magnet solid to the laboratory and bring the coil to rotation by sending current through it, or one can keep the coil solid to the laboratory and bring the magnet to rotation by sending current through the coil. In the first case the driving moment is exerted by the cylindrical pole on the radial wire ab, while in the second case the driving moment is exerted

by the projections of the current elements of the vertical wire ac in planes perpendicular to the circular axis of the ring magnet on the corresponding circular currents of the magnet. Now the centers of the circular magnet's currents do not lie on the axis of rotation (as is the case in the open half polar machines), and the Biot-Savart forces of those circular currents display a rotational moment.

In the closed half polar machine, one can keep the magnet solid to the laboratory and by rotating the coil induce there d.c., or one can keep the coil solid to the laboratory and by rotating the magnet induce d.c. in the coil. In the first case there is a motional induction in the wires ab, while in the second case there is a motional-transformer induction whose seat is at the jumping wires (see section 6).

I call unipolar the machine shown in fig. 8 which I have recently invented and whose functioning is clear from the figure. The unipolar as well <sup>as</sup> the bipolar machines (the last ones are in a common use and thus well known) can be electro-magnetomoving (when the coil is at rest and the magnet rotates) or magneto-electromoving (when the magnet is at rest and the coil rotating).

In the bipolar machines two poles are "conducted" to the coil, while in the unipolar machines only one pole is "conducted" to the coil. Further fundamental difference is the following: In the bipolar machines an alternating current is flowing in the wires of the coil, so that when driving the motor by d.c. (or when producing d.c. from the generator) a collector with sliding brushes must be used for the so-called commutation. In the unipolar machines a direct current is flowing in the wires of the coil and a collector is not needed. The sliding brushes are used not for commutation but for saltation when parts of the wires must "jump" over the magnets, while other parts of the wires "cross" the magnets (see fig. 8 and 9a). The wires ab are called active, as they cross the magnet and the wires cd are called passive, as they jump over the magnet. In fig. 8 an open unipolar machine is shown. The open unipolar machine from fig. 8 will become closed if the north and south poles of any magnet will be closed by a yoke. Thus we conclude that the bipolar machines have two magnet's gaps and there is a coil's corn, while the closed unipolar machines have only one magnet's gap and there is no coil's corn. The most simple closed unipolar machine is shown in fig. 9a. The difference between the half-polar closed machine in fig. 7 and the unipolar closed machine in fig. 9a is that in the latter the active wire ab crosses the whole magnet and not only the half magnet as in the former.

I call the machine in fig. 9a the unipolar machine with passive wires solid to the coil. In fig. 9b is shown a unipolar machine with passive wires solid to the magnet. In the last machine there are no more saltating sliding contacts but only continuous sliding contacts, and the coil is divided into two parts which have a different character of motion: when the active part (wires bae) rotates, the passive part (wires cd and the sliding rings) rests, and vice versa. Similar character has only the coil in the open half polar machine where if the one part of the winding rotates the other

rests, and vice versa, but where the magnet can be solid to any of these parts.

The unique unipolar machine which I found described in the literature is by Fukai<sup>24</sup> who has constructed a unipolar magnetomoving generator. The author calculates (and then verifies the calculations experimentally) the induced motional-transformer tension by the formula for the motional tension for the case if the generator is electromoving.

The magnets arranged radially in fig. 8 form a ring with one kind of magnetism at the periphery and the other kind of magnetism at the center and I call this the Marinov ring. The Marinov ring can be open (as in fig. 8) or closed.

In fig. 10 is shown another similar magnetic ring which I call the Müller ring, as Francisco Müller<sup>20</sup> has investigated the unipolar generators made with this ring. The difference between the Marinov and Müller ring is that there are distances between the single magnets in the former, while the magnets are close one to another in the latter. In fig. 10 ab is the active wire and cd is the passive wire. The passive wire in the machines with a Müller ring is always at rest, because if it will be solid to the active wire, no effects can be observed (the passive wire cannot "jump" over the magnets in a Müller ring). Here however (as in the half polar machines) the magnet can be solid to the active wire. In fig. 10 the magnet and the sliding rings with the active and passive wires are shown apart for clarity.

The unipolar machine with a Müller ring gives a very patent experimental confirmation of the differential Biot-Savart formula<sup>3</sup> and a demonstration of the violation of Newton's third law at the interaction of current elements. To show this clearly, I shall consider in detail all possible cases of rotation of the unipolar Müller machine (see table 2).

Table 2

Motion of:	Generator	Motor
1. Active wire alone	+	+
2. Active wire with magnet	+	+
3. Magnet alone	o	o
4. Magnet with passive wire	+	+

The explanation of the appearing effects can be made easier if one looks at fig. 11b which presents the active wire ab crossing the poles of a Müller ring, the poles being substituted by relevant square current loops. For a comparison in fig. 11a is presented the active wire ab crossing the poles of an open Marinov ring. The effects in table 2 have been experimentally verified by Müller<sup>20</sup>. Müller made many clever modifications of the machine with the aim to show that the seat of the induction is in the active wire ab.

Case 1.

Generator: There is a motional induction in the wire ab. It must be noted (see fig. 11b) that during the motion of the wire ab to the right a convectional current appears pointing to the right on which the pole's currents  $m_i$  and  $k_l$  do not act (as they are neutralized by the currents of the adjacent poles), but only the pole's currents  $i_k$  and  $l_m$  which push the positive charges in the wire ab downwards (i.e., the electrons upwards).

Motor: The current wire ab is moved by the pole. It must be noted (see fig. 11b) that the action of the pole's currents  $m_i$  and  $k_l$  is zero, and only the pole's currents  $i_k$  and  $l_m$  act on the current wire ab pushing it to the right (see the Biot-Savart formula (16) in ref. 3) at the indicated direction of the currents.

Case 2.

Generator: The effect remains the same as in the case 1 as the rotation of the Müller ring does not introduce any change in the character of the currents interaction.

Motor: The effect remains the same as in the case 1 as the Müller ring can move the current wire ab but the current wire ab cannot move the Müller ring. Indeed, as I showed above, according to the Biot-Savart formula (16) in ref. 3, the action of the pole's currents  $i_k$  and  $m_l$  on the current wire ab leads to a push of the latter to the right, however the action of the current wire ab on the pole's currents  $i_k$  and  $m_l$  is zero, according to the same formula. Thus the Müller ring gives such a clear demonstration for the violation of Newton's third law at the interaction of stationary currents as the Barlow disk.

Case 3. It is instructive to consider this case by analogy with the Faraday and Barlow disks.

Generator: When the Müller ring rotates no tension is induced in the wires ab and cd. One may object that in this case motional-transformer tensions are induced in the wires ab and cd which now have the same character, and as the tensions are with opposite polarities, the resultant tension which one measures is null. Fig. 11b shows that this alternative is wrong. In the opposite kind of motion, however, i.e., when the magnet is at rest and both wires ab and cd move, motional tensions with opposite polarities are induced in those wires, if the motion of ab and cd is in the same direction.

Motor: When the magnet has a possibility for rotation, it cannot be set in motion. Here one can again object that in this case the wires ab and cd exert opposite torques on the magnet and for this reason it does not move. Fig. 11b shows again that this alternative is wrong. In the opposite case, however, i.e., when the magnet is at rest and the wires ab and cd have a possibility for rotation, equal and oppositely directed torques act on those wires.

Case 4. This is the case 2 where the active wire ab and the passive wire cd have exchanged their functions.

In table 3 I give a systematic presentation of all types of dc machines and of the character of the contacts used.

Table 3

Type of the dc machine	Type of the contacts
Open half polar machines	Continuous sliding contacts
Closed half polar machines	Saltant sliding contacts
Unipolar machines with a Marinov ring	pass. wires solid to coil Saltant sliding contacts
	pass. wires solid to magnet Continuous sliding contacts
Unipolar machines with a Müller ring	Continuous sliding contacts
One-and-a-half polar machines	Short circuiting sliding (or non-sliding) contacts (using photo- or magneto-resistive wires' isolation)
Bipolar machines	Commutating sliding contacts

### 10. Unifilar and cylindricofilar machines

Until now I classified the electromagnetic machines with respect to the character of their magnets. Now I shall make a classification with respect to the character of their wires (coils).

I divide the electromagnetic machines in two big classes: unifilar, which have only one wire, i.e., <sup>one</sup> current loop (or winding), and multifilar, which have many wires, i.e., many current loops (or windings). All machines used by humanity are multifilar, only the open half polar machines (which humanity calls "unipolar", or "homopolar") are unifilar. We saw that the open half polar machines are only magneto-electromoving as they cannot be electro-magnetomoving. Strangely enough, humanity has not developed electro-magnetomoving unifilar machines, although experiments showing that such machines are possible have been executed by many physicists in the XIX-th century. Moreover, the first electromagnetic rotational apparatus, constructed by Faraday in 1821 (see fig. 2a in Ref. 3) was a unifilar electro-magnetomoving machine. I showed<sup>3</sup> that the torque in Faraday's experiment comes not from the current flowing in the wire but from the current flowing in the mercury, if the diameter of the wire tends to zero. A torque originated from the current flowing in the wire can appear only <sup>if</sup> the diameter of the wire is finite, and the torque is proportional to this diameter. This can be seen in the experiment of Feñitzsch<sup>25</sup> (fig. 12a). In this experiment the meridional conductors "c" serve only to increase the torque. If along the cylindrical conductor downwards from the mercury cup "i" a considerable current flows, the meridional con-

ductors can be removed. The experiment of Feilitzsch can be arranged in the class of the cylindricofilar machines. One can establish that the torque on the magnets in the Feilitzsch's experiment is originated by the current flowing in the cylindrical conductor by connecting solidly the latter to the former: in such an experiment a rotation is not possible (if such an apparatus will be brought to rotation, the law of angular momentum conservation will be violated). I confirmed this prediction with my apparatus shown in fig. 13, in which the cylindrical conductor pierces the magnet exactly at its south pole. With the apparatus in fig. 13 I carried out also the following two variations: letting the magnet have a possibility for rotation about the axle, I could neither rotate the axle when keeping the magnet solid to the laboratory nor rotate the magnet when keeping the axle solid to the laboratory. As one can see from the experiment of Feilitzsch, a rotation of the magnets with respect to the axle (or vice versa) is possible only if a part of the axle is solid to the magnet and a part is solid to the laboratory. Moreover, the part solid to the laboratory must be cylindrical. One can easily explain the rotation of the cylindrical conductor in Feilitzsch's experiment by imagining it as a cylindrical bunch of current wires. If the current in any of these wires flows down-up, then, according to Fleming's rule, the magnetic intensity which points from the north to the south pole will set the cylindrical bunch in a clockwise rotation (when looked from above). According to Newton's third law, if the cylindrical conductor is solid to the laboratory, the magnet will be set in rotation in the opposite direction.

Another important cylindricofilar experiment which represents a certain variation of the experiment of Feilitzsch is the experiment of König<sup>26</sup> (fig. 12b): Several U-form magnets have their south poles in a hollow copper cylinder R, while their north poles are outside the cylinder, the rim of the latter being immersed in the mercury trough Q'. The trough Q' and the magnets are solid to the vertical axle G, which is immersed in the mercury cup Q, and all of them have a rotational degree of freedom, being suspended on a string. The current flows from the positive electrode of the battery, through the mercury in the cup Q, along the axle G, through the magnets (or the metal keeping the magnets together), through the mercury in the trough Q', along the copper cylinder R, and reaches the negative electrode of the battery. At this direction of the current the magnets rotate clockwise (if looked from above). If the magnets will be kept solid to the laboratory, the cylindrical conductor will rotate counter-clockwise.

According to conventional electromagnetism (see also p. 138), the north pole of a magnet moves along the lines of the magnetic intensity, and the south pole against. This is only a seeming effect. König's experiment seems to splendidly confirm this rule. With the aim to show that the current in the cylindrical conductor acts not on the "poles" of the magnets, but on the current elements of the whole magnets, I carried out a variation of König's experiment which I called the König-Marinov machine, as it is a very useful cylindricofilar motor and generator (the scheme is shown in fig. 14 and the apparatus in fig. 15).

The König-Marinov machine consists of two brass cylindrical conductors which are fasten to two wooden columns. The magnet is mounted on both cylindrical conductors by the help of two ball-bearings on which it can rotate. The magnet consists of an internal (full-cylindrical) part, which is surrounded by the right cylindrical conductor, and an external (hollow-cylindrical part), which surrounds the conductor. These two cylindrical parts of the magnet are "closed" by two disks: the left disk, which I call "yoke's disk" is solid and holds the whole magnet on. The right disk has a gap in which the cylindrical conductor passes. If the gap is circular, as in fig. 14 on the left, and as it can be seen in the photograph 15, I call it "Müller's poles' ring". If the gap is as in fig. 14 on the right, I call it "Marinov poles' ring". The body of the magnet is of soft iron and the magnetization is produced by permanent bar magnets which are arranged on the outer magnet's cylinder (the bar magnets are not drawn in fig. 14 but they can be seen in the photograph 15). The current comes from the positive electrode of the battery from the left, climbs up from the left cylindrical conductor across the left ball-bearing to the magnet, crosses the latter, and descends across the right ball-bearing to the right cylindrical conductor, reaching the negative electrode of the battery. A magnetic field is originated by the cylindrical conductor only in its outer space, where the north pole of the magnet is; in the inner space, where the south pole of the magnet is, the magnetic field originated by the current in the cylindrical conductor is null.

When current passes through the ball-bearings, the "current  $\wedge$  <sup>thermal dilatation</sup> effect" <sup>3</sup> exerts a torque additional to the electromagnetic torque. The apparatus in fig. 15 served me thus also as a "ball-bearing" motor, and this aspect of the machine is analysed in section 14. Here I shall analyse only the electromagnetic (or König) effect and thus I shall ignore the ball-bearing effect, i.e., I shall suppose that the ball-bearings are substituted by bearing boxes.

I showed the machine from fig. 15 with a Müller ring to a couple of physicists and electroengineers and all of them said: "This gadget will not rotate." However, it rotates. If the right current cylinder is kept at rest, the magnet rotates, and if the magnet is kept at rest, the right current cylinder rotates. If, on the other hand, one keeps the right cylinder (or the magnet) at rest and rotates the magnet (or the right cylinder) by an external torque, a direct current is induced. If the prediction of a conventional physicist about the effects in the König-Marinov machine will be right, then his prediction about the seat of the induced tension will be certainly wrong. So, for the case of a rotating magnet, a conventional physicist will predict a seat of the induced tension along the cylinder kept at rest, what is wrong. There will be no motional-transformer induced tension in the right cylinder, as there  $\vec{\partial}\vec{A}/\partial t = 0$ . A tension will be induced along the path connecting the sliding contacts through the mass of the rotating magnet. (this path is shown by a broken line in fig. 14), and there will be a motional induction, as the motional-transformer induction along this path is again null.

### 11. The seat of the electromotive and ponderomotive forces

First I must make the statement that only about 10% of the conventional physicists can understand the notion "seat of the induced electric tension", as for the other 90% (whom I call the "butchers") the magnetic flux is a sausage and the loop a knife. Indeed, conventional physics, considering the electromagnetic effects as "field", "closed lines", and "flux" effects, do not pay attention to the differential interactions and to the extremely important problem about the electromotive and ponderomotive forces exerted on the current elements of the wires, i.e., to the problem about the seat of those forces. Müller<sup>22</sup> was the first physicist who during 10 years tried to locate the seat of the electromotive forces in a couple of experiments, developing a very clever technology<sup>22</sup> which brought him to brilliant successes. Unfortunately he has not investigated the problem about the seat of the ponderomotive forces which is of no less importance.

In the previous sections I analysed certain electro-magnetomoving and magneto-electromoving experiments. I predicted the effects and presented the physical reasons for their appearance, trying to locate their seats. Now I shall shortly return to certain of those experiments and bring more light to the problems.

The era of electromagnetism was heralded by the experiment of Oersted carried out in 1820 (as a matter of fact, such an experiment was carried out for the first time by Romagnosi in 1802 but it remained unnoticed by the "scientific community"). Oersted observed the rotation of a magnetic needle by a linear current. I am afraid conventional electromagnetism is unable to give a clear picture of the acting forces, as this can be done only by the help of the differential Biot-Savart formula (16) in Ref. 3, about the validity of which conventional electromagnetism is not certain (see p. 91 in Ref. 3) and which formula can be found only in one of ten text-books on electromagnetism. Thus I shall consider first the Oersted experiment.

In fig. 16 I give a diagram of the forces with which a linear current  $C$  (the current is perpendicular to the figure pointing to the reader) acts on a magnet with the form of a prolonged parallelepiped. I shall call the plane of the figure "horizontal" and the direction of the current "vertical", and I shall consider only the vertical torques on the current elements of the magnet. In the figure the magnet is horizontal. If the magnet should be inclined to the horizontal plane, then in the figure one sees its "horizontal projection", as the forces acting on its "vertical projection" do not lead to vertical torques and can be ignored. In the figure are presented the horizontal projections of the vertical currents at the magnet's edges (consider the magnet as a solenoid). The currents at the edges  $A$  and  $B$  point to the reader and at the edges  $A'$  and  $B'$  from the reader. I do not take into account the horizontal currents at the magnet's edges, as the forces acting on them do not

generate vertical torques. One sees in the diagram that all forces acting on the magnet's currents cross the current  $C$  and thus a linear current cannot bring a magnet to rotation about itself. The magnet can be brought to rotation about any other vertical axis (say, about the axis  $C'$  piercing the middle of the magnet), and it will rotate until becoming perpendicular to the current with its north pole pointing leftwards. If the linear current will be substituted by a cylindrical current, the acting forces remain the same, as it can easily be shown that the magnetic field of a linear current and of a cylindrical current (outside the cylinder) are equal for equal distances from the axis. The diagram in fig. 16 explains why there is no torque on the magnet in my experiment shown in fig. 13. It also shows that the torque in Faraday's experiment shown in fig. 2a of Ref. 3 can be exerted only by the current flowing in the mercury. According to the integral Biot-Savart formula<sup>3</sup>, the magnet in Faraday's experiment will exert an equal and oppositely directed torque on the mercury in the cup. Thus if we assume that the friction between the molecules of the mercury is bigger than the friction between the mercury and the cup's walls, and if we assume further that the moments of inertia of the magnet and of the mercury in the cup are equal, then when the magnet will begin to rotate in one direction, the mercury (in the form of a "liquid disk") will begin to rotate in the opposite direction with the same angular velocity. I do not know whether this effect has been observed and reported.

In fig. 17 the so-called Pohl's experiment is shown (I could not establish where is the first publication of this experiment): Two bar magnets with north poles pointing down can rotate about a vertical axis, being suspended on a string. The short axle  $e$  to which the middle of the magnets are fasten is immersed in the mercury cup  $b$ . The current flows from the electrode  $K$ , along the vertical axle  $a$  which is solid to the laboratory, through the mercury in the cup  $b$ , along the radial wire  $p$ , through the mercury in the trough  $f$  (in which the end of the wire  $p$  is immersed), and reaches the electrode  $Z$ . At this direction of the current the magnets rotate counter-clockwise. Conventional electromagnetism supposes that the torque is exerted by the vertical current in the axle  $a$ , as the north poles of the magnets move along the lines of magnetic intensity originated by the latter. This supposition is not true. The magnets will have exactly the same rotation if the mercury cup  $b$  will be not at the top of the axle  $a$  (as it is shown in fig. 17) but at its bottom. Thus the seat of the ponderomotive forces is along the radial wire  $p$ , and it represents as a matter of fact a cemented Barlow disk. The magnets in Pohl's experiment can rotate under the action of the vertical current only about their horizontal axis, until they will become perpendicular to the vertical current. This rotation can be explained only by the help of the differential Biot-Savart formula (16) in Ref. 3, considering the magnets as parallelepipeds and taking into account the action of the vertical current on the currents at the magnets' edges which point to and from the vertical current: the force on the current pointing "to" will be downwards and the force on the current pointing "from" will be upwards, so that the magnet will rotate counter-clockwise if the magnet is between the wire and the observer.

To be able to clearly demonstrate the seats of the electromotive and ponderomotive forces, I constructed the demonstrational Faraday-Barlow machine (see the scheme in fig. 18 and the photograph in fig. 19). The machine has three parts which can rotate independently one of another: 1) the magneto-yoke, consisting of two ring magnets and yoke of soft iron, 2) the Faraday-Barlow disk of soft iron, and 3) six bar conductors of aluminium crossing the yoke through holes large enough, so that a limited motion of the bars with respect to the yoke can be realized. The yoke rotates on the first and third small ball-bearings, the disk rotates on the second small ball-bearing, and the bar conductors rotate on the middle and on the big ball-bearings (the inner race of the big ball-bearing is solid to the Faraday-Barlow disk). The current (when the machine is used as a motor) goes from the positive electrode of the battery through the second small ball-bearing, crosses the disk, the big ball-bearing, the bar conductors, and through the middle ball-bearing reaches the negative electrode. The bars can be made solid to the magnet by the help of a plastic "cap" shown on the left of the drawing. The magnet can be made solid to the disk by the plastic "spoke" shown in the upper part of the drawing. The bars can be made solid to the disk by the help of the plastic "cap" shown in the lower part of the drawing which blocks the big ball-bearing. The disk can be made solid to the lab by the help of a "spoke" (not shown in the drawing) which blocks the second small ball-bearing. The magnet can be made solid to the lab by hand. The effects observed by me are presented in table 3.

Table 3

	Rotation or possibility for rotation of :			GENERATOR EFFECTS			MOTOR EFFECTS	
	Magnet	Disk	Bars	measured tension	kind of induction	seat of induction	torque at	reaction at
1.	o	o	o	o			o	
2.	o	o	$\Omega$	o			o	
3.	o	$\Omega$	o	+	motional	disk	disk	magnet
4.	o	$\Omega$	$\Omega$	+	motional	disk	disk	magnet
5.	$\Omega$	o	o	+	mot.-tr.	bars	magnet	disk
6.	$\Omega$	o	$\Omega$	+	mot.-tr.	bars	magnet	disk
7.	$\Omega$	$\Omega$	o	o	mot.-tr. mot. (opp.)	bars disk	o	
8.	$\Omega$	$\Omega$	$\Omega$	o	mot.-tr. mot. (opp.)	bars disk	o	

We see that the effects are exactly the same as in table 1 (p. 134). I intended to construct also a demonstrational König-Marinov machine, where the different parts can rotate independently one of another, but since I realized that the effects will be the same as in tables 1 and 3, I renounced to this intention.

Take into account that in case 6 a continuous rotation can be realized. Thus in case 6 the generator produces continuously direct current and the tension is induced in the bar conductors which the whole time remain in space domains where the magnetic intensity is zero. Thus the current is produced only because of the availability of magnetic potential at the location domain of the bar conductors. Meanwhile conventional physics affirms that the magnetic potential can be not "physically observed". The nonsensical conceptions of conventional electromagnetism are tremendous!

Finally I shall consider another important phenomenon which is either left without explanation in the textbooks or honoured with nonsensical explanations. The coil in any electromagnetic machine is wound in the slots of the armature where the magnetic intensity is very feeble (one can accept it equal to zero), as the magnetic field is "closed through the iron". How then such a machine generates current? Müller has shown (Ref. 20. p. 211) that if one moves the wire in the armature's slot no tension is induced. However, when moving the armature<sup>a</sup> tension is induced independently of the fact

whether the wire moves with the armature or remains at rest. Evidently the explanation is only one: the induction is motional-transformer and depends only on the motion of the magnet but not on the motion of the wire. Thus the tales about the "force lines" which "jumping" from cog to cog "cut" the wire (the "butchers" must always cut something) are from the thousand and one nights.

How then can one explain the torque on the armature if current is sent through the coil? - The current wire in a slotted armature does not interact with the magnet. If Müller had tried to see whether there are forces acting on the current wire in the slot, he had to see that no such forces do appear. Thus the explanation for the torque is the following: The current wire magnetizes the armature and the magnetic interaction between the magnet and the magnetized armature leads to the production of torques.

I should like to add that when the magnet in the König-Marinov machine is rotated by an external torque at an open circuit, then no braking is observed for the case of a Müller poles' ring, however the rotation is braked and the machine becomes hot when a Marinov poles' ring is used (see fig. 14). Indeed, in the first case the motional-transformer electric intensity induced at all points of the cylindrical conductor is zero, while in the second case the electric intensity induced at the cylinder's points which are in the magnetic field (under the poles) is in one direction and at those outside of the magnetic field (between the poles) in the opposite direction, so that the magnetic field of the appearing eddy currents interacting with the field of the rotating poles brakes the rotation of the latter. The same eddy currents and braking of the rotation appear when the magnet is at rest and the cylinder is rotated by an external force.

Although the magnetic interactions of current elements violate Newton's third law, in my firm opinion, a violation of the laws of momentum and energy conservation at the interaction of magnets and loops with stationary currents (at the use of sliding contacts) cannot be observed. I shall be very surprised if such a violation will some day be observed, and I leave any effort for a search of this kind of violation.

However, a violation of the energy conservation law at the electromagnetic interactions of magnets and loops may be expected and I have already observed such a violation (see sections 12 and 13). Let us consider the most simple Faraday-Barlow machine with closed magnetic flux shown in fig. 20. The whole magnet can rotate about the central axis with respect to the laboratory and the lower and upper (called also first and second) hemispheres (called also disks) can rotate independently one of another on the indicated balls which roll along circular troughs. Let the moment of inertia of any of the disk be  $J$  and let us suppose that the friction is zero.

At a disconnected circuit (i.e., when the mercury from the trough is taken away) we set disk 2 in rotation with the initial angular velocity  $\Omega_{i1}$ , leaving the disk 1 at rest. When closing the circuit, an electric current will begin to flow, whose ponderomotive action will be braking for disk 2 and driving for disk 1. After a certain time, which I denote by  $T/2$ , the velocities of both disks will become equal, and with this final angular velocity  $\Omega_{f1}$  they will continue to rotate eternally, as the tensions induced in both disks will become equal and opposite.

Supposing that the law of energy conservation is valid, we can write the following equation for the energy balance  $(E_{kin})_{in} - (E_{kin})_{fin} = E_{e1}$ , having on the left side the kinetic energy lost by the system and on the right side the electric energy converted into a Joule heat in the circuit whose Ohmic resistance is  $R$ , i.e.,

$$\frac{1}{2} J \Omega_{i1}^2 - J \Omega_{f1}^2 = \int_0^{T/2} \left(\frac{1}{R}\right) (U_2 - U_1)^2 dt, \quad (42)$$

where  $U_1 = (1/2c)BR_0^2\Omega_1$  and  $U_2 = (1/2c)BR_0^2\Omega_2$  are the tensions induced in disks 1 and 2,  $\Omega_1$  and  $\Omega_2$  are their angular velocities, and  $R_0$  is their radius (i.e., the distance from the center to the balls of the bearing). If we make the assumption (the right approach is given elsewhere<sup>27</sup>) that  $\Omega_2$  decreases linearly with time and  $\Omega_1$  increases linearly with time, we can write  $\Omega_1 = kt$ ,  $\Omega_2 = k(T-t)$ ,  $\Omega_{i1} = kT$ , where  $k$  is a constant, and according to the law of angular momentum conservation we shall have  $\Omega_{i1} = 2\Omega_{f1}$ , so that equation (42) will give

$$T = 6c^2JR/B^2R_0^4, \quad (43)$$

and we see that  $(1/2)(E_{kin})_in$  is transformed into heat, while  $(1/4)(E_{kin})_in$  is transferred from disk 2 to disk 1. It is easy to see that if disk 1 is solid to the laboratory, then disk 2 will come to rest during the time  $T$  given by formula (43), and the whole initial kinetic energy will be transformed into heat.

The energetic aspect of this experiment is exactly the same as of inelastic collision of two equal masses, the one being before the collision at rest and the other moving (the second case corresponds to an inelastic collision between a mass and a "wall"). In our experiment, however, there is no interaction between disk 1 and disk 2. The interaction is only between the electrons flowing along the radii of both disks and the magnet. And what will appear if the experiment is carried out at very low temperatures where the Ohmic resistance will be practically zero? We know that an inelastic collision at very low temperatures is impossible, as at such temperatures all bodies become "hard". Meanwhile our experiment is always 100% "inelastic". On the other hand, when  $R$  tends to zero, the time  $T$  tends also to zero and the induced current increases to infinity.

I observed (see the next two sections) that the electric energy produced by the Faraday disk is more than the kinetic energy lost, i.e., that the electrons streaming along the radii of disk 2 cannot brake its rotation to the degree required by the law of energy conservation; neither (I hope) disk 1 can be accelerated to the angular velocity required by the driving Newton-Lorentz force (formula (17)). The physical causes for this effect are not entirely clear to me. I presume that the induction electrons simply cannot transmit the whole tangential momentum acquired by them to the rotating disk (see p. 129). Thus in equation (42) Nature instead to write the sign "=" writes the sign "<". It is obvious that this experiment is not a pure electromagnetic experiment, as thermal energy, and thus also statistical physics, are also involved.

## 12. The Faraday generator coupled with the Barlow motor (COUPLED N-MACHINE)

Bruce de Palma<sup>17,18,19</sup> was the first man who reported that a cemented Faraday disk has no mechano-braking effect and thus violates the generator Lenz rule (see p. 128). He gave to the cemented Faraday disk the name "N-machine" and explained this new baptism of a child born many and many years ago with the following words<sup>18</sup> (p. 255):

During a meditative walk I asked myself whether the magnetic field around a rotating magnet rotates or not. If it doesn't, does the metal of the magnet rotate through its own (stationary) field, and if it did, wouldn't there be a voltage generated between the centre and the edge? Suddenly, I had the idea for an 'N' machine and I had not known about Faraday's work at this time. I published a paper on this showing the basic effect that Faraday discovered with a rotating magnetized conductor and what I did was to sandwich the conductor between two magnets and called it an 'N' machine. The reason it's called an 'N' machine is because I thought that there were a million things that are going to result from this and the only thing that adequately describes all the results of these experiments is the letter 'N' which means something large, etc.

The most impressive report that the cemented Faraday disk has no (or has a very small) braking effect is given by de Palma in Ref. 19 (p. 116):

Further evidence of the low drag of the N generator was evidenced when the drive motor was turned off and the machine allowed to coast down from the normal 6000 r.p.m. operating speed.

Under these conditions opening and closing the current control knife switch to interrupt the flow of the 7200 ampere output current caused *no visible effect* in the slowing down of the apparatus whether the current was flowing or not. Of course for a generator constructed along conventional lines such a test would result in an immediate arresting of the rotation of the machine as 10 HP of electrical load was thrown on the machine.

Indeed, de Palma reported<sup>19</sup> that the induced tension was  $U = 1.05$  V and as the

flowing current was  $I = 7200$  A, the power dissipated into heat at 6000 rev/sec had to be  $P = IU = 7200 \times 1.05 = 7560$  W = 10.05 HP.

There is also the question whether the cemented Barlow disk has an electro-resisting effect. According to Bruce de Palma such an electro-resisting effect must not exist. So he writes<sup>18</sup> (p. 256):

If we have a generator like the 'N' machine which gives us no drag when we take current out of it, we ought to have a motor effect. A "free energy" motor would have no back-EMF at all and all you would have to do would be to supply current to it. In November 1952 Wireless Engineer wrote in a paper "A Novel Form of D.C. Motor", the Germans had invented such a motor during the war. In it, a (fixed) copper spiral had two iron pole pieces rotating around it with an axle going through the centre. A brush on the inner end of the copper spiral and one on the frame supporting its outer end fed current to it. The current on the inside (end of the spiral) goes into the axle and is taken out via a brush on the right hand side. This motor has no back-EMF. (Such a current conducting self-rotating spiral see in fig. 11 in Ref. 3).

I was deeply impressed by all those reports and constructed my own N-machine to see whether the reported effects are really existing. In order to receive a pure energy created from nothing, I coupled a Faraday disk with a Barlow disk (fig. 1), calling this apparatus the coupled N-machine. I had an uncemented Barlow disk but a cemented Barlow disk can also be used. I had electromagnets, but permanent magnets can also be used and permanent magnets are even better, as sliding contacts to supply current to the rotating magnet of the Faraday disk are not needed. The tensions  $U_1$  and  $U_4$  produced by the disks 1 and 4 could be changed at will by manipulating the currents feeding the magnets 2 and 5 and changing thus the magnetic intensity.

My coupled N-machine was a slight variation of the scheme shown in fig. 1 (the photograph is given in fig. 21). Instead of one, I put 16 sliding contacts on the rims of disks 1 and 4, thus increasing 16 times the current flowing along the radii of the disks. The carbon brushes sliding on the rim of disk 4 (in fig. 21a my right hand points at the rotating magnet to which disk 4 is solidly attached) are connected by soft copper wires directly with the carbon brushes sliding on the rim of disk 1 (in fig. 21a my left hand points at the magnet at rest; the rotating copper disk is between the magnet and the yoke; to diminish the eddy currents (the yoke has not a cylindrical symmetry!) 40 radial slits were cut in the disk 1).

I performed the following experiment which gave me a certain evidence that energy was created from nothing: First I started the apparatus (by the help of a boring machine (2700 rev/min) as shown in fig. 21b, or by an angle-grinder (6000 rev/min)) without feeding the magnets. <sup>In the second case</sup> It came to rest in 30 sec. Then I started the apparatus feeding both electromagnets. The apparatus stopped in 32 sec. This 2-second difference was obtained for the optimal relation  $U_1 = U_4/2$  when the power delivered by the Barlow disk 1 is maximum. As in this case electric current has flown in the apparatus, heat was produced and according to the energy conservation law the apparatus had to come to rest in a time shorter than 30 sec, but in no case in a longer time. Thus I concluded that energy was created from nothing. I could not increase the 5-second difference as I could increase neither the rate of initial rotation

(6000 rev/min) nor the magnetic intensity produced by the rotating magnet as it became too hot by the feeding current.

The experiment was not firmly convincing, as I had no tachymeter and the initial rotational velocity which I communicated to the apparatus by the angle-grinder held in my hands was uncertain. Thus the time varied considerably in the different measurements and depended also highly on the "friction conditions" of the apparatus which could not be maintained always the same (more pressed sliding brushes gave higher induction current but increased the friction!).

I tried to establish also whether the cemented Barlow disk has an electro-resisting effect. Here my experimental results were enough convincing and the answer was: yes, it has! I carried out the experiment in the following manner:

I drove the disk 4 and the magnet 5 supplying to the disk a constant tension and let them spin steadily. Then a short switching off of the current feeding the electromagnet 5 led to an abrupt increase of the flowing current. This was a clear evidence that there was an electro-resisting effect (i.e., a back-EMF).

### 13. The Faraday generator coupled with the König-Marinov motor (ADAM)

I pointed out in section 4 that as the braking force in the Faraday disk may be less than this one which is prescribed by formula (31), so the driving force in the Barlow disk may be less than this one which is prescribed by formula (32). The first inequality must lead to a violation of the energy conservation law, while the second inequality must lead only to a diminution of the efficiency of the Barlow motor. This difference is very important, and I beg the reader to pay a due attention to it.

To be able to convert in a reliable and effective way the electric energy created by the Faraday generator out of nothing into a mechanical energy, I decided to couple it with the König-Marinov motor which has to deliver mechanical energy equivalent to the consumed electric energy and can have a very low resistance. I called this apparatus ADAM (Apparatus Discovered in Austria by Marinov). Its scheme is shown in fig. 22 and the photograph in fig. 23.

The cemented Faraday disk, which has two permanent ring magnets, is above, the König-Marinov machine, which has an electromagnet, is beneath. I shall speculate for magnets' polarities as shown in the figure. The polarities, of course, can be reversed: of the König-Marinov motor by changing the direction of the current feeding the electromagnet, of the Faraday generator by turning over the magnets. The electromagnet with the axle of the apparatus is solid to the laboratory. The yoke of the König-Marinov machine, to which the Faraday disk is solid, can rotate on two ball-bearings which have small sizes and consequently small friction.

All details of the machine have been coppered and then gilded. Then the mercury from the troughs amalgamated with the gold and during a couple of days the whole machine was covered by the amalgam. It was better to cover parts of the details having

contact with the mercury by a protection paste, so that the mercury can make amalgam only with the gold on the inner walls of the troughs and on the rims of the rotating cylinders immersed in the mercury. The resistance of the whole machine was about  $R = 100 \mu\Omega$ . The resistance was measured by sending current  $I$  through the machine and by measuring the tension  $U$  on the electrodes. So I measured the "inner" resistance  $R = U/I$ . Then taking out the rotor and making short circuit between the electrodes, I measured in the same manner the "outer" resistance, which was much smaller than the "inner" resistance. The resistance of the short-circuited machine was the sum of those two resistances. The tension produced by the Faraday disk at about 10 rev/sec was about 20 mV, i.e., at this rate of rotation, if not feeding the electromagnet of the König-Marinov machine, the flowing current was about 200 A.

Let us first see how the machine works as a motor, supplying a driving tension to it as shown in fig. 22: The current goes from the positive electrode up through the large upper mercury trough, then along the radii of the disk (which serves<sup>now</sup> as a Barlow disk), then down through the small mercury trough, and reaches the negative electrode. It is easy to see that the torque on the disk will be clockwise (if looked from above), while the torque on the yoke will be counter-clockwise. Thus the machine will rotate in this direction where the torque is stronger.

Let us now see how the machine works as a generator, rotating it by an external torque (I used a boring machine as shown in fig. 23). If the torque is clockwise, the Faraday disk will drive the positive charges to the positive electrode, while the König-Marinov machine will drive the positive charges to the negative electrode. Thus current will flow in this direction in which the tension induced is stronger.

Let us finally see how the machine works as a perpetuum mobile, giving to it an initial clockwise rotation and short-circuiting its electrodes. The short-circuiting can be made in two manners: (i) by pouring mercury in the large lower trough or (ii) by the help of the band which can be seen<sup>at the right lower corner of fig. 23</sup> and which encompasses the outer walls of both large troughs (I used the second method). One makes the tension  $U_F$  produced by the Faraday generator bigger than the tension  $U_K$  produced by the König-Marinov motor, by tuning the current feeding the electromagnet. The best relation is  $U_F = 2U_K$ , and I shall further assume that this relation is realized. Thus a current  $I = (U_F - U_K)/R$  flows along the outer conductors downwards and along the inner conductors upwards. This current is braking for the Faraday disk and driving for the König-Marinov machine. We have  $U_F = (1/2c)B_F R_F^2 \Omega$ , where  $B_F$  is the magnetic intensity produced by the permanent magnets in the gap between them,  $R_F^2 = R_{out}^2 - R_{in}^2$ , where  $R_{out}$  and  $R_{in}$  are the outer and inner radii of the ring magnets, and  $\Omega$  is the angular velocity of rotation. Further we have  $U_K = (1/c)B_K R_K h \Omega$ , where  $B_K$  is the magnetic intensity produced by the electromagnet in the poles' gap, and  $R_K$  is the radius of the cylindrical conductor passing through the poles' gap, whose height is  $h$  (see formulas (29) and (17)). At the condition  $U_F = 2U_K$ , we obtain for the time in which the machine will come to rest, if assuming zero friction and performing calculations as in sect. 11,

$T = 24c^2JR/B^2R_F^2$ , where  $J$  is the moment of inertia of the rotor.

However, my measurements showed that the machine ADAM violated the law of energy conservation. I established this in the following way: I measured the braking times of the open and then of the short-circuited machine. According to the energy conservation law, the braking times at closed circuit must be shorter, as a certain kinetic energy must be transformed into Joule heat. The experiment, however, has not confirmed this expectation. I made two Faraday disks: one of solid metal and one of mercury poured into a cylindrical "trough" excavated in the solid disk and covered with insulator, so that the induced current could go only through the mercury. When current was extracted the braking times of the solid Faraday disk were always lower than in the case when current was not extracted but for higher velocities the relative and absolute differences diminished and at the highest velocity which could be reached (3600 rev/min) this difference was -1 second, namely 140 seconds when current was not extracted and 139 seconds when current was extracted. However, for the mercury Faraday disk the picture was the following: At lower rotational velocities (until 1000 rev/sec) the braking times of the machine at the cases of extraction and non-extraction of current were the same, but for higher velocities the former became bigger than the latter and at 3600 rev/sec the difference was +31 seconds, namely, 140 seconds when current was not extracted and 171 seconds when current was extracted. All detailed measurements which show without any doubt that energy was created from nothing will be presented elsewhere<sup>27</sup>.

#### 14. The Faraday and König-Marinov generators coupled with the ball-bearing motor: CUREC (CURrent thermal dilatation Effect Coupled with...)

In Ref. 3 I analyse the physical background of the current thermal dilatation effect and of the mechanism of rotation of the ball-bearing motor. As the ball-bearing motor creates energy from nothing, then coupling it with a generator which can cover the ohmic and friction losses of the motor and the generator one can run a perpetuum mobile. Further, for simplicity, I shall assume that the generator is conventional and the electrical energy produced by it is equal to the mechanical energy supplied minus its ohmic and friction losses, but I emphasize that the cemented Faraday disk- and cylinder-generators produce more electrical energy than the mechanical energy supplied to them (see sections 12 and 13).

The condition for an eternal motion thus is that the electric power produced by the generator at a certain torque applied to it should be equal to the electrical power necessary to drive the ball-bearing motor, so that the torque produced by the latter is equal to the torque driving the generator. If at the electrical power  $P_{el}$  applied to the ball-bearing motor, having  $P_{el} = P_{ohm} + P_{fr}$ , where  $P_{ohm}$  and  $P_{fr}$  are, respectively, the powers of the ohmic and friction losses of the ball-bearing motor, as its mechanical power,  $P_{me}$  is created from nothing, we have  $P_{me} = P_{ge} = P_{el} + P_{ohm} + P_{fr}$ , where  $P_{ohm}$  and  $P_{fr}$  are, respectively, the ohmic and friction losses of the generator, the motion will be eternal. As  $P_{ohm}$  is much higher than  $P_{fr}$ ,  $P_{ohm}$ , and  $P_{fr}$  (see beneath), the condition for eternal motion is, practically,  $P_{me} = P_{ohm}$ .

I have constructed three different perpetua mobilia CUREC:

1. The perpetuum mobile CUREC with cemented Faraday disk-generator (figs. 24 and 25). A metal shaft is fasten on two wooden columns. A small ball-bearing is mounted on the shaft. A metal ring sandwiched between two permanent ring magnets with the indicated polarity is mounted on the latter. A big ball-bearing is mounted on the periphery of this metal ring. The outer race of the big ball-bearing is fasten by the help of a metal cylinder through an insulator ring to the shaft. The circuit "shaft - small ball-bearing - rotating disk - big ball-bearing - cylinder - shaft" is interrupted by the insulator ring and can be closed by a metal "stopper" which slides on the shaft. When the stopper is removed, the tension of a driving battery can be applied to the apparatus. At the indicated polarity of the applied tension, the ring (which now represents a Barlow disk) will begin to rotate in the indicated (by a full line) direction. The current thermal dilatation effect will immediately support the rotation and increase the rate of rotation. The tension induced in the rotating ring will be opposite to the battery's tension and the current will begin to diminish. At a certain

rate of rotation which is stationary, one introduces the stopper and removes the battery (which, evidently, will be short-circuited by the stopper). Now only the generated current will flow in the circuit in a direction opposite to that in which the driving current has flown. However, the torque due to the current thermal dilatation effect will be in the direction of rotation, as this torque depends on the initial push but not on the direction of the current. If the current thermal dilatation torque will be equal (with opposite sign) to the sum of the mechanical braking torque of the current flowing in the generator (as far as such a torque does exist - see sections 12 and 13) and of the friction torque, the apparatus will rotate eternally. One can, before switching on the battery, give an initial push to the rotor in the opposite direction (denoted by the broken line). If the torque due to the current thermal dilatation effect is bigger than the torque of the cemented Barlow disk, the machine will continue to rotate in the initial direction and increase its rate until some stationary value. Now the tension induced in the cemented Faraday disk (denoted by the broken signs "+" and "-") will generate current in the same direction as the driving current. One introduces the stopper and removes the battery. If the current generated by the cemented Faraday disk will produce a current thermal dilatation torque equal (with opposite sign) to the sum of the mechanical braking torque of the current flowing in the generator (as far as such a torque does exist) and the friction torque, the apparatus will rotate eternally.

When the magnets in the machine presented in fig. 25 were taken away, a driving tension of about 2 V, producing current of about 70 A, drove the rotor in both directions (after giving an initial push to the rotor) with a rate of about 20 rev/sec. When the magnets were mounted, the same tension rotated the machine with a higher rate (by a self-starting) into the "direct" direction (i.e., when the current thermal dilatation torque and the Barlow torque coincided), and with a lower rate (after giving an initial push) into the "opposite" direction (i.e., when the Barlow torque was against the current thermal dilatation torque). At the rate of rotation 20 rev/sec, the tension generated by the Faraday disk was 20 mV (for both directions of rotation with opposite polarities as shown in fig. 24). Thus the tension produced at 20 rev/sec was 100 times lower than the tension needed to drive the motor with the same rate and one was too far from the possibility for an eternal rotation. The external force with which I drove the machine was condensed air. This kind of external torque was used also in the next two machines.

2. The perpetuum mobile CUREC with König-Marinov generator (figs. 14 and 15). This apparatus represents, as a matter of fact, the König-Marinov machine described in section 10. However, as here the sliding contacts are ball-bearings, the current thermal dilatation effect produces a torque and makes the machine a perpetuum mobile, if the conditions mentioned on p. 154 will be fulfilled.

I calculated the efficiency of the machine first when the magnets were not taken away and both the ball-bearing and the König-Marinov torques were acting in the same direction. A driving tension  $U = 1.5$  V, producing current  $I = 50$  A, and thus consuming an electric power  $P_{el} = 75$  W, drove the machine in the "direct" direction with  $N = 20$  rev/sec. The mechanical (kinetic) power delivered was found in the following manner: From the geometry of the rotor and the specific gravity of the iron, I found its moment of inertia  $J = 5 \times 10^{-3}$  kgm<sup>2</sup>. As the angular velocity of rotation was  $\Omega = 2\pi N \approx 126$  rad/sec, the kinetic energy of the rotor at the steady rotation was  $E = (1/2)J\Omega^2 = 40$  J. Dividing this kinetic energy by the halftime interval in which the motor reached the steady rate of rotation  $\Delta t = 2$  sec, I found the mechanical power delivered by it  $P_{me} = E/\Delta t = 20$  W. Consequently the efficiency of the motor was  $\eta = P_{me}/P_{el} = 0.27$ . The formula  $P_{me} = E/\Delta t$  is deduced by the help of the following reasoning: At the beginning of the acceleration of the rotor by the driving torque, the production of kinetic energy is 100% and the production of heat (because of the friction) is 0%. When the rotor achieves its steady state of rotation, the production of kinetic energy is 0% and the production of heat (because of the friction) is 100%. If we assume a linear decrease in the production of kinetic energy and a linear increase in the production of heat, then in a time  $2\Delta t$  the machine produces  $E$  joules of kinetic energy and  $E$  joules of heat, so that its power is  $P_{me} = 2E/2\Delta t = E/\Delta t$ . The efficiency which I calculated only for the ball-bearing motor, i.e., taking away the magnets (and remaining thus with a smaller moment of inertia) was about 0.1. I must repeat, however, that in this case of 100 J input electrical energy all 100 J have been converted into heat and 10 J mechanical

energy were created out of nothing.

The tension induced in the apparatus in fig. 15 was 35 mV at 20 rev/sec. Thus here the tension produced by the generator was 43 times lower than the tension needed to rotate the ball-bearing motor with the same rate.

3. The perpetuum mobile CUREC with cemented Faraday cylinder (figs. 26 and 27). At the present time this is my best machine CUREC. However, as the reader will see, it is still too far from reaching the two necessary and sufficient conditions for a perpetuum mobile: (i) equality of the driving and generated tensions, (ii) mechanical power produced by the ball-bearing motor equal to the electric power produced by the generator, which when applied to the ball-bearing motor "brings to life" this mechanical power, which, from its part, when applied to the generator "brings to life" this electric power.

The elements 1, 2, and 3 form a frame which maintains the vertical axle 4 solid to the laboratory, however with a possibility for vertical displacement. The axially magnetized ring magnets 5 and 6 build a "magnetic cushion", so that the axle 4 with the iron cylinder 7, the radially magnetized ring magnets 8-13, and the ball-bearings 14 and 15 "hang in the air". In this way I diminished substantially the mechanical friction of the ball-bearings. The rings 16 and 17 are of plastic: the ring 16 holds on the magnet 6, the ring 17 serves as an insulator and interrupts the circuit "axle - lower ball-bearing - iron cylinder - upper ball-bearing - axle". Conducting the battery electrodes to the terminals 18 and 19, one can drive the machine as a motor, while by short-circuiting of the terminals (as it is shown in fig. 27) one uses the machine as a perpetuum mobile.

I made a metal cylinder with the same shape and almost the same specific gravity as the magnets 8-13, so that I could carry out more exact measurements when driving the machine as a ball-bearing motor only. A tension  $U = 1.4$  V producing current  $I = 45$  A, and thus consuming an electric power  $P_{el} = 63$  W, drove the machine with the exchange cylinder with  $N = 20$  rev/sec ( $\Omega \approx 126$  rad/sec). The moment of inertia of the rotor was  $J = 3 \times 10^{-3}$  kgm<sup>2</sup>, so that its kinetic energy at the rate of steady rotation was  $E = (1/2)J\Omega^2 \approx 24$  J. The half-time interval in which the motor reached the steady rate of rotation (at a sporadic starting) was  $\Delta t = 1.5$  sec, but I must note that this figure could be not registered very accurately. Thus the mechanical power of the motor was  $P_{me} = E/\Delta t = 16$  W and its active efficiency was  $\eta = P_{me}/P_{el} = 0.25$ .

The tension induced in the apparatus in fig. 27 was 74 mV at 20 rev/sec. Thus here the tension produced by the generator was only 19 times lower than the tension needed to rotate the ball-bearing motor with the same rate. As the ohmic resistance of the machine at a rate of 20 rev/sec was  $R = U/I = 31$  m $\Omega$ , the electrical power delivered by the cemented Faraday cylinder was  $P_{ge} = U_{ge}^2/R = 0.2$  W, so that we have  $P_{el} = 315P_{ge}$ . Let me note that in the perpetua mobilia CUREC the ohmic and friction losses of the generator can be not considered separately from the ohmic and friction losses of the motor, so that we can assume  $P_{ohm} = P_{fr} = 0$  (see p. 154).

### 15. The motional-transformer inductor coupled with an a. c. motor (MAMIN COLIU)

My discovery (see section 11) that the seat of the motional-transformer induction may be at such points of the wire which lie outside of the magnetic field produced by the moving magnet leads immediately to the conclusion that induced electrical energy can be obtained without spending some mechanical energy. Indeed, at the motional induction the magnetic field of the current induced in the moving wire interacts with the stationary magnet and always the motion of the wire is braked (see cases 3 and 4 in table 3). This is also the case at the motional-transformer induction when the seat of the induction is in parts of the wire which lie in the magnetic field of the moving magnet, i.e., as I say, which are "under the poles". But motional-transformer induction can appear also at points of the wire which are outside of the magnetic field of the moving magnet, i.e., which are "outside the poles". In such a case a magnetic interaction, and consequently a braking, is impossible. It turns out, however, that for closed loops always certain parts are "under the poles" and always a braking does appear. This is demonstrated clearly by cases 5 and 6 in table 3. In these cases the motional-transformer tension is induced in the bars but the braking is because of the interaction of

the current in the disk with the magnet. More interesting is the case of motional-transformer induction in the wires of a slotted armature in a conventional bipolar generator already analysed on p. 148. Here the whole wire is "outside the poles". The braking, however, appears between the armature magnetized by the induction current and the moving magnet (let me remember that also in the case of moving armature and magnet at rest the induction is motional-transformer). Thus the conclusion is to be drawn that a motional-transformer induction without braking can appear only if the wire does not cross the magnet. Such a case is very easily realizable. Let us have a toroidal magnet, as in fig. 28, and a loop. Moving the magnet with respect to the loop a motional-transformer electric tension will be induced in the latter. It is easy, however, to see that in any two halves of this loop the induced tensions will be equal and oppositely directed, so that the resultant electric tension in the whole loop will be always zero. Which is the conclusion? The conclusion is that motional-transformer electric tension can be induced "outside the poles" only in unclosed wires. By moving the magnet "there and back", alternating current will flow through such an unclosed wire, and the unique way to utilize energetically those alternating currents is through the Joule heat produced by them.

Such an experiment is shown in fig. 28. A thin metal plate is put in a reservoir filled with a thermally largely dilatible liquid. By moving the toroidal magnet, induced alternating currents will flow along the metal plate and the produced heat will lead to a dilatation of the liquid that can be observed. If, however, the metal plate with the reservoir will be moved no tension will be induced and no heat produced. Finally, if moving there and back the toroidal magnet with the metal plate and the reservoir, the same tension as in the first case will be induced, and the same heat produced. However the power produced in such an experiment is very low. Let us suppose (see figs. 28 and 30) that the magnetic potential of the toroidal magnet in a "radial" direction is the same as of a long cylindrical solenoid (see formulas (20)) and let us take a reference frame with its x-axis pointing to the right, y-axis pointing from the reader, and z-axis pointing upwards, choosing the origin of the frame at the rightest point of the toroidal axis where the magnetic intensity is pointing upwards. According to formula (19), we shall have for the motional-transformer electric intensity, omitting the index "mot-tr" and supposing that the magnet is jerking with a velocity  $v \sin(\omega t)$ , where  $\omega = 2\pi/T$ , and T is the period of jerking,

$$\vec{E} = (1/c)(\vec{v} \cdot \text{grad})\vec{A} = \frac{v}{c} \sin \omega t \frac{\partial}{\partial x} \left( \frac{Br^2}{2x} \right) \hat{y} = - \frac{v}{2c} \frac{Br^2}{x^2} \sin \omega t \hat{y} = - \frac{v Br^2 \sin \omega t \hat{y}}{2c \{r + (v/\omega)(1 - \cos \omega t)\}^2}, \quad (44)$$

where r is the radius of the cross-section of the toroidal magnet. For a quick calculation of the order of the effect, let us assume  $r \gg v/\omega$ . Then we shall have for the magnitude of the flowing current, supposing that the length of the wire is l and its capacitance C,

$$I = \frac{dQ}{dt} = \frac{v B \omega l C}{2c} \cos \omega t, \quad (45)$$

where Q = EIC is the quantity of electric charge separated at the ends of the wire at the moment t. If R is the ohmic resistance of the wire, the power produced will be

$$P = \frac{1}{T/4} \int_0^{T/4} I^2 R dt = \frac{v^2 B^2 \omega^2 l^2 C^2 R}{2\pi c^2} \int_0^{\pi/2\omega} \cos^2(\omega t) d(\omega t) = \frac{v^2 B^2 \omega^2 l^2 C^2 R}{8c^2}. \quad (46)$$

Putting here  $v = 10$  cm/sec,  $B = 10,000$  gauss,  $\omega = 2\pi$  rad/sec,  $l = 10$  cm,  $C = 10$  cm (supposing that at the ends of the wire two metal balls with radii of about 10 cm are attached),  $R = 1 \text{ M}\Omega = (1/9)10^{-5} \text{ cm}^{-1} \text{ s}$  (abohm), we obtain  $P \cong 6 \times 10^{-13} \text{ erg/sec} = 6 \times 10^{-20} \text{ W}$ . As the energy produced is very small, this motional-transformer inductor has no chance for any practical use.

It is extremely important to note that, if working in a laboratory moving in absolute space with a velocity  $\vec{V}$ , and a piece of wire is solid to a toroidal magnet, then in this wire a motional-transformer electric intensity will be induced which is to be calculated according to formula (19"), where  $\vec{A}$  is the laboratory magnetic potential at the reference point. For the case described above, we can use the same formula (44), by substituting into the expression next to the last  $\sin \omega t = 1$ ,  $x = r$  (for points very near to the mag-

net),  $v = V$ , thus obtaining

$$\vec{E} = (1/c)(\vec{V} \cdot \text{grad})\vec{A} = - (VB/2c)\hat{y}. \quad (47)$$

The same result can be obtained directly from the relative Newton-Lorentz equation (10), putting there

$$\phi = 0, \quad \partial\vec{A}/\partial t = 0, \quad \vec{A} = \{Br^2/2(x^2 + y^2)\}(-y\hat{x}, x\hat{y}, 0), \quad (48)$$

where  $-y(x^2 + y^2)^{-1/2}$  and  $x(x^2 + y^2)^{-1/2}$  are the cosines of the angles between  $\vec{A}$  and the x- and y-axes, respectively, and taking in the final result  $y = 0$ , as formula (44) is written for the points at the x-axis, and then  $x = r$ , when considering a point near the right extremity of the toroidal solenoid.

Now I shall show that motional-transformer electric tension can be induced in a closed wire which lies thoroughly outside the magnetic intensity field of the moving magnet. Let us have two coaxial long cylindrical solenoids. Suppose that the internal (primary) solenoid is of elastic wire wound on a cylindrical balloon which can increase its diameter by increasing the pressure of the gas filling it. If we shall increase and decrease periodically the diameter of the balloon, the cylindrical solenoid will also increase and decrease its diameter and, as constant current flows along its wire, the produced magnetic intensity in its internal space will remain the same (see formula (20)), but the produced magnetic flux will change periodically. Consequently an alternating electric tension will be induced in the external (secondary) solenoid.

The magnitude of the induced tension can be very easily calculated. In fig. 30 I present a cross-section in the xy-plane of the toroidal magnets from figs. 28 and 29, and I plot the values of the magnetic potential at the points along the x-axis. The magnetic potential along the positive x-axis is the same (almost the same) as of a long cylindrical solenoid, so that at the points N and M the magnetic potential will be, respectively,  $A_N$  and  $A_M$ . When the solenoid increases its radius from  $r$  to  $r'$ , the magnetic potential at point M will increase from  $A_M = 2\pi n I r^2 / cr'$  to  $A'_M = 2\pi n I r' / c = A_N$ , i.e. with  $\Delta A = A'_M - A_M = 2\pi n I (r'^2 - r^2) / cr'$ . If the momentary velocity of expansion is  $v_{\text{mom}} = v \sin(2\pi/T)$ , where  $T$  is the period of expansion-contraction, the average velocity will be  $v_{\text{av}} = 2v/\pi$ . Thus the time of expansion will be  $\Delta t = (r' - r) / v_{\text{av}} = \pi(r' - r) / 2v$ , and the average motional-transformer electric intensity induced at point M (i.e., at a distance  $r'$  from the axis of the solenoid) will be

$$\vec{E} = - \frac{1}{c} \frac{\Delta\vec{A}}{\Delta t} = - \frac{4nIv}{c^2} \frac{r' + r}{r'} \hat{y}. \quad (49)$$

If the second solenoid has  $n'$  turns, its length will be  $l' = 2\pi r'n'$ , and the average value of the alternating tension induced in it will be

$$U = El' = 8\pi nIv(r' + r)n'/c^2 = 2vB(r' + r)n'/c. \quad (50)$$

In the system SI this formula is to be written without the "c" in the denominator<sup>2</sup>, so that taking  $v = 1$  m/sec,  $B = 1$  T,  $r = r'/2 = 0.01$  m,  $n' = 100$ , we obtain  $U = 6$  V.

Such an experiment can be carried out very easily by making the wire of the primary solenoid of a "telescopic" type (remember the antennas of the portable or car radios). To ensure that no change in the feeding current should appear, one can connect the ends of the "links" by flexible wire as shown on the left upper side of fig. 30. As far as I know, such an experiment has neither been performed nor considered in some text-book or paper. If it had been carried out, then the wrong dogma that the magnetic potential cannot be "physically observed" had long ago to be discarded. It is interesting to note that if the primary solenoid will be with a greater diameter than the secondary, the pulsations of the former will not induce tension in the latter as a change of the magnetic potential at the points of location of the secondary solenoid does not appear.

The induction in the delineated experiment is not transformer but motional-transformer. This can be clearly seen from formula (49), as the induced intensity depends on the velocity of the current elements of the primary solenoid in which the flowing current is constant. Thus such a machine is not a transformer but a generator.

Now we have to pose the question, where from will the energy for the induced electric power come. In a transformer the energy for the induced power "comes" from the electric source supplying current to the primary coil because of the back tension re-induced in the primary coil which is always opposite to the primary tension. In a generator the energy for the induced power "comes" from the mechanical energy of the

"rotor" because of the magnetic braking. This is also the case in our "generator": the magnetic field originated by the electric current induced in the external solenoid will act magnetically on the radially expanding and contracting windings of the internal solenoid braking always their motion. Indeed, looking at the right cross-section of the toroidal solenoid in fig. 30, we see that if, at a counter-clockwise direction of the current, the internal solenoid extends, the current induced in the external solenoid will be clockwise (see formula (18)) and its magnetic field will point from the reader, so that the magnetic forces applied to the current elements of the internal solenoid (see formula (17)) will act oppositely to their motion, i.e., contracting the windings.

I found (fig. 29) a way to eliminate the braking ponderomotive action in a motional-transformer inductor similar to the one just described: In the "gap" of a torus of soft iron with permeability  $\mu$  there are two similar disks consisting of an equal number of sectors of axially magnetized magnets. The space between the sectors is non-magnetizable material, say, bronze. The one disk is solid to the torus and the other one can be rotated by an electromotor. When the sectorial magnets of the rotating disk overlap the sectorial magnets of the solid disk, the magnetic flux in the torus has a certain value  $\Phi = B(S/2)$ , where  $B$  is the magnetic intensity originated in those "sectors" of the torus which "overlap" the overlapping sectorial magnets,  $S$  is the cross-section of the torus, and I assume that the magnetic intensity in those "sectors" of the torus which overlap the bronze sectors is zero. When the sectorial magnets of the rotating disk overlap the bronze sectors, the magnetic flux in the torus is  $\Phi' = B'S$ , where  $B' = (\mu'/\mu)B$  is now the magnetic intensity in the whole torus and  $1/\mu' = 1/\mu + L_d/L_t$ , where  $L_d$  is the thickness (the height) of any of the two disks and  $L_t$  is the middle length (middle circumference) of the torus. If  $\mu \gg L_t/L_d$ , a case which can be easily realized, we can assume  $\mu' \approx L_t/L_d$ , thus  $B' \approx \{(L_t/L_d)/\mu\}B$ , and as we assumed  $\mu \gg L_t/L_d$ , we can set  $B' \approx 0$ , and consequently  $\Phi' \approx 0$ . As

$$\Phi = \int_S \vec{B} \cdot d\vec{s} = \int_S \text{rot} \vec{A} \cdot d\vec{s} = \oint_L \vec{A} \cdot d\vec{l}, \quad (51)$$

where  $L$  is the circumference of the surface  $S$ , we shall have for the magnitude of the alternating motional-transformer electric tension induced in a wire consisting of  $n$  turns wound on the torus

$$U = n \frac{\Delta}{c \Delta t} \oint \vec{A} \cdot d\vec{l} = \frac{n}{c} \frac{\Delta \Phi}{\Delta t} = \frac{n}{c} \frac{\Phi - \Phi'}{1/pN} \approx \frac{nBSpN}{2c}, \quad (52)$$

where  $p$  is the number of the sectorial magnets in one of the disks and  $N$  is the number of revolutions per second of the rotating disk. In the system SI the last formula is to be written<sup>2</sup> without the "c" in the denominator, so that taking  $n = 100$ ,  $B = 1$  T,  $S = 0.0025$  m<sup>2</sup>,  $p = 4$  (as in fig. 29),  $N = 10$  rev/sec, we obtain  $U = 10$  V.

It is evident that in this generator the motion of the rotating disk cannot be braked by the magnetic field produced by the electric current induced in the solenoid, as this magnetic field has a rotational symmetry in the "gap" about the axis of rotation of the disk. On the other hand, as the width of the "gap" is practically  $2L_d$  (let us assume that the permanent magnets have a very high remanence, so that we can set  $\mu_{\text{magn}} \approx \mu_{\text{bronze}} \approx 1$ ), the magnetic intensity,  $B_{\text{ind}}$ , originated in the torus by the current induced in the solenoid will be very low. This machine, evidently, can be only a generator but cannot be a motor, because if feeding the coil by an alternating tension, the disk cannot be set in motion. The motional-transformer inductors of this type can be called non-polar machines, as no pieces of the coil lie "under the magnetic pole". The non-polar machines can be only generators and since they do not brake the motion of their "rotor", the induced electric energy is produced out of nothing. Feeding the motor in fig. 29 by the current produced in the coil, we shall run the machine eternally, if the motor will overcome the friction of the system. I call this perpetuum mobile MAMIN COLIU, coining the name from the words MARinov's Motional-transformer INductor COupled with a Lightly rotating Unit.

### Conclusions

In the conclusions I shall no more discuss the failure of the theory of relativity. I have shown theoretically and experimentally that this theory is wrong and the resistance of the scientific community is senseless.

Here I wish to discuss shortly only the controversy between the Faraday-Maxwell and Gauss-Weber concepts on electromagnetism, calling for brevity the first the "Saxon" and the second the "German" concepts. First let me note that the fundamental equation of mo-

tion in electromagnetism is the Newton-Lorentz equation but not the Maxwell-Lorentz equations which are a mathematical corollary of the former<sup>2</sup> (I gave above a proof of this assertion for the Maxwell-Lorentz equations (23) and (26)). Further for the German school (and for me) the fundamental electromagnetic quantities are the potentials, while for the Saxon school those are the intensities, which, as a matter of fact, are mathematical products of the potentials. The Newton-Lorentz equation describes the "point-to-point" interaction between the electric charges which is the relevant physical interaction. The Saxon school introduces the notion "force lines" and searches always to close the electric currents introducing the highly speculative notion "displacement current". Then the Saxon school introduces the highly pernicious notion "propagation of interaction". Certain of the concepts of the Saxon school are convenient when performing calculations and for certain "physical explanations". However when one searches to explain the real physical essence of the electromagnetic phenomena, one has always to refer to the simple, "mechanistic", point-to-point German concepts of the Newtonian "far-action". The explanation of the non-, half-, one, one-and-a-half, and two-polar machines is impossible to be done on the grounds of the Saxon concepts. Thus these apparatus kill two birds: the relativity theory and the Maxwell-Faraday field concepts.

Let me note that in Ref. 3 I proposed an experiment (the trick-track perpetuum mobile) by the help of which one can show that the notion "displacement current" has no physical substance. Recently Bartlett and Corle<sup>28</sup> reported of having measured the magnetic action of the displacement current and thus of having established its "physical existence". Maddox<sup>29</sup> immediately cheered this big experimental "success". In the experiment of Bartlett and Corle the displacement current "flows" between the plates of a condenser inserted into a current loop. Until now nobody was able to measure the magnetic action of a current element<sup>3</sup>, as one is unable to screen the magnetic action of the remaining part of the loop. The condenser in the experiment of Bartlett and Corle is such a "current element" in a loop along which moreover an alternating current flows. And Bartlett and Corle succeeded to "measure" the magnetic action of this current element. This is the same as when one cannot teach a calf with one head to play piano, but when one is able to do this with a calf which has two heads. I wish to note, however, that Bartlett and Corle vote for the differential Biot-Savart formula!

And what can I say about the violation of the energy conservation law? The discussion of this big problem will start now and it will be, I think, long. I have constructed perpetua mobilia for 35 years. My Bulgarian wife (who is a philologue) said me very often with sad eyes full of unshed tears: "How can you not understand that something cannot be created from nothing?" After long years of work in the axiomatics of physics I can only say: "Is energy something?"

#### Acknowledgement

The construction of the dc machines described above and their theoretical explanation are due to a high degree to the information which I received from Dr. Francisco Müller (Miami, Florida) in his letters in August and September and during our conversations when he visited me in Graz in October 1983. Dr. Müller has worked on the problem of the unipolar (i.e., half polar) induction for 10 years. He has sent many papers to many journals but all of them have been rejected. "Certain papers have been rejected even 7 times" said to me Dr. Müller sadly. "One should not give up the battle even when a paper is rejected 7 times 7 times", I answered optimistically. Once Dr. Müller saw my book "Classical Physics"<sup>2</sup> in the Miami University, and reading it concluded: "This is the man who will understand me!" I hope that now the whole scientific community will understand him.

Dr. Müller is an exiled Cuban. I am an exiled Bulgarian. I should like to call the one-and-a-half polar machines constructed by me "Bul-Cub" in honour of our two marvelous countries. With this name I wish to pay a last honour to Nicola Krunev, the strange old man who brought me in my youth to the thorny way of a search of a perpetual motion, to whom I dedicated my "Classical Physics". Nicola Krunev wished

to call the perpetuum mobile which he thought of having discovered: the "Bulgarian" motor.

My coupled N-machine of fig.21 is built by the mechanic Florian Hopfgartner without payment after his working hours in a small workshop in Graz and to him I express all my cordial thanks.

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FIGURE CAPTIONS

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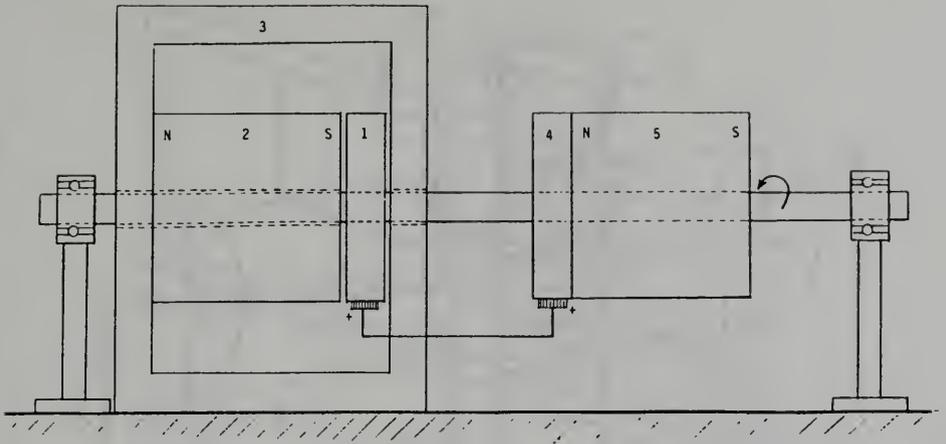


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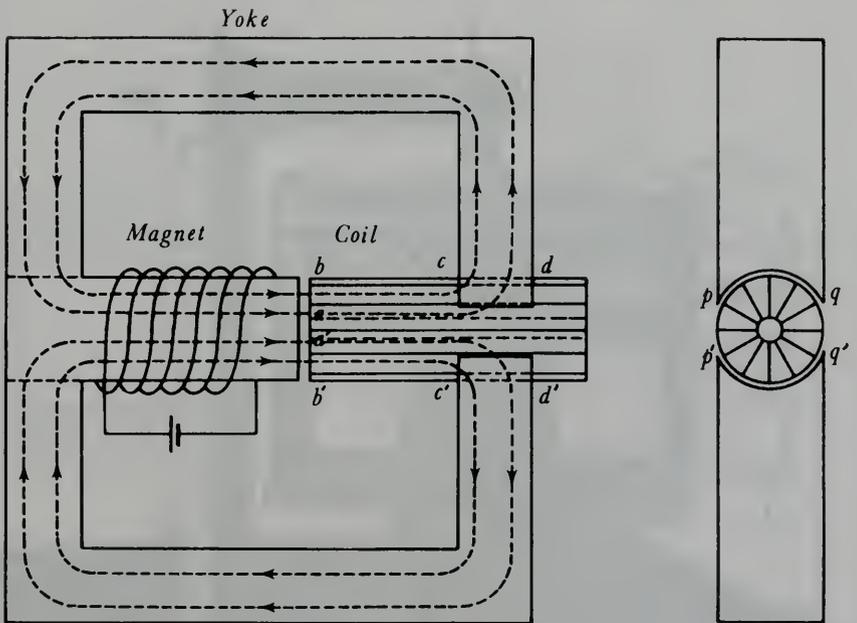


Fig. 2

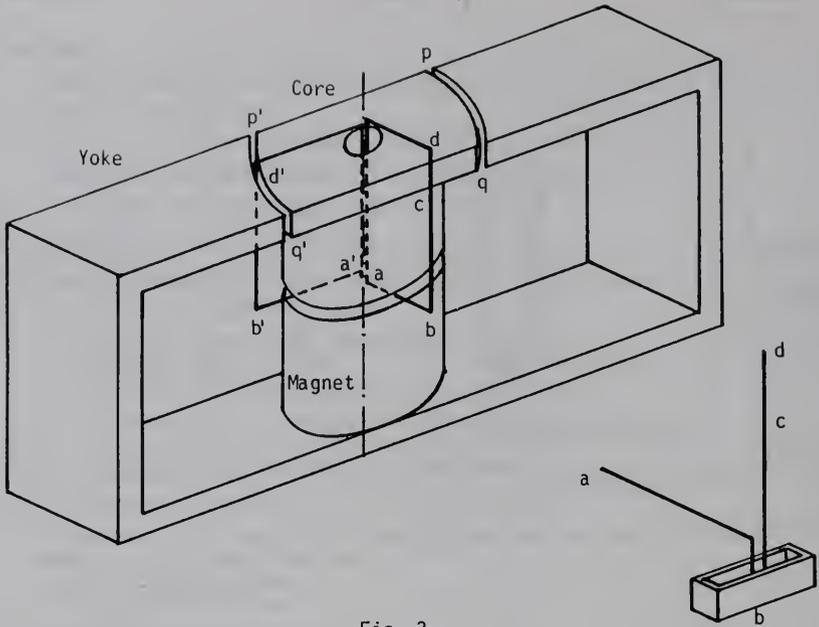


Fig. 3

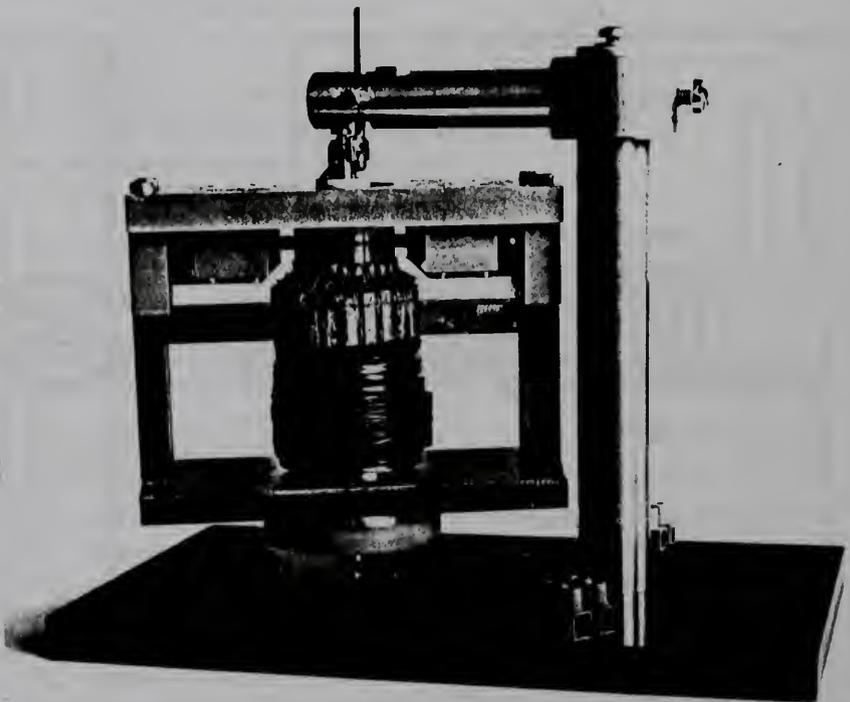


Fig. 4

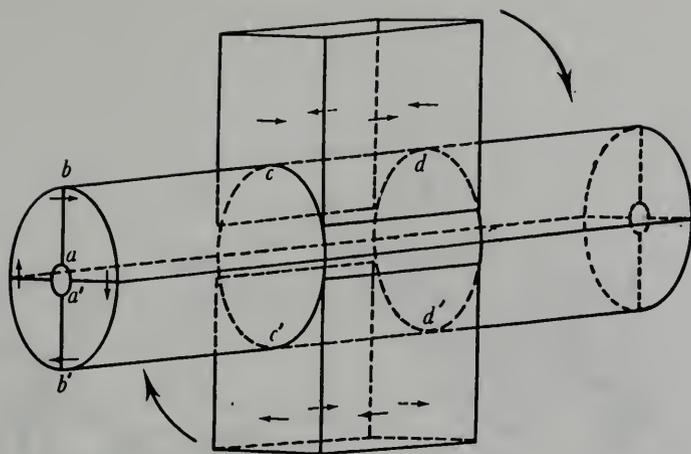


Fig. 5

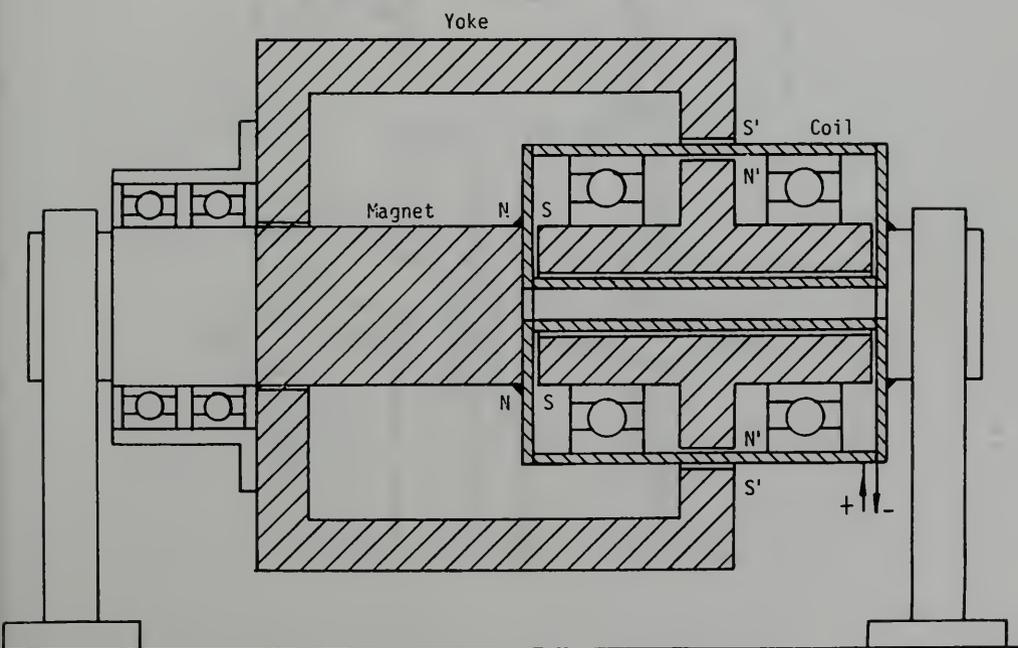


Fig. 6

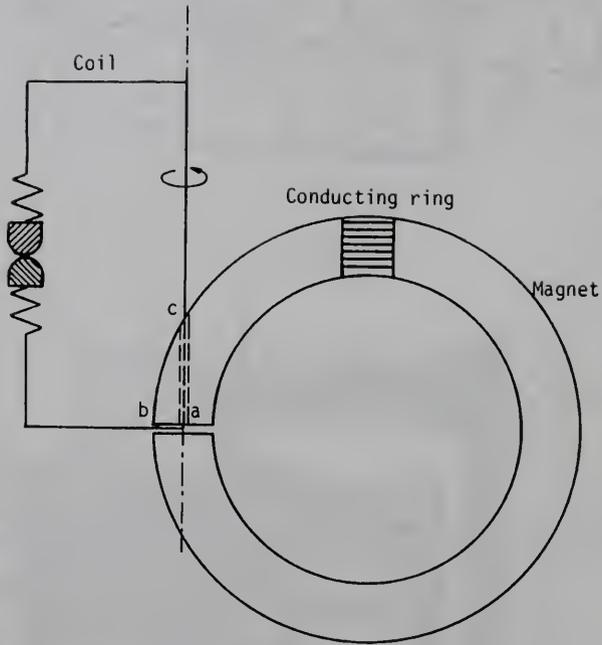


Fig. 7

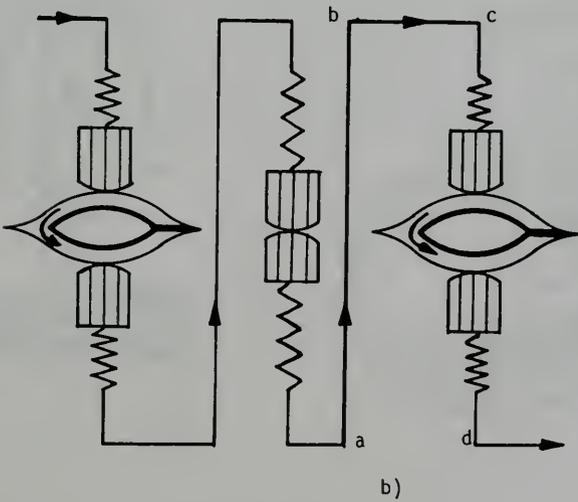
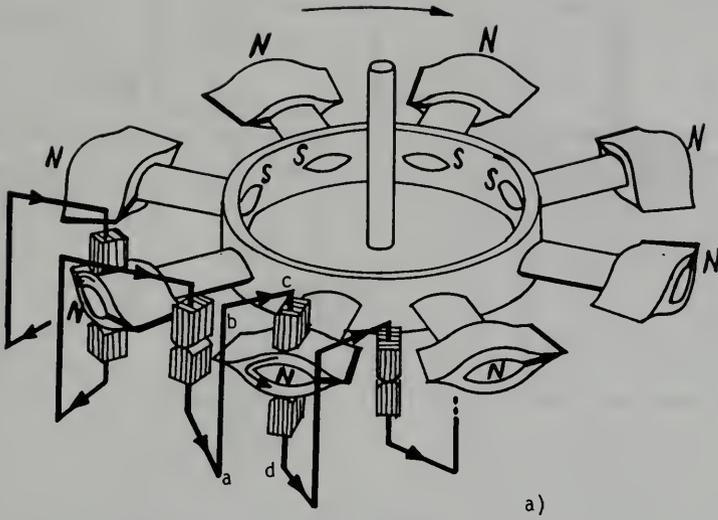


Fig. 8

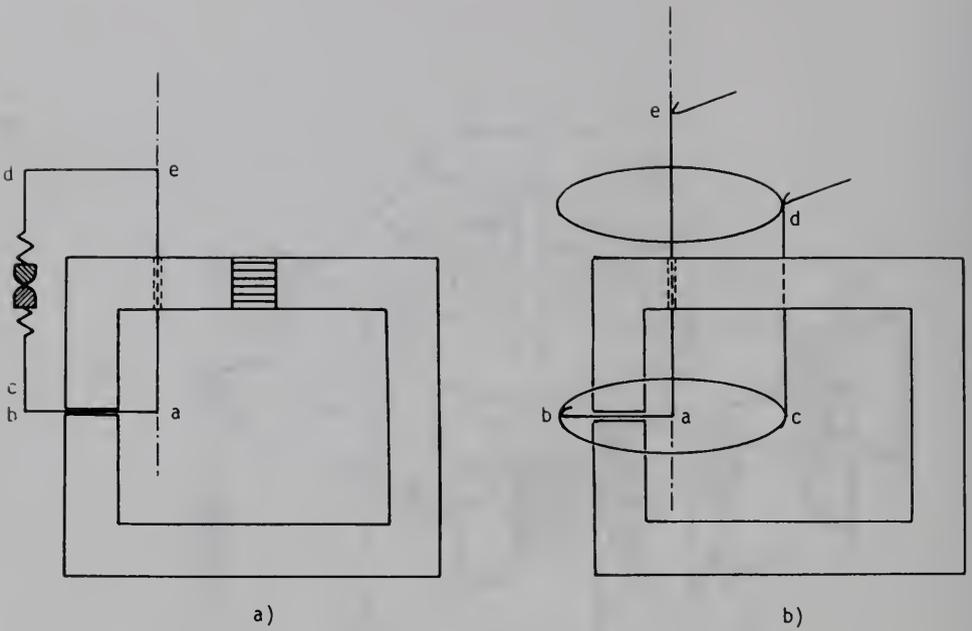


Fig. 9

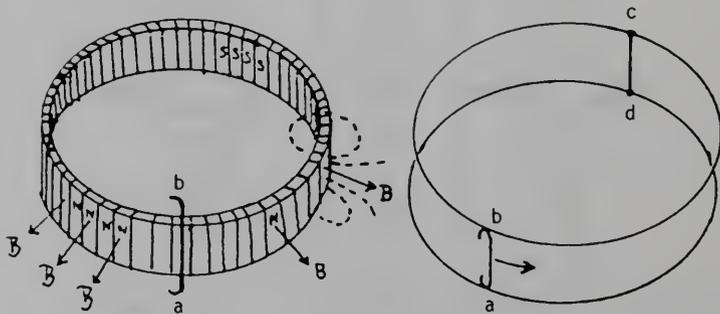


Fig. 10

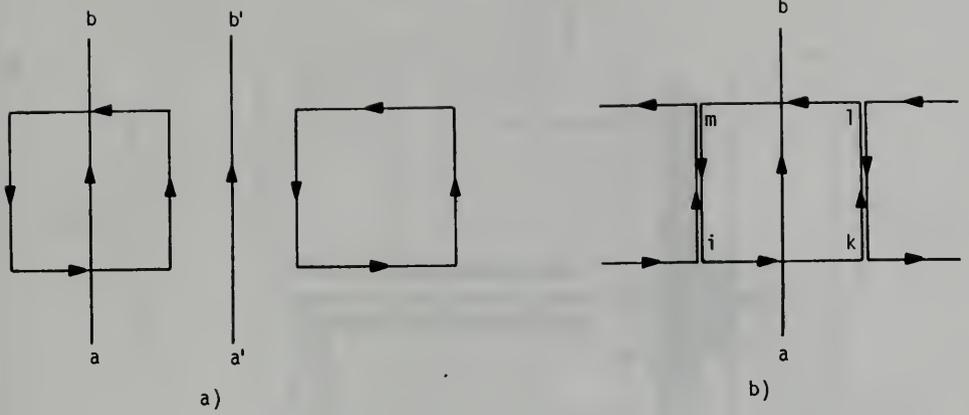


Fig. 11

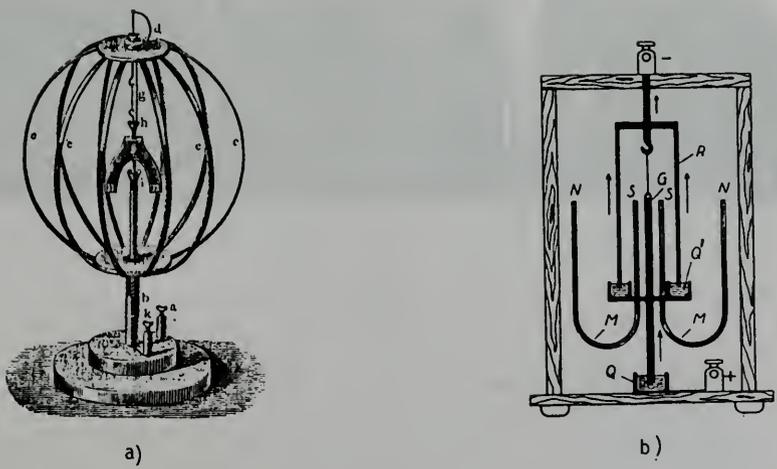


Fig. 12

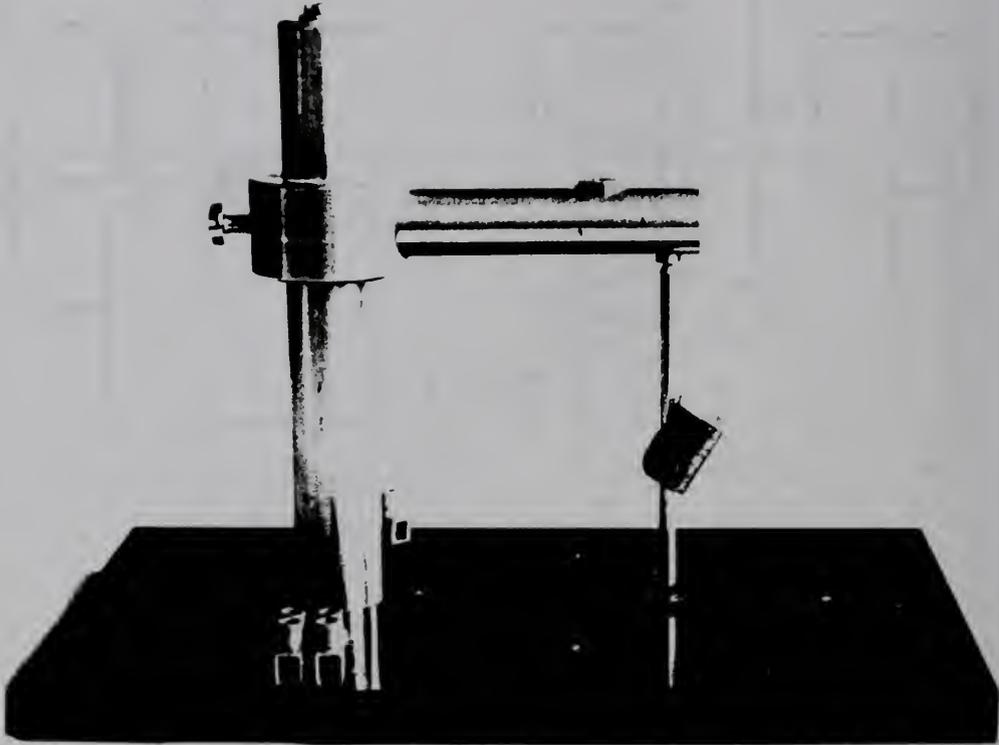


Fig. 13



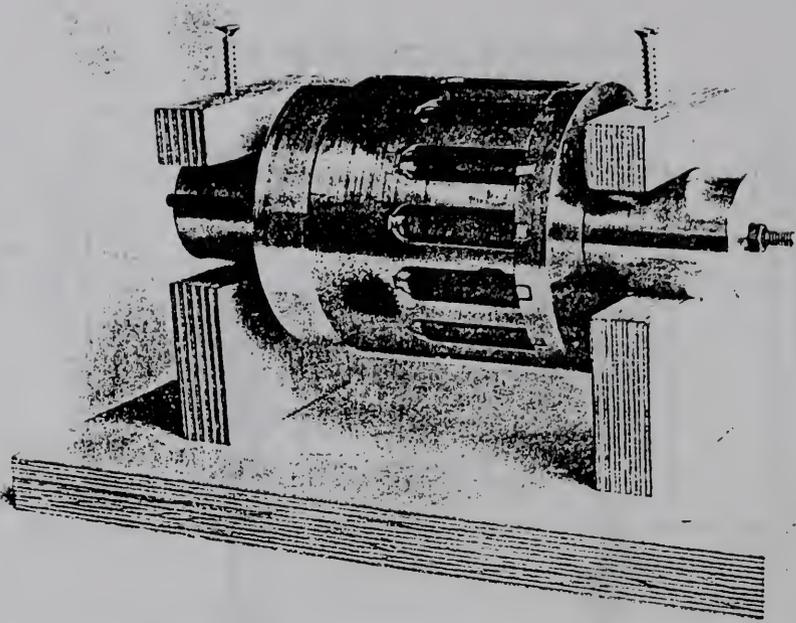


Fig. 15

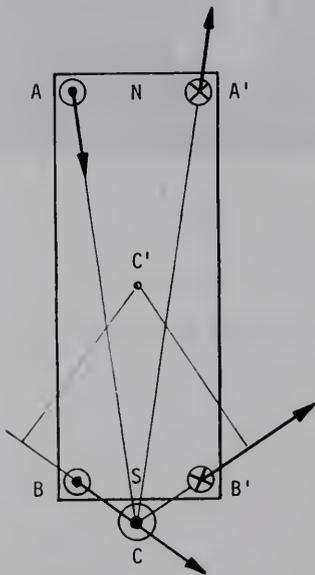


Fig. 16

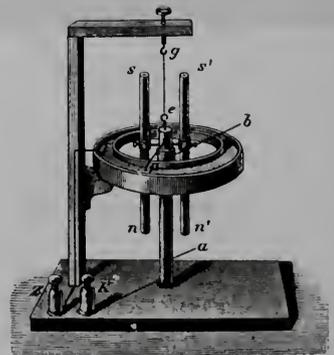


Fig. 17

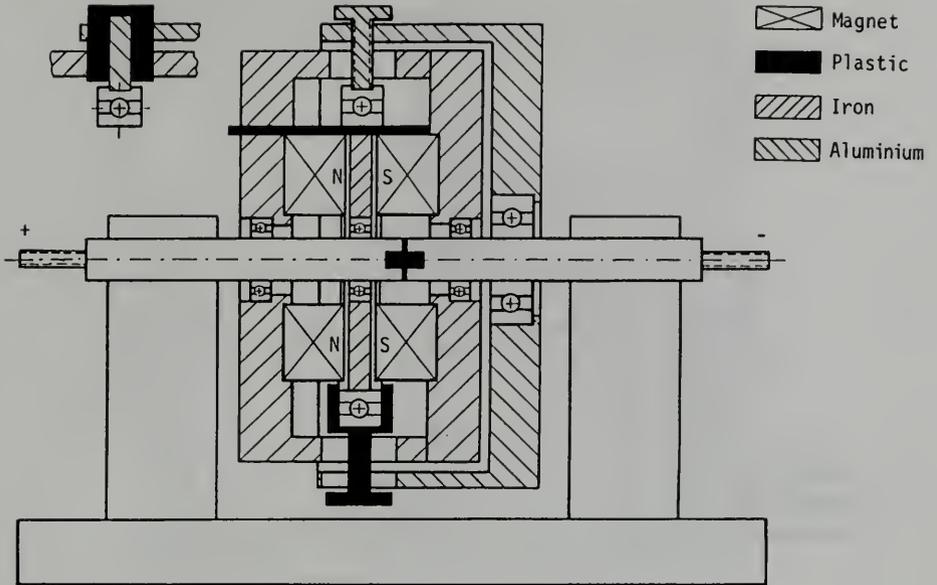


Fig. 18

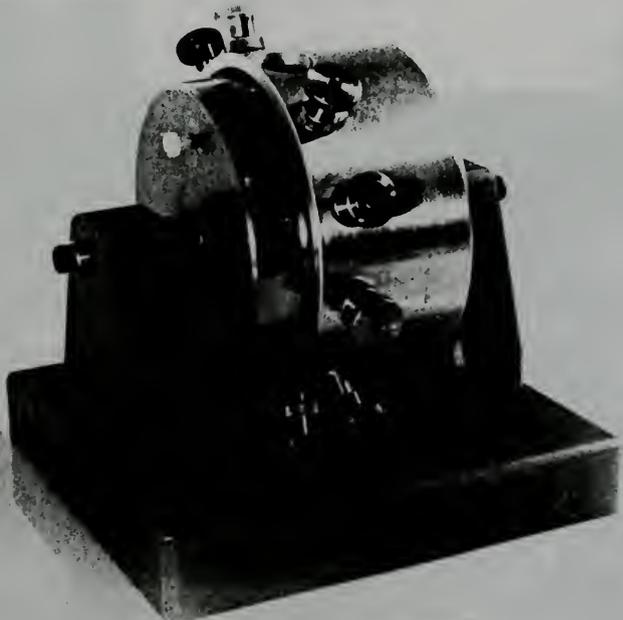


Fig. 19

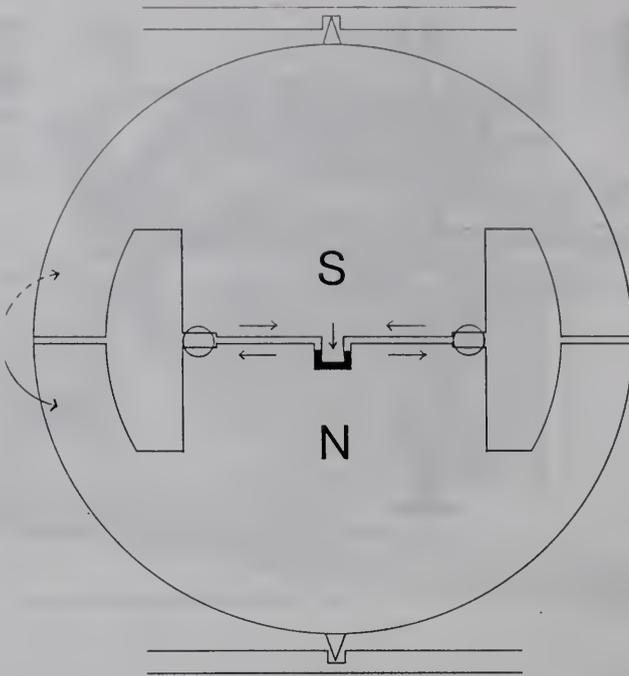
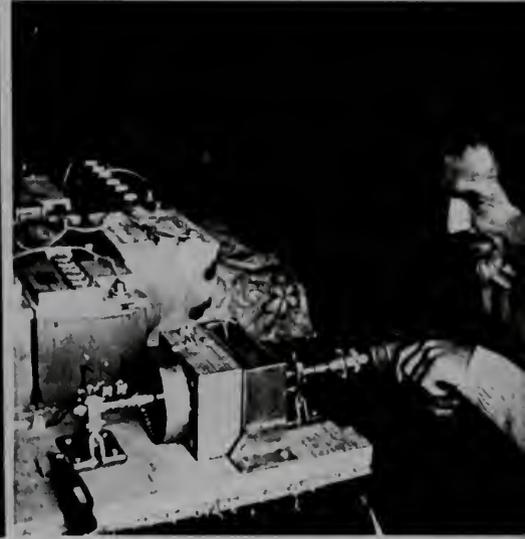


Fig. 20



a)



b)

Fig. 21

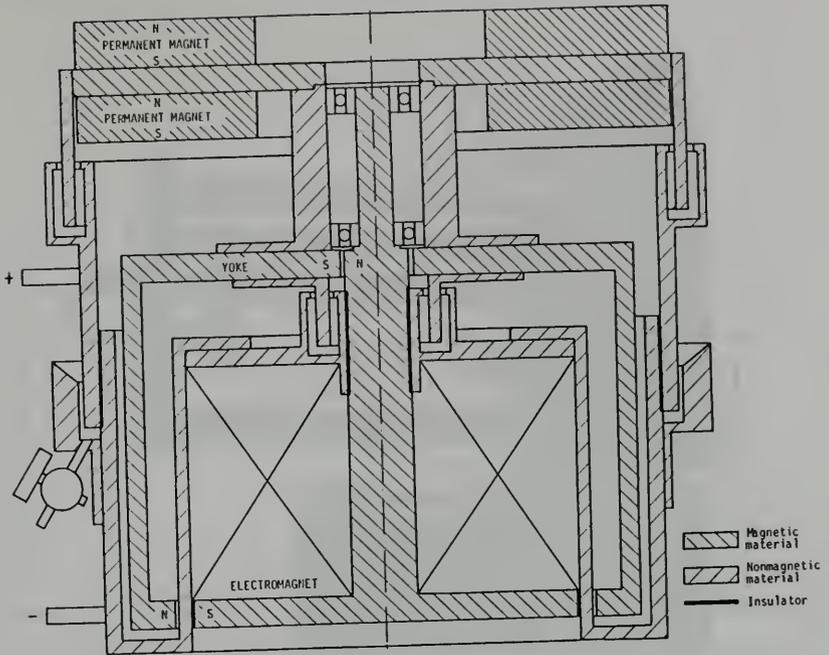


Fig. 22

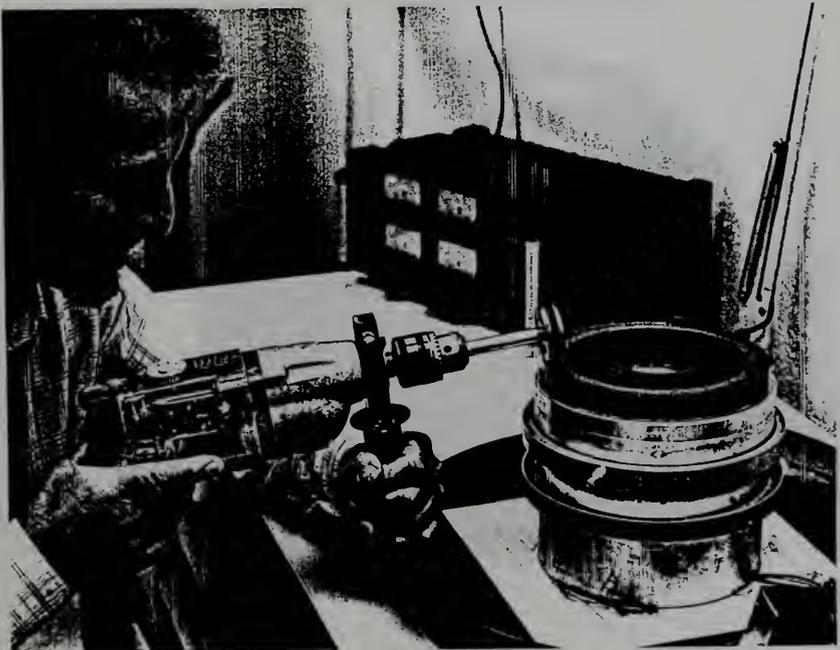


Fig. 23

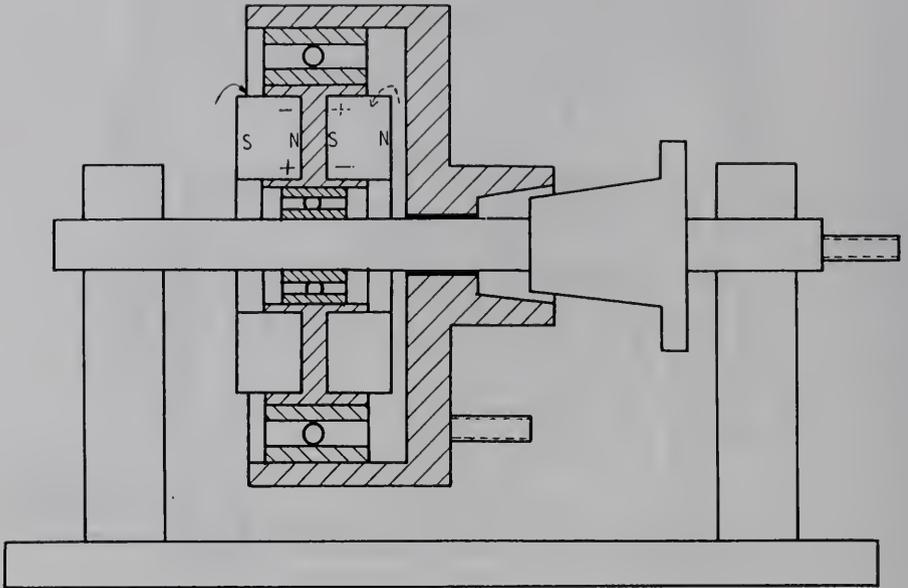


Fig. 24

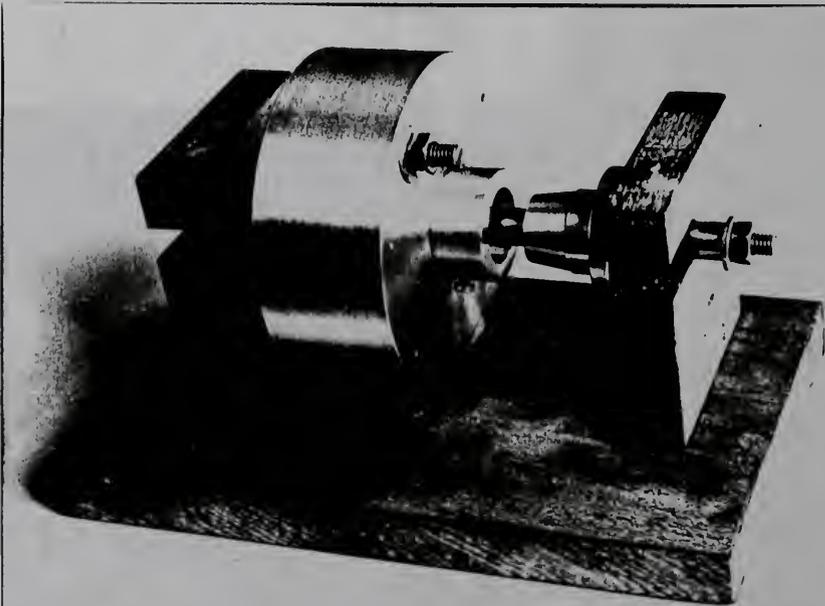


Fig. 25

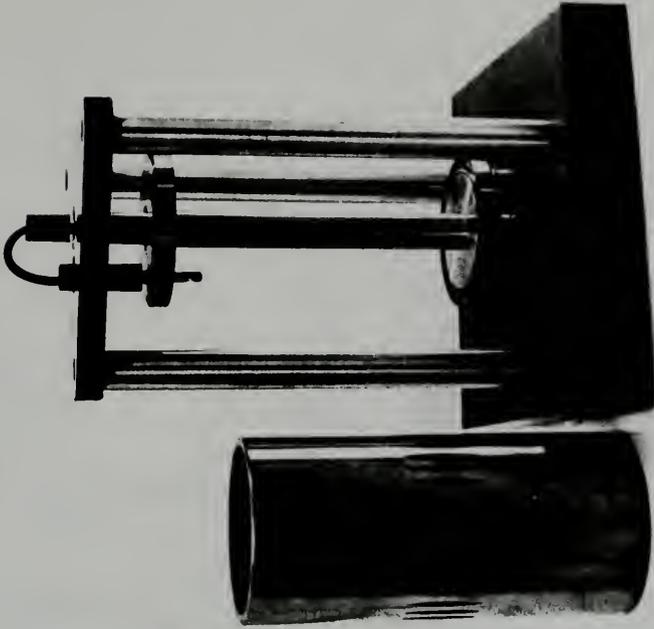


Fig. 27

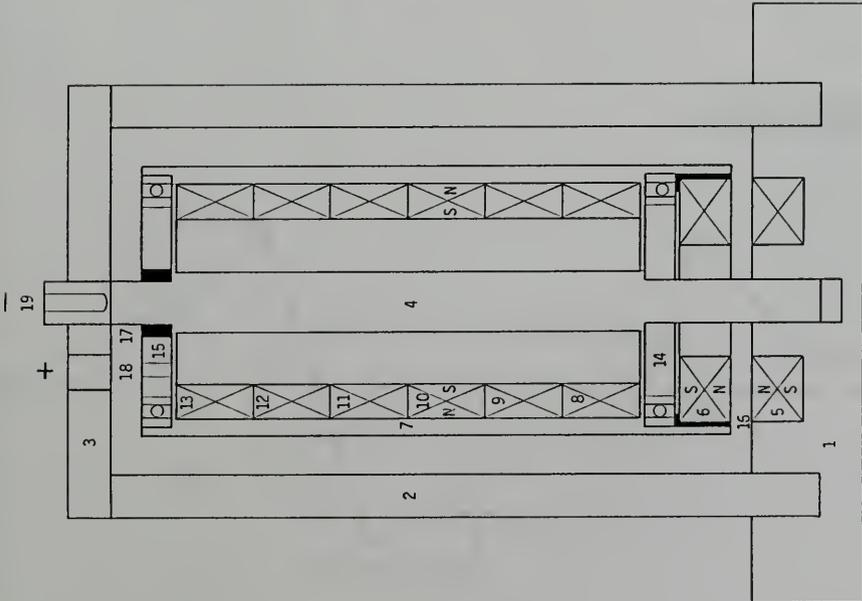


Fig. 26

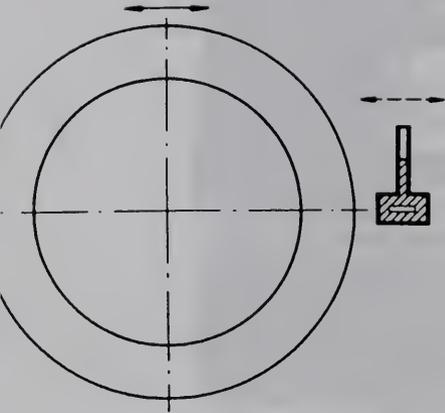


Fig. 28

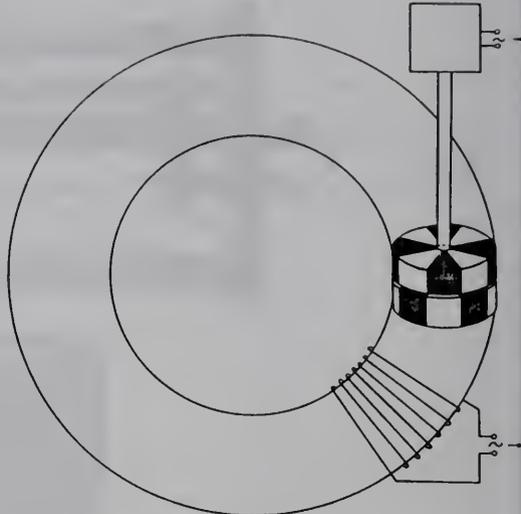


Fig. 29

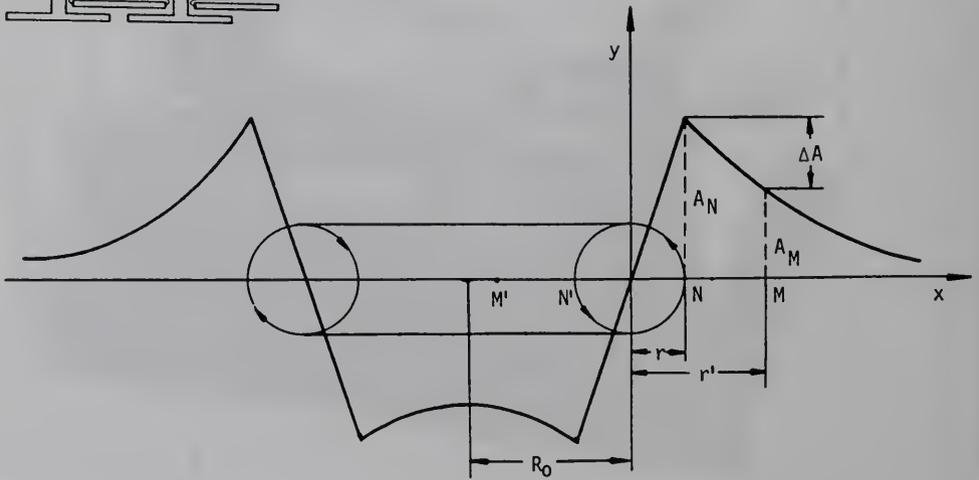
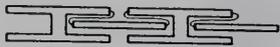


Fig. 30

CLIPPINGS FROM JOURNALS  
AND  
CORRESPONDENCE

Dans tous les pays de l'Est, l'opposition se développe. La semaine dernière, nous apprenions que, durant le mois d'août de cette année, des milliers de mineurs étaient partis en grève en Roumanie. Au même moment, la KOR (Comité de défense des travailleurs qui furent victimes de la répression qu'il allait élargir son champ d'intervention. En fait, sous l'impulsion de Jakac Kuron et d'Adam Michnik, le KOR se transforme petit à petit en force politique d'opposition. Au même moment encore, les bureaucrates tchoslavaques faisaient une nouvelle tentative, ratée, pour réprimer la Charte 77, le mouvement d'opposition, dont trois membres furent condamnés.

Qu'en Bulgarie aussi, dans ce pays de tous points de vue le plus arriéré des pays de l'Est, une opposition se développait, nous l'ignorions jusqu'à ce que nous rencontrions cette semaine Stefan Marinov, un dissident bulgare, dont voici un interview. Elle Gross, du Comité du 1er mai pour les libertés démocratiques et les droits des travailleurs dans les pays de l'Est nous le présente.

• Qu'est-ce qui a fait de toi un contestataire ?

Les déviations de la vie politique et sociale en Bulgarie, qui entraînent en contradiction déclarée avec mes idées d'une société socialiste et avec les descriptions de cette société présentées dans les livres de nos maîtres. A chacun qui affirme que la vie économique et les relations sociales en URSS et dans les pays de l'Est représentent la réalisation des idées de Marx, je dis : « Vous n'avez pas lu Marx ». Et je dis au revoir.

• Alors, d'après toi, les pronostics de Marx sont un mensonge historique ? Marx, bien sûr, est compris et analysé assez bien, la structure économique et sociale de la société capitaliste qu'il a observée ; mais d'après toi, comme prophète il n'aurait pas eu la chance de nous dire la vérité ?

Marx est aussi excellent comme futurologue. La tendance historique à l'expropriation de la richesse bourgeoise qu'il a pronostiquée est devenue réalité au XXème siècle. Mais Marx a aussi considéré les perversions qui peuvent se produire dans les futurs États « collectivistes ». Une aussi grande tête ne peut être naïve. Marx a consacré des centaines de pages aux « révolutionnaires » qui peuvent devenir un plus grand malheur social que les « réactionnaires ».

• Te considères-tu encore communiste malgré tout ?

Certainement. Et je pense que seuls les gens qui combattent activement les perversions sociales dans nos pays peuvent être considérés comme communistes. Dire que les gens du KGB et ceux qui collaborent avec eux sont des communistes, c'est la même chose que dire que les juifs qui brûlaient des étres vivants étaient chrétiens. Ou Jésus Christ n'a-t-il dit que les gens dans le feu parce que le diable serait entré dans leur éme ? Ou Marx n'a-t-il dit de jeter les gens en prison et en salle psychiatrique pour leurs idées ?

• Y a-t-il en Bulgarie des cas de contestation ouvrière, comme en Pologne ou en Roumanie, ou bien la contestation est restée uniquement l'apanage des intellectuels ?

Chez nous, on ne sait pas ce qui se passe dans le pays. La presse officielle n'écrit rien sur les événements « désagréables ». L'information qui vient de l'étranger (par le radio ou par la presse) est mélangée. Alors, ce qui reste ce sont les rumeurs. Mais les rumeurs, je ne les aime pas. Très souvent, il y a des exagérations fantaisiques.

Selon moi, des contestations ouvrières, c'est-à-dire des

grèves ou des manifestations, il n'y en a pas eu. Mais il n'y a pas eu non plus de contestation des intellectuels (par contestation, j'entends une protestation écrite ou dite en public). La plus grande contestation chez les écrivains, c'est d'écrire des fables sur la vie et les mœurs des années, des singes, des loups et des brebis, oubliant qu'Esopo était un esclave et que jamais un Sophocle ou un Euripide n'aurait fait « détour de parler des âmes des animaux ».

Il y en a d'autres, plus courageux, qui écrivent des épiques. A ce propos, je me rappelle ce qu'écrivait un Vénitien au XVIIIème siècle : *Ecrire des épiques contre les tyrans, c'est assez amusant. Mais de temps en temps, on doit dire aux tyrans ouvertement : « Fichas le camp ! »*

• As-tu des liens avec des contestataires d'autres pays de l'Est ?

Mon unique lien est Sakharov. Je ne le connais pas personnellement. Le contact était établi par lettres (envoyées via Londres) et par une autre voie. Si je pouvais me payer un voyage à Moscou, j'irais tout de suite le voir. J'ai beaucoup de choses à discuter avec lui.

• Quel type d'action contestataire crois-tu possible actuellement en Bulgarie ?

La contestation en Bulgarie et dans tout notre camp sera seulement non violente. Jusqu'à présent, dans tous les pays de l'Est elle a été non violente.

Pourquoi ? La machine politique est tellement corrompue que n'importe quelle opposition violente sera étranglée avant de surgir. On ne peut s'imaginer qu'en Bulgarie ou en URSS on puisse envoyer un Schliyer et le tenir caché pendant des semaines. Tu vois bien comment le police a su « épurer » déjà notre contestation.

D'après moi, seule la révolution violente, dans n'importe quel pays, peut être effective. Chaque action violente tue l'âme de la révolte. Je pense que l'assommoir révolutionnaire qu'on doit suivre, c'est Jésus Christ, et pas Che Guevara (pour qui, naturellement, j'ai une très haute estime). Je ne connais pas très bien la situation en Pérou du Sud, mais pour nos pays, je m'assure que l'on va seulement voir une contestation par le parole.

• Qu'y a-t-il à changer pour retourner à la démocratie socialiste pour laquelle tu te bats ?

Beaucoup, et en même temps très peu. Le peuple doit se sentir libre. Nos lois sont parfaites. Le problème de l'expropriation de la richesse bourgeoise n'existe pas. Les nouveaux chefs ont construit des palais pour eux, mais ad-

ministrativement, ils appartiennent à l'Etat. Si les Bulgares demain, en ouvrant le fenêtre pour qu'entre le soleil, disent : « Et voilà, nous sommes libres », la Bulgarie sera le plus heureux pays du monde.

• Et la police ?

Qu'est-ce qu'elle peut faire ? Elle va diriger le trafic et occuper des ivrognes...

## qui est stephan marinov ?



Stefan Marinov est un physicien bulgare qui a élaboré une théorie Espace-Temps qui conteste la théorie de la relativité d'Einstein. Il est aussi un contestataire, non violent, et se présente comme un véritable communiste.

Dès le début des années 80, il distribue des tracts pacifistes et antimilitaristes pendant le congrès mondial des étudiants à Sofia. Il est interrogé par la police. En 1966, à la suite d'une série de lettres adressées au ministre de l'Intérieur, il est emprisonné pendant 10 jours, puis enfermé dans une salle psychiatrique. Déclaré paranoïaque, les médecins essayent de le « guérir » par de fortes doses de médicaments ; après un simulacre de procès, il est remis en liberté, mais il est constamment contrôlé par la police.

En septembre 1973, lorsque Brejnev visite Sofia, Stefan Marinov est arrêté durant tout le séjour du secrétaire général du PCUS. Marinov publie ensuite des poèmes et des satires. Réaction de la bureaucratie bulgare : on déchoit le phy-

sicien de son titre et on l'appointe comme traducteur (il parle 8 langues). En mars 74, il est chassé de l'Institut et on lui accorde une pension de maladie mentale.

Après avoir pressé les diplomates français de faire parvenir ses écrits à l'Ouest, il est arrêté et échoue de nouveau en salle psychiatrique. Il s'évade et se rend naïvement à l'ambassade américaine, où il est roué de coups par des policiers bulgares épéés par les diplomates. Il explique, plus tard que les seuls coups qu'il reçut, ce fut sur ce territoire américain.

Enfermé, drogué, puis libéré après 3 mois, il tente d'organiser à Varna, du 5 au 16 mai 1977, une conférence scientifique internationale, présidée par Andreï Sakharov. Mais il est à nouveau arrêté le 15 avril et la conférence est décommandée parce que l'on craint un tremblement de terre. Après 20 jours de prison, il est libéré. Il est à nouveau arrêté le 15 avril et la conférence est décommandée parce que l'on craint un tremblement de terre. Après 20 jours de prison, il est libéré. Il est à nouveau arrêté le 15 avril et la conférence est décommandée parce que l'on craint un tremblement de terre. Après 20 jours de prison, il est libéré. Il est à nouveau arrêté le 15 avril et la conférence est décommandée parce que l'on craint un tremblement de terre.

Elle Gross.

THE DAILY TELEGRAPH, 30 January 1978

## SCIENCE

ADRIAN BERRY

THE REPUTATIONS of great scientists can often be imperilled as much by the actions of their own supporters as by the attacks of their opponents. A case in point is Dr Andrei Sakharov, the distinguished Soviet dissident whose name is frequently taken in vain by a Bulgarian fringe scientist named Stefan Marinov.

This bizarre story has been largely unearthed by Vera Rich, who writes about Iron Curtain dissident affairs for *Nature*. Last week she published evidence that Marinov had signed Sakharov's name, without his permission, to the preface of a pamphlet he had written attempting to debunk Einstein's theories of relativity.

Now, Sakharov, between his heroic attempts to alleviate suffering in Russia, is well known as a specialist in the general theory of relativity; so any book or pamphlet which he appeared to have recommended, no matter how thirderate it was, would at once seem to have scientific distinction.

As far as science is concerned, Marinov cannot be taken seriously. In 1976, he took a whole page advertisement in the *New Scientist* to announce an international scientific conference on "space-time absoluteness." The idea behind this conference, which was never in fact held, was to publicise his 1974 "coupled mirrors experiment," which purported to show that the speed of light differed according to the time of day at which it was measured.

If this were true, it would destroy the main postulate of the special theory of relativity, namely that the speed of light is the same for all observers. But the English-language Czechoslovakian *Journal of*

## With a friend like this . . .

*Physics*, in which Marinov described his experiment, carried an extraordinary footnote, almost unknown in a scientific journal, saying that his results were "too crude to be convincing."

From the start, Marinov invoked Sakharov's name in his support. The *New Scientist* advertisement declared that Sakharov himself was to be patron of the conference, although Sakharov himself had not been consulted. Marinov had written to him in Moscow in the best tradition of inertia salesmen, saying that, unless he heard to the contrary, it would be assumed that Sakharov had no objection to being named as patron of the conference.

After this non-conference, and after Marinov had spent three spells in a Bulgarian mental hospital, he was allowed to emigrate to Belgium, where he is now living.

This part of Marinov's life is obscure. It is not clear whether he was a political dissident, as well as a scientific one, or whether the Bulgarian Communists wished to destroy or discredit him because he appeared to be an associate of Sakharov's.

Last October, the news magazine *Pourquoi Pas* carried a long and praising article about Marinov, calling him "the scientist who came in from the cold," and quoting his anti-relativity tract and the laudatory

I CANNOT too strongly recommend a particularly beautiful book being published today. The *New Challenge of the Stars*, written by Patrick Moore and illustrated by David Hardy (Mitchell Beasley, £4.95).

It updates their earlier book, "Challenge of the Stars," with illustrations based on the film "Star Wars" and other paintings depicting future journeys to the stars. Describing itself as a "science fact look at science fiction," the book has a foreword by Arthur C. Clarke.

preface allegedly signed by Sakharov.

But had Sakharov really signed it? Vera Rich made energetic efforts to find out, and through an intermediary received two separate messages in reply. The first said: "Academician Sakharov knows of the book, but did not wish to be associated with it, as he does not agree with the theory."

The second was much blunter in its comments on Marinov, although adding: "But I wouldn't want to condemn anyone to a mental hospital."

This whole saga could, nonetheless, have highly dangerous implications for Sakharov. The KGB has often accused him of having "abandoned betrayed science for so-called dissidence."

The manoeuvrings of a man like Marinov, intent on publicising his own pseudo-science, could be seen to bring substance to these infamous charges.

As Vera Rich remarks, the story is yet another illustration of the falsehoods and misunderstandings which can grow when Governments restrict the freedom of scientific contact and correspondence.

Editorial note. In an article published in THE DAILY TELEGRAPH in the spring of 1977 Mr. Adrian Berry appeared with the allegation that Marinov is special type KGB-agent.

## STEFAN MARINOV Le dissident dissident



Christian DEPOVERE  
Patrick WILCOX

35° - col. - 16 mm - optique

BELLADONA FILMS - 46, rue Léopold Hymans - 1000 Bruxelles - Tél. 021.344.80.02

# Le Festival du court métrage à Namur : primeur du documentaire

LE SCIR, Bruxelles  
31 Octobre 1979

Bien le plus politique que contienne « Stefan Marinov », dit-il. Il s'agit de la relation d'une rencontre de l'homme avec la nature. Il est dans le film un homme qui dit dans un langage simple et direct, sans aucune prétention, ce qu'il a vu et ce qu'il a senti. C'est un homme qui a des enfants, qui aime sa femme, qui aime la nature, qui aime la vie. C'est un homme qui est un homme. Un document de primeur.

### FRANCAIS

Ce document vous propose de suivre Stefan Marinov, un physicien bulgare dissident, dans sa quête de la vérité physique, politique et humaine. Entremêlé trois fois depuis 1967 dans différents asiles psychiatriques en Bulgarie, Marinov vit aujourd'hui en Occident... Il parle de sa théorie physique de l'Espace/Temps (il ne s'agit pas de relativité) et de sa théorie de la matière (il ne s'agit pas de physique quantique) et de sa théorie de la gravitation (il ne s'agit pas de relativité générale). Il est un homme qui a une théorie physique opposée à celle mondialement connue ? Marinov, comme G. Galilée, revendique de pouvoir dire non.

### NEDERLANDS

In deze film kan u Stefan Marinov volgen, een Bulgaars dissident fysicus, bij zijn zoektocht naar de fysieke, politieke en menselijke waarheid. Marinov was sinds 1967 drie keer opgesloten in verschillende psychiatrische gestichten in Bulgarije en leeft thans in het Westen... Hij spreekt ons ook over zijn natuurkundige theorie van Ruimte/Tijd (die ingaat tegen de welbekende theorie van Einstein). Maar is het hebben van een natuurkundige theorie die in strijd is met de wereldwijde kennis voldoende reden om een man in een gesticht op te sluiten? Net zoals G. Galilée ooit Marinov het recht op om neen te mogen zeggen.

### ENGLISH

This film follows Stefan Marinov, a dissident Bulgarian physicist, in his search for political, physical and human truth. He has spent three times since 1967 in various psychiatric hospitals in Bulgaria. He lives today in the West... He tells, too, of his physical theory of time and space (which contradicts Einstein's well-known theory). But is having a physical theory which goes against the universally known one, a sufficient reason for committing a man to an asylum? Marinov, like Galileo, claims the right to say no.

### DEUTSCH

Dieser Dokumentarfilm begleitet Stefan Marinov, einem oppositionellen bulgarischen Physiker auf der Suche nach physischen, der politischen und menschlichen Wahrheit. Seit 1967 dreimal in verschiedenen psychiatrischen Kliniken Bulgariens interniert, lebt er heute im Westen... Er berichtet ebenfalls über seinen physikalischen Theorien der Raumzeit (die im Widerspruch zum Einsteinschen sind). Aber genügt das, ein Mensch in einem Asyl festzubalten? Wie Galilée, verlangt auch Marinov das Recht, nein zu sagen.

A la Maison de la Culture de Namur

## Les cinquièmes journées du court métrage belge

LIBRE BELGIQUE  
1-2 Décembre 1979

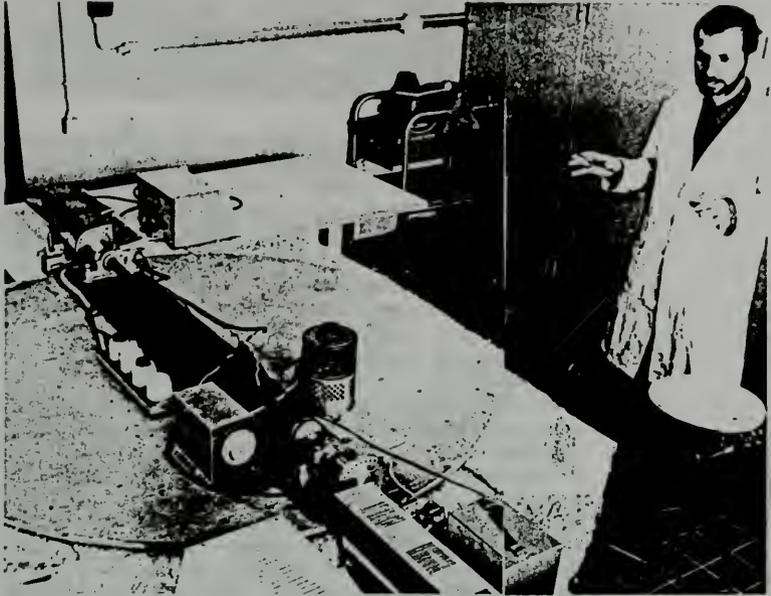
Dans le même ordre de préoccupations, on trouve aussi un documentaire de Stefan Marinov, un physicien bulgare dissident, qui donne la parole à un physicien bulgare enlevé à trois reprises, depuis 1967, dans des asiles psychiatriques. Il est un homme qui a une théorie physique opposée à celle mondialement connue ? Marinov, comme Galilée, revendique de pouvoir dire non.

## Revolutionäre Physik?

**Bulgarischer Physiker wartet mit schwer deutbaren Meßwerten auf**

In seinem Studierzimmer in Genua glaubt der bulgarische Physiker *Stefan Marinov* mit Hilfe einer von ihm selbst gestalteten Laser-Apparatur (im Foto Marinov neben dem Gerät) einen revolutionären physikalischen Sachverhalt entdeckt zu haben. Die Werte, die er in seiner experimentellen Anordnung gemessen hat, deutet er so, daß er aus abweichenden Werten für die Lichtgeschwindigkeit in der einen bzw. entgegengesetzten Richtung die „absolute Geschwindigkeit“ seines Studierzimmers bzw. der Sonne errechnet habe. Stimmen diese Messungen, dann stellen sie einerseits Inhalte der Einsteinschen Relativitätstheorie in Frage und erfüllen andererseits einen an sich längst austräumten Traum der Physik, eröffnen aber zugleich mögliche Perspektiven zum Verständnis parapsychischer Phänomene.

Nachdem um 1800 die Welleneigenschaften des Lichtes und später allgemein der elektromagnetischen Strahlen entdeckt worden waren, suchte man nach dem hypothetischen Stoff „Äther“, in dem sich diese Wellen – im luftleeren Raum! – ausbreiten sollten. Ein direkter Nachweis gelang nicht. Auch der indirekte ist bis heute nicht geführt: Er müßte so verlaufen,



daß sich durch genaue Messungen über die Ausbreitungsgeschwindigkeit des Lichtes im Vergleich mit dem – auf irgendeinen Stern bezogen – ruhenden Äther eine relative Geschwindigkeit z. B. der Erde feststellen lassen könnte. Und genau das will Marinov gelungen sein. Doch seit *Einstein* gilt die dem widersprechende Deutung, daß die Lichtgeschwindigkeit eine unüberschreitbare Grenzgeschwindigkeit ist und von jedem Beobachter, wie schnell er sich auch immer bewegt, in jedem Fall gleich groß gemessen wird.

Wenn Marinov richtig gemessen hat, wären die Folgen für das herrschende physikalische Weltbild kaum abzuschätzen. U. a. wäre dann auch ein Perpetuum mobile denkbar, da er den Energieerhaltungssatz in Frage stellt. Spekulative Deutungen seiner „Resultate“ als „paranormal“ bieten sich in zweifacher Weise an: Entweder er hat seine Anlage paranormal beeinflußt und so die Werte erhalten; oder sie weichen tatsächlich vom Normalwissen der derzeitigen Physik ab. Marinov will seine Experimente auf einer Konferenz zur Dis-

kussion stellen, zu der er auch Nobelpreisträger einzuladen gedenkt. Organisiert wird diese „Internationale Konferenz über die Absolutheit von Raum und Zeit“ vom 8.–11. Juli in Genua von der „Organizzazione Internazionale Congressi, Via Puggia 47, I-16131 Genua“. Themenbezogen soll unmittelbar davor, vom 2.–7. Juli, eine weitere Konferenz „Parapsychologie und Wissenschaft im Vergleich“ stattfinden. Sollten sich Marinovs Feststellungen wirklich als revolutionär erweisen, wird *Esotera* nach den Veranstaltungen wieder berichten.

# Unorthodox assessments

*A recently published book provides an intriguing glimpse of peer-review in action.*

Like restaurant proprietors, journal editors have the right to refuse admission to anyone, the obligation to explain their attitude being merely moral. Dr Stefan Marinov has therefore performed a useful and courageous service by revealing in print\* the manner in which journals (including this one) and funding organizations around the world respond to this obligation. For some years, Dr Marinov has submitted papers and proposals concerning "absolute space-time" to such bodies, with — by his own account — a rather small degree of success. Literal copies of this correspondence make up the bulk of his book and are absorbing reading.

It is an inevitable part of the duties of every editor to assess papers that lie near what may be called the fringe of science. Physics journals and "general" journals receive many attempts to "correct" the theory of relativity or to propose new laws underlying the structure and evolution of the Universe. Some papers are based on numerological mysticism or are in some other way so speculative and unpredictable as to justify immediate dismissal. Others contain inmathematical errors. Some (as in Dr Marinov's case) contain detailed arguments, often including descriptions of experiments, which require more lengthy assessment.

Dr Marinov's book reveals some of his arguments and the reception they received. As a result, it is something of a handbook for editors faced with the need for an appropriate choice of words if the assessment process has revealed that rejection is the appropriate course of action. Does one follow, at one extreme, the rather curt approach of *Science* ("We decline to publish your paper on 'Measurement of the one-way velocity of light and the Earth's absolute velocity'. The manuscript is enclosed.") or, at the other, does one follow the editor of *Zeitschrift für Naturforschung* and (as Dr Marinov relates) exchange more than twenty letters and give the author an explanatory conversation over a pizza? Between these two lie the responses of some 35 other journals and the National Science Foundation (four referee reports followed by formal appeals up successive rungs of the hierarchy).

What can or should be learned from such a book? Those as tenacious and as radical in their scientific approach as Dr Marinov will learn what to expect in tone and quality from the variety of journals available to them. Those responsible for journals or funding bodies will gain a glimpse normally denied them of their colleagues in action. They may be drawn to conclude that to refuse publication without providing justification is to do less than justice to any author and plays into the hands of conspiracy theorists. They will note with disquiet that the more conscientious they are in this respect, the more conscientious a reply they will probably receive.

Publishers might conclude that there is a market for an unrefereed journal of unorthodox science. All readers should note how, in this case at least, the system seems to have ensured that orthodoxy prevails — deciding for themselves whether by malevolent conspiracy, inertia or good sense.

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\**The Thorny Way of Truth*. Est-Ovest International Publishers, Via Puggia 47/1, 16131 Genova, Italy.

IL LAVORO

Genova

28. XII. 1982

Nella foto accanto un episodio di «Calvario», rievocato pittorico sugli orrori della storia e la speranza della pace. «Ho sempre creduto criminale — ha detto il pittore Renato Cenni — ogni gesto di violenza diretta e sottomettere l'individuo ad altro individuo, un popolo ad altro popolo»



## Un artista dipinge contro la guerra

Una ampia ciclo di opere del pittore Renato Cenni, scomparso qualche anno fa, è stato esposto al pubblico a Genova, nelle sale di Villa Grimaldi

di MICHELANGELO DOLCINO

A Villa Grimaldi, in via Capolungo, martedì 21 dicembre è stato esposto al pubblico il «Calvario» di Renato Cenni. L'opera maggiore del pittore da qualche anno scomparso, la più sofferta, la più segreta — come si è scritto — è stata presentata dall'assessore alla Cultura Attilio Sartori, presente il sindaco Cerofolini. Un ciclo di tele, dodici per l'esattezza, che nell'insieme rappresentano «una protesta e nello stesso tempo un omaggio alle vittime di tutte le guerre».

Sono parole dell'Artista stesso, che a tale impresa lavorò per lunghissimo tempo, a partire dal 1958, documentandosi puntigliosamente sui personaggi che intendeva rappresentare, eseguendo centinaia a centinaia di schizzi preparatori, rifacendo più volte le tele medesime, le «stazioni» della particolarissima Via Crucis...

Singolare, intanto, la figura del Cristo. Dapprima — spiegava Cenni — questi appariva negli aspetti consueti, ma la visione di un film sugli orrori della guerra suggerì come doveva mostrarsi la figura centrale, il protagonista: «furono i milioni di poveri scheletri di Dachau, di Buchenwald, di Mauthausen, di Auschwitz, di Belsen, che mi dissero come doveva essere il Cristo del «Calvario». E nelle varie «stazioni» Gesù ci appare appunto come l'archetipo del deportato, della vittima di goyeschi orrori: maciuto, col capo rasato e il volto scavato dalla fame, dalle umiliazioni, dalle torture. Soltanto il rosso della veste rispetta la tradizione: «per ragioni pittoriche e per chiarezza di simbolo, ritenevo di rendere così maggiormente l'idea della confusione nel tempo del sacrificio dell'Uomo».

Intorno a lui, anche i personaggi che caratterizzano i successivi momenti hanno connotazioni particolari. I torturatori, i carnefici del Cristo sono gli aghieri, i soldatucci della seconda guerra mondiale. Anzitutto plumbei tedeschi, ma altre uniformi sono riconoscibili. E nella prima «stazione» — Inelivemente intitolata «Condannato» — l'Uomo è circondato da tutti coloro che nell'Umanità conflitto ebbero parte eminente. E se per noi aver voluta togliere dalle tele questo o quel personaggio — osservava ancora Cenni — alte personalità politiche, responsabili di partiti e di associazioni, funzionari di gallerie, agenzie di stampa, giornali e riviste mi hanno ignorato e illuso e amareggiato con pro-

messe non manientre e mostre non organizzate, non ha più importanza. Le tele sono finite ed il risultato è quello che è. Ormai non sono più le condizioni di giudicarlo. D'altronde non le ho dipinte per me. Questo «Calvario» è stato fatto per tutti quelli che come e più di me le guerre le hanno sofferte ed è il loro giudizio che conta...

Ancora in vita, il pittore volle donare a Genova, sua città adottiva, la serie di dipinti. La burocrazia snodò a sua volta una sequela di prevedibili e imprevedibili «stazioni», ma finalmente oggi — quindi ad anni di distanza — la donazione è stata perfezionata, con l'acquisizione da parte del Comune il «Calvario» — come si diceva in principio — è esposto a Villa Grimaldi e lo rimarrà sino al giugno del 1983. Dopodiché verrà trasferito a Palazzo Ducale, dove già fu presentato nel '78.

Le suggestive tele, intanto, sono state perfettamente riprodotte dall'editore Franco Pirola in un bel volume. Di ariosa concezione, di grande formato, con scritti di Fulvio Cerofolini e Mario Bontaro, e le note di Cenni da cui abbiamo stinto, la pubblicazione non ha certo il piglio d'un semplice catalogo, anzi per l'abbinamento con poesie d'un autore d'eccezione: Stefan Marinov, fisico affermatissimo. Un bulgario, figlio quindi d'un paese oggi decisamente chiacchierato, ma «al di sopra d'ogni sospetto», dissidente sotto l'aspetto politico e anche scientifico, patì in patria violenze e internamenti protratti in ospedali psichiatrici, finché gli fu possibile riparare nel '77 all'estero. Tra vari soggiorni fu anche a Genova, recentemente, e nel suo passaggio ci lasciò questo omaggio. Poesie ispirate alla pace, all'insofferenza di ogni tirannide. Versi — come i seguenti — che sarebbero piaciuti al partigiano all'antifascista Renato Cenni:

«Sono di nuovo dietro la rete, come negli anni sessanta, / seguendo nel cielo il calmo andare delle nuvole, / e di nuovo ogni sera scendo da fuori un vento leggero, / e un rumore smorzato arriva alle case vicine. / Le stesse camere bianche, come a quel tempo, / gli stessi infermieri, dottori, guardiani... / Sono però più nervosi, nei capelli appare la vecchiaia, / e i loro occhi sono pesanti e tristi... / E ognuno di loro mi ripete le stesse parole: / «Da anni non riesci a capire il mondo, Marceau, / rimani lo stupido ingenuo di sempre / che infila la mano nuda nella ruota». / Ed io, ammutolito, li guardo dentro gli occhi / e vedo che sono essi i raggi della ruota».

## BOOK REVIEW

Classical Physics, by Stefan Marinov, 1981. Published by International Publishers "East-West". 1188 pages. \$125.00.

According to the introduction, the author intends this work to be a textbook for students. As such, it contains much material found also in standard physics texts, particularly those dealing with mechanics. But it contains also much original matter, based on the author's ideas regarding the absolute nature of time and space.

The work consists of 5 volumes: I Mathematical Apparatus; II Axiomatics and Low-Velocity Mechanics; III High-Velocity Mechanics; IV Gravimagnetism; and V Electromagnetism. The first volume presents all the mathematical tools needed for the subsequent volumes. It covers in concise form the major mathematical topics generally taught to physics students in an undergraduate program: linear algebra, differential and integral calculus, series, vectors, tensors, and differential equations. For those who have already acquired these mathematical skills it will provide an excellent review. As a textbook, however, it suffers from a deficiency which is evident throughout all 5 volumes: there are no exercises, and hence no opportunity for students to acquire proficiency in the skills taught.

In the second volume Dr. Marinov first introduces the 10 axioms upon which he plans to reconstruct classical physics. The first 2 axioms assert the absolute nature of space and time (i.e. their independence of the observer), thus advocating a return from Einstein to Newton. Marinov defines absolute space as that in which the velocity of light has the same value in all directions. The next 7 axioms are concerned with energy. Noting the formal similarity between the laws for electrical and gravitational energy, Marinov assumes the existence of a complement to gravitational energy - "magnetic energy" - by analogy with the magnetic energy. The 10th axiom asserts that photons move with velocity  $c$  in absolute space and that their velocity does not depend on their history (i.e. movement of their source).

The further bulk of the second volume deals with low-velocity mechanics. Here Marinov presents no original contributions, but develops the standard topics of mechanics (i.e. Lagrange's equations, Hamiltonians, canonical transformations, central force motion, etc.). The great part of the 4th volume is concerned with the usual applications to physical problems (i.e. 2-body problem, 3-body problem, Lagrange planetary equations, precession).

It is in the third volume, on high-velocity mechanics, where Marinov develops his original ideas inherent in the 10 axioms. Here he derives new transformations for co-ordinates, velocities, and accelerations. He also deduces new equations of motion and new equations for light kinematics. These Marinov distinguishes from the corresponding equations in the systems of Newton and Einstein.

Whether Marinov's novel reconstructions are indeed valid

evidence. The second half of the third volume is therefore devoted to a number of experiments by which Marinov hopes to demonstrate the correctness of his ideas regarding the absolute nature of space. Of these, the coupled mirrors experiment seems to be the most significant. Through this experiment Marinov claims to have measured the Sun's absolute velocity to be some 300 km/sec.

Unfortunately, Marinov's account of his experiment is not above criticism. Although, to my knowledge, no one has yet published a refutation of the experiment, physicists have been somewhat reluctant to accept Marinov's results. R.G. Chambers (Proceedings of ICSTA, 1982, pp 44-47) discusses the possible experimental errors that could arise, errors that Marinov has apparently not taken adequately into account. It is thus imperative that the scientific community undertakes an independent repetition of this experiment so that Marinov's results can be conclusively either confirmed or refuted.

Marinov presents further observational predictions at the end of the 4th volume. His predictions for the perihelion displacements of the planets are half those predicted via general relativity, thus leaving room for the additional effect of the sun's oblateness. With regards to cosmology, Marinov suggests that the red-shifts of distant galaxies are caused by gravitational, rather than by Doppler, effects. His theory predicts the red-shift to be proportional to the square of the distance rather than the usual linear relation. At present there exists too much scatter in the observed red-shift versus distance data to allow one to conclusively eliminate either the linear or Marinov's square law. But, hopefully, future observations will enable us to make such a distinction.

The last volume is concerned with electromagnetism. Again, the usual topics are covered (i.e. e-m field equations, e-m potential, fields of static and dynamic systems, e-m waves, radiation & propagation of e-m waves, etc.) but the results are interpreted, and sometimes modified, by Marinov's 10 axioms.

Finally, some remarks of a more general nature. As a textbook, "Classical Physics" has a few notable weaknesses. First of all, as we have already noted, it lacks any exercises or problem sets. Secondly, the work provides very few connections with either the past or present physics community. Historical references are rare. Although a number of recent experiments are referred to, the student is given no information as to where he can find these references or other background material. Nor is the distinction always clearly made between Marinov's original contributions and his mere presentation of commonly accepted physics (e.g. low-velocity mechanics).

However, when looked upon as the elaboration of a new theory, the author is to be congratulated on the thorough theoretical development of his novel ideas regarding the foundations of physics. In particular, he is to be commended for deriving ample observational consequences from his theory. It is to be hoped that the scientific community will take up the challenge and put Marinov's ideas to the experimental test. Marinov deserves a fair hearing. It is felt that this must be done on the basis of objective evidence.

## KOMMUNISMUS

## Mit rotem Siegellack

Wie kann man Moskau in die Pleite stürzen? Per Einschreibebrief.

Seit dem Sieg der neuen Klasse in Rußland, seit 1917 also, suchen Außenstehende und Außenseiter nach Strategien, das Sowjetsystem wieder loszuwerden – die bisher raffinierteste erfand der bulgarische Wissenschaftler Dr. Stefan Marinoff, ansässig in Italien. Er will die Sowjet-Union in den Konkurs treiben und dabei selbst noch Geld verdienen.



Regimekritiker Sacharow: Keine Post aus Italien

Als Physiker Marinoff noch in seiner Heimat weilte, kam er mit der Deduktion zu Ehren, daß Einsteins Relativitätstheorie nicht schlüssig sei. Derart ausgewiesen, durfte er 1977 in Sofia eine wissenschaftliche Konferenz organisieren, zu der er als Delegierter Moskaus den Atomphysiker Sacharow einlud.

Erst 20 Tage vor Eröffnung des Symposions erkannten die Behörden, daß es sich dabei um den führenden Dissidenten der UdSSR handelte; sie sagten die Konferenz wegen „Erdbebengefahr“ ab, wahrheitsgemäß, bedenkt man die politischen Konsequenzen.

Marinoff mußte in eine Psychoklinik zwecks Tiefschlaf; nach seiner Entlassung, hellwach, erfreute er seine Regierung mit der (normalen Bürgern allemal verweigerten) Ausreise nach

Italien. Dort erfand er seine Einnahmequelle.

Jede Woche schreibt er an Sacharow einen Brief, siegelt ihn mit rotem Lack, läßt ihn einschreiben und für eine Prämie von knapp zehn Mark bei der Post versichern: gegen Verlust durch die Folgen ungenügender Straßenbeleuchtung oder heftigen Schneefalls oder was immer sonst einem sowjetischen Postbeamten bei der Briefzustellung widerfährt.

Noch nie hat die Sowjetpost dem Empfänger Sacharow einen Marinoff-Brief ausgehändigt. Nach einem halben Jahr reklamiert Marinoff dann bei der italienischen Post das Einschreiben und kassiert den Schadenersatz von rund 700 Mark. Den wiederum lassen sich die

Italiener von Moskau erstatten: gemäß den Bestimmungen des Weltpostvereins. Die Russen zahlen, um aus diesem internationalen Verbund nicht ausgeschlossen zu werden.

700 Mark pro Woche bringen Marinoff, abzüglich seiner Portokosten und der Ausgaben für Briefpapier und Siegellack, einen Jahresverdienst von netto 32 000 Mark. Der Bulgare sucht schon eine Villa am Meer.

Der Profit würde sich summieren, wenn eine Massenbewegung derartige Briefe an Sowjet-Dissidenten richtete – dann wäre die Sowjetpost samt Sowjetstaat rasch pleite. Vorausgesetzt freilich, die Sowjets zahlten weiterhin. Um so etwas in Gang zu setzen, hat Marinoff eine ganzseitige Anzeige in einem Physiker-Fachblatt aufgegeben.

In relativ kurzer Zeit, so Marinoffs Konzept, vermöchte so die freie Welt Rußland in den Status eines bettelarmen Satelliten Kubas oder der DDR zu versetzen, ohne eine einzige Pershing 2.

Der Staatsetat von 354 Milliarden Rubel wäre in einem Jahr allein mit subversiven Briefpartnerschaften von zehn Millionen Italienern aufgebraucht.

US-Journalist Gerre Jones empfahl den Weg zu raschem Reichtum inklusive Beendigung des Bolschewismus bereits in seinem Washingtoner „Professional Marketing Report“ als Chance „für einige Firmen, aus der gegenwärtigen Rezession herauszukommen“.

Allerdings – Staaten wie den USA und der Bundesrepublik erstattet Moskau die Kosten für nicht angekommene versicherte Einschreibebriefe nicht. ◆

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
5 Februar 1983

DER SPIEGEL  
Redaktion  
"Leserbriefe"  
Postfach 110 420  
D-2000 Hamburg 11

Sehr geehrte Herren,

Ich werde Ihnen sehr dankbar sein, wenn Sie den folgenden Brief, wenn möglich ohne Kürzungen, im SPIEGEL veröffentlichen würden:

Ihr Artikel (DER SPIEGEL, 31.I.83, S. 128) über eine sehr effektive Methode die gesetzlichen Möglichkeiten auszunützen um mit ganz einfachen und friedlichen Mitteln den Totalitarismus zu beseitigen, bringt eine Desinformation, die viele Leute in Deutschland einschüchtern würde. In Ihrem Artikel wird nämlich behauptet, daß die deutsche Bundespost, im Unterschied zu der italienischen, die Versicherungen für die in die Ost-Staaten nicht ausgelieferten Briefe nicht bezahlt. Eine so gut informierte Zeitschrift wie Ihre dürfte wohl wissen, daß die Versicherung eines Briefes (Paketes, Warensendung) ein gesetzlicher Kontrakt zwischen dem Absender und der Einnahmepost darstellt. Im Falle, daß der Brief dem Adressaten nicht übergeben wird, also im Falle, daß die Einnahmepost ein Dokument mit der Unterschrift des Adressaten dem Absender nicht vorzeigen kann, muß die Post die Versicherung bezahlen. Der Nationalökonom K. Marx schrieb in seinem Buch "Das Kapital" vor mehr als hundert Jahren das folgende: "Wenn eine Transportgesellschaft die Versicherungen für nicht ausgelieferte Waren nicht bezahlt, wird sie vom Gericht mit derselben Strenge wie ein Geldfälscher bestraft."

Ich habe 3000 DM der englischen Zeitschrift NATURE bezahlt, um meine Methode bekannt zu machen. Warum verhindert DER SPIEGEL mit so einer Desinformation die Verbreitung dieser Methode zwischen Millionen von Deutschen, die: 1) keine Beschäftigung haben, doch dringend Geld brauchen und 2) einen friedlichen Weg suchen, um die blöde und absurde kriegerische Ost-West Konfrontation zu beseitigen.

Stefan Marinov  
Graz, Österreich

*S. Marinov*

Editorial note: This "reader's letter" was rejected by "DER SPIEGEL" and one can ask oneself whether this authoritative journal serves to seminate truth or refined desinformation.

Legationsrat  
Dr. Gabriele HOLZER

Wien, am 8. April 1983

Sehr geehrter Herr Marinov!

Ihren an den Herrn Bundeskanzler gerichteten Brief hat dieser zum Anlaß genommen, eine Überprüfung dieser Angelegenheit zu veranlassen. Danach wurden Sie 1979 in Belgien als Flüchtling im Sinne der Genfer Konvention anerkannt. Die Gültigkeit Ihres belgischen Konventionsreisedokumentes wurde zweimal verlängert und hatte zuletzt eine Gültigkeit bis 6.4.1982. Da Sie sich jedoch zwischenzeitlich mit diesem Reisedokument wieder in Ihre Heimat begeben hatten, wurde von den belgischen Behörden die Verlängerung der Gültigkeit des Konventionsreisedokumentes abgelehnt, insbesondere auch deshalb, weil Ihnen ein bulgarischer Nationalpaß ausgestellt worden war, mit dem Sie im April 1978 in die CSSR reisten. Dort wurde Ihnen der bulgarische Nationalpaß wegen Teilnahme an einer Demonstration abgenommen und Sie in die Bundesrepublik Deutschland ausgewiesen. Nach weiteren Aufenthalt in den USA, Frankreich und Italien sind Sie auf bisher nicht geklärte Weise nach Österreich gekommen.

Laut Ihren eigenen Angaben bestehen gegen Sie Aufenthaltsverbote in den Ländern USA, Frankreich, Italien und der CSSR. Von der Bezirkshauptmannschaft Graz-Umgebung wurde gegen Sie am 29.9.1982 ein unbefristetes Aufenthaltsverbot für Österreich erlassen. Gegen diesen Bescheid brachten Sie Berufung ein, welche jedoch von der Sicherheitsdirektion für das Bundesland Steiermark wegen formaler Mängel zurückgewiesen wurde. Es wurde Ihnen aber ein Vollstreckungsaufschub bis 31.12.1982 erteilt.

Am 29.12.1982 wurden Sie von der deutschen Grenzpolizei Walserberg festgenommen. Sie versuchten unter Verwendung Ihres durch Zeitablauf ungültig gewordenen belgischen Konventionsreisedokumentes in die Bundesrepublik Deutschland einzureisen. Sie wurden im Schubwege der Bundespolizeidirektion Salzburg überstellt und nach Abstrafung nach dem Paßgesetz wiederum auf freien Fuß gesetzt.

Mit freundlichen Grüßen



Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

Tel. 03132/2609  
9 April 1983

An Dr. Erwin Lanc  
Innenminister  
Innenministerium  
Wien

Sehr geehrter Dr. Lanc!

Seit einem halben Jahr befinde ich mich unter dem ständigen Polizeidruck, der, wie ich begreife, von Ihrem Ministerium geleitet ist (wahrscheinlich vom Regierungsrat Dr. Peter, Abt. II/14).

Ich bin politischer Flüchtling aus Bulgarien. Meine bulgarische Bürgerschaft wurde mir am 28.XII.1981 entzogen und mein Haus in Sofia konfisziert. Seit Januar 1979 habe ich einen belgischen Konventionspass (vorher lebte ich in den USA). Aber im Sommer 1981 als ich bereits in Österreich lebte, informierte mich das Flüchtlingskommissariat in Brüssel, daß mein Asylrecht aberkannt wurde, weil ich im August 1979 Bulgarien besucht hatte. Damals ging ich zu Herrn Priller von der BH-Graz-Umgebung, um in Österreich Asyl anzusuchen. Herr Priller sagte mir, daß ohne eine politische Unterstützung mein Ansuchen hoffnungslos wurde. Darum habe ich nicht meinen Reisepass nach Brüssel geschickt (wie schriftlich von mir verlangt wurde) und lebte mit diesem Dokument bis zum Ablauf seiner Gültigkeit (April 1982), schreibend viele Briefe an verschiedene belgische Instanzen, mit der Hoffnung mein Asylrecht wieder zu bekommen. Das konnte ich aber nicht erzielen und darum habe ich um Asyl in Österreich angesucht. Mein Ansuchen, wie mir Herr Priller mehrmals mündlich prophezeit hatte, wurde negativ beantwortet. Gleich nach dieser negativen Antwort gab mir die BH-Graz-Umgebung eine Woche um das Land freiwillig zu verlassen, ansonst werde ich mit Gewalt nach Belgien ausgewiesen werden. Ich sagte Herrn Priller, daß ich mich gern in dieses Land ausweisen lasse (dort lebt meine Frau, die ich seit zwei Jahren nicht gesehen habe), doch die belgische Regierung wird das nicht erlauben und ich zeigte Herrn Priller, daß nicht nur er ein Prophet ist. Darum legte ich eine schriftliche Deklaration vor, daß ich nach Bulgarien ausgewiesen zu werden wünsche. (Bemerkung: Als die bulgarische Regierung mir die Bürgerschaft entzogen und mein Haus konfisziert hatte, schrieb ich dem Präsidenten der VRB, daß ich gleich vor einem Gericht in Sofia erscheinen möchte, um für meine bürgerlichen Rechte zu kämpfen. Denn gegen die Gesetze Bulgariens habe ich nicht verstoßen. Im Gegenteil ich kämpfe für die Erhaltung der bulgarischen Gesetze, die von der Regierung besudelt werden. Herr Jivkov hat mir nicht geantwortet, obwohl ich meinen Brief in der Presse veröffentlichte.) Die ganze Geschichte mit meiner Ausweisung von Österreich wurde zu einem Skandal, als DIE KLEINE ZEITUNG einen Artikel von meinem Fall veröffentlichte. In einem der Leserbriefe hat einer der Leser gefragt: Wer ist der Drahtzieher dieser schamlosen Komödie mit einem bulgarischen Dissidenten, aber keiner gab eine Antwort. Anstatt von diesem Skandal was zu lernen, began BH-Graz-Umgebung und Fremdenpolizei-Salzburg mich mit Geldstrafen und Zuchthaus zu marterysieren mit dem Vorwurf, daß ich keine gültigen Reisedokumente habe. Die Summen sind schon 3200 öS., in dem Salzburger Polizeigefängnis saß ich eine Woche und jetzt muß ich für vier Tage in das Grazer Gefängnis gehen. --- Nach der negativen Antwort um Asyl, suchte ich um österreichische Bürgerschaft in der Steiermärkische Landesregierung an. Mein Ansuchen, persönlich von Dr. Krainer unterstützt, hat einen positiven Empfang gefunden. Doch, wie mir schriftlich am 25.III.83 mitgeteilt wurde, kann ich die Bürgerschaft nicht bekommen, bevor mein Aufenthaltsverbot von der BH nicht aufgehoben ist. Andererseits kann mir das Wissenschaftsministerium nicht die bewilligten 100,000 öS geben, bevor ich nicht Asyl oder Bürgerschaft habe. Dr. Bruno Kreisky hat sich persönlich eingesetzt, um meinen "POLIZEIFALL" zu lösen, aber auch er hatte keinen Erfolg.

Herr Minister, ich werde mich persönlich an Sie mit den folgenden Fragen: 1. Sind Sie einverstanden, daß ein bulgarischer Dissident, der Jahre in bulgarischen Kerkern und Irrenanstalten gesessen hat, hier in Österreich weiter sitzt? 2. Erkennen Sie alle meine Geld- und Haftstrafen als gesetzlich? 3. Werden Sie mein Aufenthaltsverbot aufheben? --- Wenn bis zum 15.IV.83 von Ihnen keine Antwort kommt (auch nicht über die BH), werde ich am 15.IV ins Gefängnis gehen, weil das der letzte Tag meiner Aufforderung ist. Ich werde den Fall der Presse übergeben und die ganze Verantwortung über meine bisherigen Verspottungen werden Sie persönlich tragen. Bitte, verstehen Sie, daß ich keinen Skandal vor den Wahlen machen will; es sind andere Leute, die diesen Skandal anzetteln.

Ihr: Stefan Marinov



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Sonntag  
17. April 1983

VON WERNER KRAUSE

Er heißt Stefan Marinov und ist ein bulgarischer Reinhold Messner der Aktenberge. Mit einem genialen Brieftrick verhöhnte und schröpfte er den mächtigen Sowjetstaat. Seit fünf Jahren versucht der Physiker und Dissident wegzugehen, in Westeuropa Fuß zu fassen. Zuletzt strauchelte er dabei direkt ins Grazer Polizeigefängnis. Wir haben die abenteuerliche Lebensgeschichte eines Mannes recherchiert, der weit mehr als ein Bürgerrechtskämpfer und weit weniger als ein Staatsbürger ist. Er lebt im Niemandsland.

Daß er hier ist, liegt nicht zuletzt daran, daß er gar nicht weg kann. Bis zum Freitag dieser Woche hatte der 52jährige Stefan Marinov auf einem Bauernhof in Weinitten bei Graz Gelegenheit, über jenes Los nachzudenken, das ihm eine Fülle kaum noch bewältigbarer Probleme einbrachte. Der Physiker aus Bulgarien, rund 14 Jahre lang angesehenes Mitglied in der Akademie der Wissenschaften, ist staatenlos. Mehr noch: Er ist in vielen Staaten absolut unerwünscht und wurde nach seiner Ausweisung aus dem Ostblockstaat im Jahr 1978 zum Spielball der Nationen.

Aufenthalten in Belgien, Frankreich und Italien folgte nämlich nach politischen Agitationen alsbald ein Aufenthaltsverbot. Und seit seiner Einreise nach Österreich im Sommer 1982 ist Marinov auch in der Alpenrepublik weder geduldet noch gern gesehen.

#### Alle Inkompetent?

So wurde er hierzulande zum Hauptakteur einer tragikomischen Auseinandersetzung amtlicher Art, die anderen einige graue Haare und ihm selbst außer einer Glutze so gut wie gar nichts einbrachte. Letztere trägt er seit Freitag aus Protest „gegen die Behördenwillkür“, und er bekräftigt seinen Unmut auch durch eine außergewöhnliche andere Tat: Marschierte er doch freiwillig ins Polizeigefängnis, um dort eine Ersatzarreststrafe wegen Fehlens der Aufenthaltsberechtigung abzudienen.

Aufmerksam machte er damit aber auch auf eine groteske Situation, deren tatsächliche Hintergründe kaum leichter auszumachen sind als das Geheimarchiv des KGB in Moskau.

Was Marinov will, ist noch relativ einfach auszudrücken: Er möchte in Österreich bleiben und früher oder später auch österreichischer Staatsbürger werden.

Was ihn daran hindert, ist die Tatsache, daß sein Ansuchen um Aufenthalt in der Alpenrepublik von Anbeginn an ohne präzise Angabe von Gründen abgelehnt wurde.

Was einer von den Behörden geforderten Ausreise jedoch vor allem im Wege steht, ist wiederum der Umstand, daß Marinov dafür — sieht man von einem Fremdenpaß ab — keine Papiere besitzt. Dies alles löste eine ziemlich einzigartige Straf- und Protestwelle aus, die Tag für Tag neue Akten und Eingaben in die Akten schmeißt.

Einige markante Beispieltücke aus der gewaltigen Papierflut mögen dies veranschaulichen: Die Bezirkskammermannschaft Graz-Umgebung erachtete Marinov als Fremdkörper und bestrafte ihn schon mehrmals wegen Verstoßes gegen das Fremdenpolizeigesetz. Marinov protestierte und wurde mit dem Hinweis „Tut uns leid. Wir sind weisungsgebunden“ an die Sicherheitsdirektion verwiesen. Dort zeigte man viel Verständnis für Marinovs Misere, beteuerte aber ebenfalls, weisungsgebunden zu sein. Dließ als nächste Station das Innenministerium, wo man allerdings — der Leser ahnt es wahrscheinlich schon — wieder auf eine Weisungsgebundenheit verwies. Also wandte sich Marinov an das Bundeskanzleramt: Auch dort reagierte man einigermaßen wohlwollend, wollte sich aber in die Angelegenheit nicht einschalten. Denn das sei Sache des Innenministeriums. Und so weiter und so fort.

Wir haben versucht, zumindest einige Etappen dieses schier endlosen Amtsweges zu absolvieren. Einziges konkretes Ergebnis: Irrendwo auf der Behördenstrecke sickerte durch, daß allfällige politische Aktivitäten Marinovs und sogar ein Spionageveracht seinen Aufenthalt unerwünscht erscheinen lassen.

#### Den Kröml verhöhnt

Womit es Zeit ist, die bewegte und abenteuerliche Vergangenheit unseres Protagonisten zu durchleuchten. Ob in seiner andurchschauenden Rolle wie ein Märtyrer, Don Quichotte und Hauptmann von Köpenick in Personalunion agiert.

Der Name Marinov löste schon mehrmals weltweites Pressecho-

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# DER GRENZZÜGLER

Die Haare sind weg, die Probleme sind geblieben: Bürgerrechtler Marinov ist ein Mann mit vielen Gesichtern (man vergleiche bloß die beiden Bilder auf dieser Seite)



Stefan Marinovs Kommentar auf dem Weg ins Grazer Polizeigefängnis.

Sechzig Sekunden in jeder Minute meines Lebens sind mit bürokratischem Unnütz und Schikanen gefüllt

66

aus. So etwa im Jahr 1977, als er noch in seiner Heimat Bulgarien weilte und dort versuchte, nach jahrelanger wissenschaftlicher Arbeit Einsteins Relativitätstheorie zu widerlegen.

Als Dank für seinen Forschungsdrang durfte er, vom Staat beauftragt, in Sofia eine wissenschaftliche Konferenz organisieren. Die allerdings einen argen Schönheitsfehler hatte: Denn als Delegierten Moskaus lud Marinov sein großes Vorbild, den Atomphysiker Sacharow, ein. Erst kurz vor Eröffnung dämmerte es den Behörden, daß es sich dabei um den führenden Dissidenten der UdSSR handelte; sie sagten die Konferenz wegen „Erbebebenfahrt“ ab. In der Tat: Politische Beben hätte es leicht geben können.

Marinov wurde in einer Psychoklinik interniert und einer Tief Schlafkur unterzogen. Nach seiner Entlassung beschloß er, hellwach und voll Widerstandesgeist, nach Italien auszureisen. Im April 1978 fuhr er in die CSSR und initiierte dort eine waghalsige Demonstration: Er marschierte allein auf dem Wenzelplatz umher und verkündete Parolen gegen das Sowjetregime. Er wurde festgenommen; sein bulgarischer Paß wurde beschlagnahmt, Marinov wurde in die BRD abgeschoben. Bald darauf bombardierte er von Frankreich aus das Weiße Haus mit Protestbriefen und forderte eine sofortige Abrüstung; in Italien trat er mit einem genialen Trick in Erscheinung: Er erfand eine raffinierte Methode, „um das Sowjetstigma in den Konkurs zu treiben“ — nämlich den Einsatz verbleibender.

Woche für Woche schrieb er von Italien aus an den verhafteten Physiker Sacharow Briefe, versiegelte diese, ließ sie einschreiben und für eine Prämie vom umgerechneten rund 70 Schilling bei der italienischen Post versichern. Gegen Verlust, gegen Nichtzustellung und ähnliches mehr.

Klarerweise händigt die Sowjets dem Empfänger Sacharow keinen einzigen dieser Briefe aus; weshalb der clevere Bulgare bei der Post reklamierte und Schadener-



zatz kassierte. Pro Brief immerhin rund 500 S. Nach den Bestimmungen des Weltpostvereins müssen die Russen für diese Beträge aufkommen, wollen sie nicht aus dem internationalen Postverband ausgeschlossen werden. „In relativ kurzer Zeit“, so Marinovs Konzept damals, „kann so die freie Welt Rußland in den Status eines bettelarmen Satelliten Kubas oder der DDR versetzen. Ohne eine einzige Pershing II...“

Zur Verdeutlichung: Der jährliche sowjetische Staatsetat beträgt rund 354 Milliarden Rubel. Er wäre aufgebracht, würden rund zehn Millionen Italiener die Vorteile dieser subventionierten Brief-freundschaft nützen.

Seine durch Liebesgrüße nach Moskau erschlusene Geldquelle sprudelte nicht lange: Marinov erlitt einige Monate später Aufenthaltsverbot in Italien — und kam bei Nacht und Nebel und mit einem belgischen Konventionpaß, der mittlerweile abgelaufen ist, nach Österreich.

#### Viel Galgenhumor

Die Ansichten über ihn reichen hierzulande von „armen Irren“ (so ein Sicherheitsbeamter) bis zum „gefährlichen Unruhestifter und Poli-Chatoten“; Marinov selber fühlt sich indes als Opfer des bulgarischen Staates, „denn der hat seine Hände im Spiel“.

„Offenbar kann sich halt keiner für ihn verwenden“, erklärt man in der Grazer Sicherheitsdirektion schon leicht resignativ. Marinov selbst zeigt vorerst wenig Spuren von Resignation; einzig sichtbare Zeichen seiner Veränderung ist die eingangs erwähnte Glutze. Und auch dafür gibt es scheinweis eine durchaus lämpferische Begründung: „In Bulgarien ist es Pflicht, geschoren ins Gefängnis zu gehen; weil wir dort unten so oft in Haft, also scheide ich mit der Haare jetzt aus Protest“, meint er mit Anflügen von Galgenhumor, der in seiner Situation schon als Lebenselixier dient. Dies beweist auch ein anderer Ausdruck von ihm: „Mit der Mondregierung komme ich am besten aus. Aber die Fahrt dorthin ist zu teuer.“

THE PHYSICAL REVIEW

AND

PHYSICAL REVIEW LETTERS

EDITORIAL OFFICES - 1 RESEARCH ROAD

BOX 1000 - RIDGE, NEW YORK 11961

Telephone (516) 924-5533

5 May 1983

Dr. Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz, Austria

Dear Dr. Marinov:

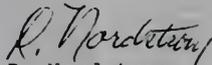
Your manuscripts entitled "Elastic collisions of particles in absolute space" and "The laboratory motion of a charge in a uniform magnetic field" have been received in our office.

We have examined these manuscripts, their supporting documents accompanying their submittal, and the files on recent earlier submittals of yours concerned with your theory and experiments on absolute space-time. We have also discussed these papers and your earlier papers and their evaluations with colleagues and advisors.

We regret to inform you that as a result of our deliberations we conclude that your manuscripts are not considered suitable material for publication in Physical Review D.

We regret the delay in coming to our decision. We are returning your manuscripts and wish you well in seeking publication of your work elsewhere.

Yours sincerely,



D. Nordstrom  
Editor  
Physical Review D

DN:em  
Enc.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
9 May 1983

Mr. James Glann  
The Bulgarian Desk  
Department of State  
Washington, D.C.

Dear Mr. Glann,

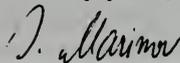
About two months ago I sent you my book ИЗЫДИ, САТАНА! (VADE RETRO, SATANAS!). Until now I have not received an acknowledgement for the reception of the book. I beg you very much to send me this acknowledgement, as I must be sure that the book is with the Department of State and that the American government is informed about my action in January 1984 a year before.

I insist once more that the American government pays me the recompensation of \$ 10,000 for the beating to which I was exposed in the American Embassy in Sofia on the 3 April 1974 when I succeeded to escape from the Sofia Psychiatric clinic. I repeat, the money is to be invested into the preparation of my action to free Orlov in January 1984. The money can be sent to the following bank account:

Creditanstalt, Graz, Austria  
c/a 0082-17077/00, Stefan Marinov.

Hoping to receive your answer as soon as possible,

Sincerely yours,



Stefan Marinov

Editorial note. The US Department of State did not acknowledge the reception of the book VADE RETRO, SATANAS!, which Marinov granted to the Department of State (and consequently to the CIA), neither answered Marinov's letter of the 9 May 1983. When the totalitarian Eastern countries enter into economic difficulties, the US grant them milliards of dollars to save those corrupted systems from an economic and consequently political collapse. However, when the US have to pay the re-vedication for injury to a Bulgarian fighter for freedom because of his barbarian beating in an American Embassy (see THE THORNY WAY OF TRUTH, Part I, p. 47), which sum is to be invested in an action for the liberation of another Russian fighter for freedom, the bastards in the State Department make the fool.

Marinov's note. The word BASTARDS is used by the editor of this book and I have no responsibility for it. I am a non-violent fighter and my moral codex does not permit me to use invectives to the address of persons who beat me and then spit over me.



ERWIN LANZ  
BUNDESMINISTER FÜR INNERES

Zl.: 65.840/1-BM/83

Wien, am 9. Mai 1983

Sehr geehrter Herr Marinov!

Ich beziehe mich auf Ihr Schreiben vom 9. April 1983.

Ihre Annahme, daß das Innenministerium auf Sie "Polizei-  
druck" ausübt, ist unverständlich. Herr Regierungs-  
rat Peter war einer jener Beamten, der Ihnen den Auf-  
enthalt in Österreich ermöglicht hat. Anschuldigungen  
gegen ihn muß ich daher mit Entschiedenheit zurück-  
weisen.

Mit vorzüglicher Hochachtung

Herrn  
Stefan MARINOV

Niederschöcklstraße 62  
8044 G r a z

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

- 195 -

An den Dr. Josef Krainer  
Landeshauptmann  
Die Burg  
Graz

1 Juni 1983

Sehr geehrter Dr. Krainer,

Wie Sie wohl wissen werden, suche ich seit Herbst 1982 bei der Steiermärkischen Landesregierung um österreichische Bürgerschaft an. Überall bei den Beamten der Landesregierung, die mit dieser Sache in Kontakt sind, habe ich einen recht guten Empfang gefunden, besonders bei dem Herrn Dr. Gspandl, mit dem wir uns mehrere Stunden unterhalten haben.

Mit diesem Brief will ich ganz kurz die wichtigsten Gründe meines Ansuchen erörtern mit der Hoffnung, daß Ihre persönliche Stellungnahme zu einer positiven und schnelleren Entscheidung führen würde:

1) Ich bin Vertreter dieser östlichen "Dissidenten", die die Demokratisierung der Ostblockstaaten in einem Dialog mit den heutigen Regierungen sucht. Für uns ist es von enormer Bedeutung nach Osten zu fahren. Als österreichischer Staatsbürger werde ich die Möglichkeit haben zu jeder Zeit (es besteht visafreies Abkommen zwischen Bulgarien und Österreich) nach Sofia zu fahren.

2) Für meine Errungenschaften in der Physik (Messung der absoluten Erdgeschwindigkeit, Widerlegung der Einsteinschen Relativitätstheorie, Wiederherstellung der absoluten Newtonischen Auffassungen) hoffe ich bald eine breite internationale Anerkennung zu bekommen. Es ist auch nicht ausgeschlossen, daß der Nobelpreis für Physik mir verliehen wird. Mit dieser internationalen Reputation werden meine Bemühungen Bulgarien zu demokratisieren, demilitarisieren und neutralisieren (Austritt aus dem Warschauer Pakt) einen sehr festen Boden finden. Denn um die Rettung des Friedens in Europa zu kämpfen wird es viel effektiver sein, wenn ich als Bürger eines neutralen Landes auftrete.

3) Ich weiß, daß bestimmte Kreise in Österreich (wie das Innenministerium unter Dr. Lanc und jetzt, wahrscheinlich, das Außenministerium) Angst haben, daß meine Tätigkeit in Verteidigung der Menschenrechte im Osten Schwierigkeiten für die offiziellen österreichisch-bulgarischen Beziehungen schaffen könnte. Ich glaube, daß die Demokratie nur dann sich durchsetzen kann, wenn sie sich nicht dem Druck der totalitären Mächte unterjocht. Entweder wir müssen heute mit friedlichen und gesetzlichen Mitteln die Freiheit in Europa verteidigen, oder wir müssen morgen das mit Waffen tun - was keine Alternative ist, sondern ein vollkommen absurder Unsinn. Ich habe von mehreren Quellen gehört, meine Einbürgerung sei nur eine Ehrensache als Anerkennung meines langjährigen Kampfes für die Menschenrechte im Osten, die aber die guten friedlichen Beziehungen zwischen Österreich und Bulgarien stören könnte. Hier will ich eine Aussage Churchills nach dem Münchner Abkommen (1938) zitieren: "Wer den Frieden der Ehre vorzieht, erntet zuerst die Unehre und dann den Krieg".

Bis jetzt habe ich meine ganze experimentelle, theoretische, organisatorische, verlegerische und politische Tätigkeit selbst finanziert. Auch wenn die Schwierigkeiten enorm waren, konnte ich sehr vieles in relativ kurzer Zeit erreichen. Ich werde auch weiter alles selbst schaffen, doch mögen Sie wohl verstehen, daß jede, auch ganz winzige Hilfe, von einer enormen Bedeutung für mich ist (in materieller, aber auch in moralischer Hinsicht). Jetzt warte ich auf eine Unterstützung für die Verlagskosten zweier meiner zuletzt erschienenen Bücher (THE THORNY WAY OF TRUTH and PROCEEDINGS OF ICSTA - International Conference on Space-Time Absoluteness, Genoa, July 1982). Wenn Sie auch hier (wissenschaftliche Abteilung, Dr. W. Blanc) behilflich sein könnten, werde ich Ihnen sehr dankbar sein.

Ich lege bei den KREUZZWEIG - 12 Tafel von dem berühmten Maler R. Cenni. Bei unserer Unterhaltung nach der "Johannes Passion" im Grazer Dom habe ich Ihnen versprochen dieses hervorragende Werk des toskanischen Meisters zu schenken.

Mit meinen allerbesten Grüßen:

*S. Marinov*  
Stefan Marinov



Station House Nightingale Road  
Hitchin Hertfordshire SG5 1RJ  
Tel: 0462-53331 - Telex 825962

Ac 12/01  
6th June 1983

Stevan Marinov  
Niederschöcklstrasse 62  
A-8044  
Austria

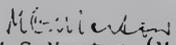
Dear Sirs

Classical Physics (5 volumes), 1981 edition

Thank you for sending us the above book for review.

We very much regret that we will not be able to publish a review and therefore return the book to you with many thanks.

Yours faithfully

  
M G Nerton (Mrs)  
Acquisition Section  
Current Services

Editorial note. With two other letters of the same date INSPEC refused to publish reviews on three other Marinov's books:

1. Eppur si muove,
2. Proceedings of ICSTA,
3. The thorny way of truth.



DER BUNDESMINISTER  
FÜR WISSENSCHAFT UND FORSCHUNG

Wien, am 13. Juni 1983  
1014 Wien, Minoritenplatz 5  
Telefon 66 21/44 40

Dr. F./We. Z1.2484/83

Sehr geehrter Herr Professor!

Ich bestätige dankend den Erhalt Ihres Schreibens vom 19. Mai 1983 und darf Ihnen sagen, daß ich grundsätzlich sehr gerne bereit bin, Ihr Anliegen um Förderung Ihres fünfbandigen Werkes CLASSICAL PHYSICS zu unterstützen.

Es muß bei dieser Gelegenheit aber doch darauf hingewiesen werden, daß die Lage auf dem Sektor der Subventionsmittel im Bundesministerium für Wissenschaft und Forschung derzeit sehr angespannt ist und bei der großen Zahl an Bewerbern jedes Ansuchen sehr genau geprüft werden muß. Ich darf Sie daher zunächst ersuchen, dem Bundesministerium für Wissenschaft und Forschung detaillierte Unterlagen über Ihre Forschungsarbeiten, insbesondere die Forschungsinhalte des gegenständlichen Werkes bzw. eine genaue Kostenkalkulation vorzulegen, um eine rasche Behandlung Ihres Ansuchens zu ermöglichen.

Mit besten Grüßen

Herrn  
Professor Stefan MARINOV

Niederschöcklstraße 62  
8044 G r a z

**BUNDESMINISTERIUM  
FÜR WISSENSCHAFT UND FORSCHUNG**

- 198 -

Sachbearbeiter: AS SÖHN  
Tel. 6621/4420 Dd

GZ 60 762/238-14/83

Herrn  
Stefan MARINOV

Niederschöcklstraße 62  
8044 GRAZ

Unter Bezugnahme auf Ihr an den Herrn Bundesminister gerichtetes Ansuchen vom 24. Juni 1983 um die Gewährung einer Förderung für die Vervielfältigung Ihres fünfbändigen Werkes "Classical Physics" bedeutet das Bundesministerium für Wissenschaft und Forschung, mitteilen zu müssen, daß es sich aufgrund der großen Zahl anderer förderungsbedürftiger und förderungswürdiger wissenschaftlicher Publikationsvorhaben leider nicht in der Lage sieht, hierfür einen Druckkostenbeitrag zu gewähren.

Gleichzeitig wird in der Beilage das von Ihnen an den Herrn Bundesminister übermittelte Buch "Der Kreuzweg" mit Dank zurückgesandt.

Sie werden um Verständnis gebeten, daß der Herr Bundesminister aus prinzipiellen Gründen nicht in der Lage ist, dieses Geschenk anzunehmen.

Beilage

Wien, am 7. Juli 1983

Für den Bundesminister:

i.V.Dr.ROSENBERGER

F.d.R.d.A.:

*Olthmann*

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Tel. 03132/2609

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

12 July 1983

Dear Dr. Maddox,

I send you my CORRESPONDENCE to which you may give the title REMINISCENCE ON GR10. I should be enormously thankful to you if you will publish this letter as soon as possible. I wish to mention that the publication of your article on my book THE THORNY WAY OF TRUTH brought me about 250 orders. The publication of this note will bring other orders on my books and with the accumulated money I will be able to carry out the differential "coupled shutters" experiment and to demonstrate the effect of absolute motion to everybody who wishes to see it. Thus the simple publication of this note will be decisive in my fight for a scientific truth. I wish to hope that you will not decline the note. If you would like to introduce certain changes in the text, please, do what you think for relevant, even without asking for my approval. The publication of this note is very very important for me. If you think that NATURE owes me a friendly gesture, please, publish the note.

I use the occasion to thank Dr. David Millar for his letter to me of the 7 June.

Sincerely yours,

*S. Marinov*

Stefan Marinov

# nature

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JM/MS  
20 July 1983

Dr Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
AUSTRIA

Dear Dr Marinov:

It was good to hear from you. I'm glad that our note has helped you to sell some copies of your book. But I can't, I'm afraid, publish your letter.

I am returning the photograph as you requested.

Yours sincerely,

*John Maddox*

John Maddox  
Editor

Dear Sir,

I should like to comment on certain aspects of GR10, the Tenth International Conference on General Relativity and Gravitation (Padua, 4-9 July 1983).

Despite my efforts during the three years following GR9 (Jena, July 1980), the overwhelming majority of the space-time specialists are still unwilling to accept that space and time are absolute categories in the most clear and unpretentious Newtonian sense. To prepare the restoration of absolute space and time on GR10, I published in 1981 my encyclopaedic work CLASSICAL PHYSICS. Then in 1982 I issued the collection of documents THE THORNY WAY OF TRUTH which patently shows the mechanism by which the "establishment" tries to "save" the obsolete and inadequate to physical reality relativistic <sup>n</sup>ceptions (see a review article in NATURE, 300, 566 (1982)). Finally in July 1982 I organized in Genoa the International Conference on Space-Time Absoluteness (ICSTA) and published the PROCEEDINGS OF ICSTA.

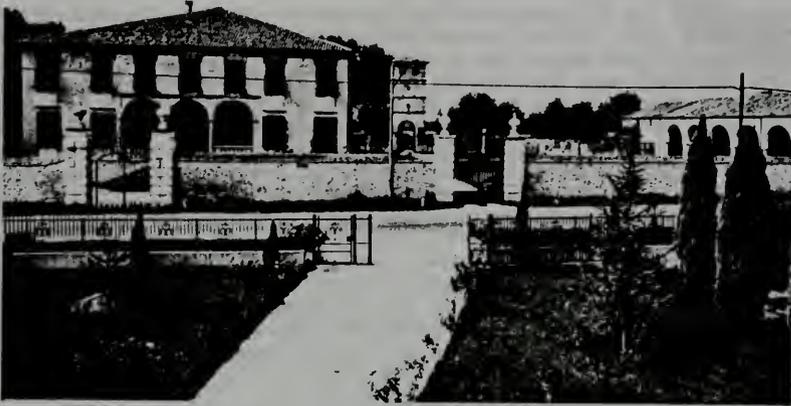
However, a discussion on the crucial topics whether the principles of relativity and equivalence are experimentally wrong (as I assert) has not taken place on GR10. I was not allowed to speak at the conference and only after the tormenting efforts of Dr. A. van Rede (Holland) a room was given at our disposition where I presented a three-hours lecture.

It is worth to mention the following interesting fact: On the same day when I exposed my books in the conference lobby, all five volumes of CLASSICAL PHYSICS disappeared. Then disappeared also my EPPUR SI MUOVE. First I thought that certain poor scientists have acquired the books in a non-traditional for a capitalist society way, but it was confidentially said to me that the books have been stolen not by somebody who wished to see what is written there but by somebody who wished that no other persons could see what is written there. Indicators on the existence of a "conspiracy" were the big posters which appeared every day on the lobby's walls announcing a non-existing "round-table on the Marinov effect". Obviously the writers of those posters intended to ridicule the effect of absolute motion observed by me, forgetting that one cannot ridicule effects. When the experiments speak even the gods keep silent. Instead to proceed in this disgusting and obscurantist way, those who are afraid of the existence of the Marinov effect have simply to show experimentally that such an effect does not exist.

However, I wish to inform the readers of this journal that a vivid interest to my experiments and theory showed the International Space-Time Center A. Beltrame. This is a private organization whose noble aim is the establishment of the scientific (and historic) truth about our space and time. The Center invited all interested participants of GR10 for a meeting in villa Roberti, one of the famous Paduan villas with frescoes of Veronese, Zelotti, Fasolo (see the picture), where all of us who have been interested in a contact with a group outside of the "establishment" have enjoyed the heartly hospitality of Loretta and Giampiero Bozzolato. The meeting ended with a

splendid banquet and when returning home with a Swedish scientist, he said to me: "Only Italians can open the doors of their houses and their hearts in such a manner." With this note I wish to express once more the gratitude of the participants of GR10 who enjoyed the meeting in villa Roberti to the hosts and to the other presented there noble citizens of Padua, the marvelous town where Galileo *molta via nei cieli svelo*.

Stefan Marinov



Villa  
Roberti

Editorial note.

When Marinov saw that his books exposed in the Conference lobby have been stolen, he put on the wall the following poster written in big red letters:

FAZIONI E VENDETTE  
QUI TRASSERO MARINOV  
1983  
DAI GIARA X. DI DANTE E GIOTTO  
EBBE PIU DURO ESILIO.

My books have been stolen. Surely I shall not find the robber. However, if I shall see that the robber will steel also my formulas and publish them under his name,

то так буду его, неходядя, бить,  
что четыре дня подряд  
сия гадина - разгадина  
кровь будет срать.

Ask your Russian colleagues to translate for you the Russian text and think and rethink about it.  
Marinov



The next day at the officail banquet in villa Giovanelli, D. D. Ivanenko said to Marinov: "Маринов, голубчик, что ты опять дадзибаошничаешь? (a hint to the big Marinov's poster at the GR9 Conference in Jena in 1980). Так мы же теперь в Италии. Эти молодчики из спецдилянской мафии могут тебя прямо на улице и зарезать."

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
20 July 1983

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

Dear Dr. Maddox,

I send you the Russian original and the English translation of my open letter to Yuri Andropov, which I should like to publish (*in toto*) in NATURE on a WHOLE PAGE with Orlov's photograph in the middle, the Russian text in the left column and the English text in the right column. I shall be very thankful to you if you will publish all this without charge (taking into account etc.). However if it is necessary, I shall pay a reduced price (again taking into account etc.) or THE WHOLE PAGE CHARGE.

You surely realize the importance for the publication of the whole text of this letter. If the Nobel prize for physics will be awarded to me this year, my action for the liberation of Orlov may become a turning point in the process of liberation of the Eastern countries. Now I am working on the repetition of my differential "coupled shutters" experiment, so that I can demonstrate the effect of the absolute Earth's motion on a scientific "press-conference". Then (after obtaining Austrian citizenship, as it is promised from a high level to me) I shall make a trip to Bulgaria, where the Austrian citizens enter without visa. You see that my program is "very dense" and I beg you for an effective cooperation. If corrections are to be introduced in the English text, always the Russian original must be taken into account (I suggest that you ask Mrs. Vera Rich to make the corrections). Attention is to be paid at the bottom of the letter where an allusion is made to Pushkin's poem "На волю птичку выпускаю при светлом празднике весны". I beg you also to ask Mrs. Rich to translate for you my letter to the Nobel committee of the 20.XII.1982 (published on p. 197 of my book "VADE RETRO, SATANAS!", sent to Mrs. Rich in February), in which I present my demand for a Nobel prize in this year.

I beg you to send me the proofs for correction and to print only after my approval.

I gave my letter to two Graz journals which published today short information (clippings are enclosed). Also the Austrian press agency promised me to distribute the information to the world agencies.

I hope that my express letter to you of the 12 July has reached you and my correspondence about some events on GR10 will be published.

I beg you to answer by an express letter. I shall appreciate very much your phone call to the Austrian number 03132/2609 with the information: "Marinov's letter will be (will be not) published according to his request without (with) payment" to the person who will answer the call. The phone tax will be then sent to you with my cheque for the page charge. If your decision will be negative, I have to search for another journal to publish the integral text of the letter.

Looking forward for your answer,

Sincerely yours,

*S. Marinov*  
Stefan Marinov



Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz, Austria  
Tel. 03132/2609

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To Yuri Vladimirovitch Andropov  
President of the Supreme Soviet  
of the USSR  
(Moscow - Kremlin)

20 July 1983

Yuri Vladimirovitch,

In my book "Go away, Satan!", which was issued in January, I addressed my friend colonel Gogov from the Bulgarian Ministry of Internal Affairs with the request to transmit to you my decision to immolate myself in front of the Soviet Embassy in Paris on the 16th January 1984 if my Soviet colleague Yuri Orlov will be not set free, as Dr. Orlov has not infringed the Soviet laws and his condemnation is unlawful (the book was sent to Gogov by registered mail on the 14-th March). Aiming to avoid a world scandal, I gave you the council to free Orlov before addressing you with an open letter. You did not follow my advice and thus I announce my ultimatum in the world press.

I tried to liberate Yuri Orlov four years ago. At that time the ultimatum was addressed to President Carter in my letter of the 9th September 1979: If Carter will not intervene before the Soviet government for the liberation of Orlov or if in the case of an eventual unsuccess he will not inform me in a personal letter about the efforts undertaken for Orlov's release, then at the anniversary of Jan Palach's self-immolation I shall commit myself to the flames in front of the Soviet Embassy in Paris. Carter did not write me a single line. I only received a letter in his name (without date) from the Department of State, signed by Stephen Cohen, and from the Commission on Security and Cooperation in Europe at the Congress of United States, signed by Martin Sletzinger (of the 26th September 1979). As my ultimatum to Carter remained unsatisfied, I announced in newspaper articles, in leaflets, on a public meeting at the Palais des Congrès in Paris and during personal visits in the American Embassies in Brussels and Paris about my decision to commit the self-immolation. However, a week before the settled day, the French police arrested me (obviously under the pressure of the American government) and imprisoned me in a psychiatric clinic. After my friends announced through the French TV about this shameful act, worthy only of a totalitarian state, I was liberated from the psychiatry clinic, but was subjugated to a day-and-night police escort and then expelled from France. A full documentation on this action with clippings is presented in my book THE THRONY WAY OF TRUTH (published in 1982).

I dedicated to the organization of my present action four years. The organization consisted in bringing the results of my measurements of the Earth's absolute velocity, my experimental rejections of the principles of relativity and equivalence and my global absolute space-time theory to the world scientific audience. I did this in more than forty scientific papers, in the five-volumes encyclopaedic work CLASSICAL PHYSICS (published in 1981), on the organized by me International Conference on Space-Time Absoluteness (Genoa, July 1982), and on all important international space-time conferences, including the conference in Padua in July this year. The whole scientific documentation is sent in a due time to the Nobel Committee in Stockholm and I wish to believe that the Nobel prize for physics for the year 1983 will be awarded to me. But even if the prize will be not awarded, I think, that this time my moral-scientific authority will not permit to the French government to suffocate the action. The preparation consisted namely in ensuring a freedom for my actions in Paris.

The success of my action has a capital significance for the future of mankind. If its result will be positive (I am absolutely sure in this, even if I should not be able to see the liberated Orlov with my own eyes), the simple people will understand that they are not a toy in the hands of blind forces, and that they can change the pace of the world history. Then ultimata for disarmament and fraternization will begin to flow. That what you, the rulers of the world, could not achieve during so many years on the round-tables, we shall do with our ultimata.

Yuri Vladimirovitch, Yuri Orlov will be free! Be wise, liberate him before my immolation. --- Too much unguilty blood was shed by the Soviet power. It is time to pay something for this blood. Krushchov intended to erect a monument to the victims of Stalinism. On this earth there are too many monuments of stone and concrete. The best monument to the dead is the freedom of the living.

We with you, we have no much time to live, Yuri Vladimirovitch. Take the communion before setting out the way to the unknown! Give freedom to the birds and you will with astonishment feel how calm and cheerful will be on your heart. And the bright spring feast of peace, brotherhood and reconciliation will come down to our possessed earth.

Yours: *S. Marinov* S. Marinov (proletarian dictator)

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Selle 4 Kleine Zeitung  
Mittwoch  
20. Juli 1983

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## Appell an Andropow: Orlow freilassen!

Graz. — Der zur Zeit in Graz lebende bulgarische Physiker Stefan Marinov hat in einem der „Kleinen Zeitung“ übergebenen offenen Brief an den sowjetischen Parteiführer Andropow diesen aufgefordert, den sowjetischen Menschenrechtskämpfer Juri Orlow freizulassen. Orlow, ein 58jähriger Physiker, gründete Mitte der siebziger Jahre eine Helsinki-Gruppe in Moskau. Er befindet sich zur Zeit in einem Arbeitslager in Haft und ist am 10. Juli in einen Hungerstreik getreten, um damit seiner Forderung nach einer Amnestie für politische Gefangene Nachdruck zu verleihen. Der bulgarische Physiker Marinov kündigt nunmehr in seinem offenen Brief an, er werde sich vor dem Gebäude der Sowjetbotschaft in Paris am 16. Jänner 1984 selbst verbrennen, falls Orlow nicht befreit würde. Marinov hatte bereits im März 1979 eine ähnliche Aktion in Paris versucht und war dabei von der französischen Polizei verhaftet worden.

Die Tagespost  
Graz, 21 Juli 1983

### — Kurz gemeldet —

**Selne Selbstverbrennung**  
vor der Sowjet-Botschaft in Paris am 16. Jänner 1984 kündigte der zur Zeit in Graz lebende bulgarische Dissident Stefan Marinov an, falls Kreml-Chef Andropow bis dahin seinen inhaftierten Kollegen Juri Orlow nicht freilasse. (TP)

Miami, July 22, 1983

EAST-WEST  
International Publishers  
Niederschöcklstr. 62, A-8044 Graz  
AUSTRIA

Sirs:

It is with great excitement that I have seen the titles of physicist STEFAN MARINOV published by your editorial. I am including a \$25.00 (US) check to purchase his:

PROCEEDINGS OF ICTSA (International Conference on Space-Time Absoluteness), Genoa, Italy 8-11 July 1982.

I will appreciate if you send me a copy to:

Francisco J. Muller  
8025 S.W. 15 St.  
Miami, FLORIDA. U.S.A 33144

(Tel: 1-(305)-266-1595)

At the same time I will appreciate if you could give me the following information:

1) HOW COULD I PUBLISH SOME BOOKS THROUGH YOUR SERVICES?

I consider myself one of those "suffocated" voices that in vain have tried, (for 10 years!) to publish a few articles containing electromagnetic induction experiments that seem to contradict some aspects of Einstein's infamous relativity theory.

2) HOW COULD I MAKE A PERSONAL CONTACT WITH DR. STEFAN MARINOV?

I already have a copy of his CLASSICAL PHYSICS and the book seems so sensational that it is almost hard to believe that it is real. I wish I could join forces with him in this unequal struggle against the established relativistic dogmas. Could you please tell me something concerning him or perhaps forward him some notification about my name, address and intentions? If possible, could you send him the little note enclosed here?

3) COULD YOU SEND ME MORE INFORMATION ABOUT YOUR PUBLICATIONS?

Perhaps a catalog, especially in the scientific arena.

Thanks very much for all your services,

Respectfully yours:

*Francisco J. Müller*  
Francisco J. Müller

Dear Dr. Marinov:

It is only with admiration that I have taken a glance at your book "Classical Physics". I am not capable of understanding most of its theoretical contents since I am more an experimental physicist. But I will like to mention to you some aspects of my work that somehow harmonize with yours.

1- Ever since 1970 I have been studying the problem of electromagnetic induction, in its form called by Weber, the Unipolar Inductor. I know that Einstein dismissed the problems connected with this intriguing phenomenon (discovered by Faraday in 1831) in which induction seems to occur WITHOUT RELATIVE MOTION between the conductor and magnet.

A problem has been to locate the true "seat" of EMF by means of experiment. Kennard, in 1917 (Phil. Magazine) made an important advance towards absolute physics by demonstrating that electromagnetic induction does not require relative motion

I myself have done some experiments where I have been able to locate the "seat" of induction, (against Einstein's assertion in 1905, section 6, that this problem "has no point").

I have been able even to design a new type of electromagnetic generator using my ideas.

In spite of this I have never been able to publish any article, (8 failures already), due to resistance of the "establishment" in its irrational acceptance of relativistic dogmas.

I wish I could have some exchange with you concerning your experiments and my experiments. Maybe we could help each other.

2-On a more theoretical level I think I can defend the thesis, supported with experiments, that there exists FAR FIELD INTERACTIONS, for example, that an electric charge can be affected by a changing magnetic field far removed from the particle's location. And indeed, even removed from any effective gradient of the magnetic vector potential A. (This is a more drastic claim than the one done for the Aharonov-Bohm effect).

3-On a more philosophical level I feel the need to subject most of 20th century physics to a scrupulous critique and re-evaluation from the viewpoint of a REALISTIC philosophy of Nature. I think you are also on this track.

Thanks very much for your attention.

Respectfully yours: *Francisco J Müller*

Francisco J. Müller

8025 S.W. 15 St. MIAMI, FLORIDA, U.S.A. 33144

Marinov's note. I sent 300 copies of my book CLASSICAL PHYSICS to the physics libraries of the world. No single book was bought. About 10% of the libraries returned the books. Certain libraries wrote that if I shall not send money for the back postage, the books will be burnt, other libraries did the holocaust without having any scruples (see p. 233). However ONE of my books found a blessed soil: the hands of Francisco Müller. And what a harvest brought this single book: the discovery of the perpetuum mobile. --- Thus I address those who will come to this earth when we shall disappear: Don't become desperate when the seeds which you try to seminate fall on stones. May be only one of all thrown seeds will find a propitious soil, but the harvest brought by a single seed may be big.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
12 August 1983

Herrn Dr. Heinz Fischer  
Bundesminister für  
Wissenschaft und Forschung  
Minoritenplatz 5  
1010 Wien  
Ihre Ref. GZ 60 762/238-14/83

Sehr geehrter Dr. Fischer,

Ich bestätige mit Dank das Erhalten des Briefes des Herrn Dr. Rosenberger vom 7 Juli 1983, der erst heute (am 12 August) angekommen ist.

Der Brief ist in Ihrem Namen geschrieben, aber ich möchte hoffen, daß er ohne Ihr Wissen geschrieben wurde. Mit diesem Brief nämlich schickt mir Dr. Rosenberger das Buch "Der Kreuzweg", das ich Ihnen geschenkt hatte, mit folgender Motivierung zurück:

Sie werden um Verständnis gebeten, daß der Herr Bundesminister aus prinzipiellen Gründen nicht in der Lage ist, dieses Geschenk anzunehmen.

Lesend diese Zeilen, bin ich sprachlos geblieben. Das Wort "sprachlos" sagt alles, man braucht keines mehr hinzufügen. Aber weil ich Angst habe, daß Dr. Rosenberger diesen Brief Ihnen nicht zeigen wird, will ich das folgende sagen:

"Der Kreuzweg" ist ein gemeinsames Werk von 12 Tafel des großen italienischen Malers Renato Cenni und 12 von meinen "Slawischen Sonetten" ins Italienische übertragen. Cenni, verjagt von Mussolini, hat lange Jahre das schwere Los des Emigranten erlebt und im Kriege als Partisan für die Freiheit in Norditalien gekämpft. Sein "Calvario" zeigt mit einer erschütternden Kraft die Tragödie des einfachen Menschen in der Welt der Tyrannen und der Tyrannenhelfer. Meine Sonette sind hauptsächlich im Kerker und in den psychiatrischen Kliniken Bulgariens geschrieben. Dieses Buch ist der Schrei von zwei Menschen, die sich nicht kannten, die, aber, die Welt mit denselben Augen sehen und mit denselben Tränen beweinen.

Ein solches Buch mit einer solchen Formulierung zurückzuschicken spricht von einer Taktlosigkeit und geistigen Leere, die man einem österreichischen Minister nie erlauben könnte. Ich wiederhole, ich möchte hoffen, daß der Brief ohne Ihr Wissen geschrieben wurde, und ich werde mit fröhlichen Augen die Welt wieder sehen, wenn Sie mich bitten würden, den "Kreuzweg" Ihnen wieder zu schicken. Wir malen und schreiben für die Leute und wir sind sehr traurig, wenn die Leute unsere Kunst nicht sehen, sondern nur die Qualität und den Preis des Papiers auf dem wir unsere Werke vorzeigen.

Mit der Überzeugung, daß Sie mich verstehen werden,

Ihr ergebener:

*S. Marinov*  
Stefan Marinov

PS. Ich hoffe auch Ihre Antwort auf mein Schreiben vom 16 Juli zu bekommen.

Editorial note. All Marinov's letters to the Minister of science and research, including the letter of the 10 July 1984 (see p. 271) with which Marinov informed the Minister of having constructed a perpetuum mobile, remained without answer. A couple of days after the 12.VIII.83 Prof. W. Papousek (Physical Institute of the Technical University, Graz) said to Marinov: "Recently I met Minister Fischer and spoke with him about you. The Minister begged me to transmit to you that he is not feeling offended by your last letter. Unfortunately he can not accept your "Calvario" because the christ-democrates may accuse him of receiving bribes and he once more begs for your understanding. The Minister wishes you any success in poetry and research work."

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
12 September 1983

Herrn Siegfried Kogelfranz  
Redaktion: Kommunismus  
DER SPIEGEL  
Postfach 110420  
D-2000 Hamburg 11

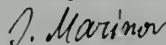
Sehr geehrter Herr Kogelfranz,  
sehr geehrte Herren von der Redaktion "Kommunismus"!

Am 21 Juli 1983 hab ich Ihnen mein ULTIMATUM an Andropov geschickt mit der Bitte es im SPIEGEL zu veröffentlichen. Leider, bis jetzt ist von Ihnen keine Antwort gekommen. Ich hatte sehr große Hoffnung den Wortlaut dieses Ultimatus über den SPIEGEL zu veröffentlichen. Bis jetzt sind nur kurze Zeitungsinformationen (durch die APA und ASSOCIATED PRESS verbreitet) erschienen. Für den Erfolg meiner Orlov-Aktion ist es sehr wichtig den integralen Text in so einer Zeitschrift wie DER SPIEGEL zu publizieren. Darum bitte ich Sie sehr meinen Brief vom 21 Juli zu beantworten. Auf jeden Fall schicke ich Ihnen eine Kopie dieses Briefes und den Text des Ultimatus.

Gemeinsam mit dem Brief vom 21 Juli habe ich Ihnen einige von meinen Büchern geschickt. Im Falle, daß DER SPIEGEL kein Interesse an meiner wissenschaftlichen und politischen Tätigkeit hat (und haben wird), bitte ich Sie sehr mir die Bücher zurück zu schicken. Wenn es nötig ist, werde ich Ihnen das erforderliche Postgebühren überweisen.

Mit der großen Hoffnung, daß Sie meinen Kampf unterstützen werden,

Ihr ergebener:



Stefan Marinov

PS. Wenn ich nicht eine große Zeitung finden werde um den integralen Text meines ULTIMATUMS zu veröffentlichen, dann werde ich einen Hungerstreik vor einer solchen Zeitung oder Zeitschrift durchführen. Wenn man den Text nicht kostenlos publiziert, bin ich bereit das Ultimatum als bezahltes Inserat zu veröffentlichen. Also, ich bitte Sie mir zu schreiben, wieviel mir eine Seite im SPIEGEL kosten wird. Ich warte auf Ihre baldige Antwort.

10 Dezember 1983

Schickend Ihnen die Kopie des obigen Briefes, bitte ich dringend diesen Brief zu beantworten! Ich frage nochmals: Kann ich mein ULTIMATUM (nicht Brief!) an Andropov als Inserat im SPEIGEL veröffentlichen? Bitte, haben Sie MITLEID und beantworten Sie meine Frage. Ich habe zu wenig Zeit.

Ihr ergebener:



Stefan Marinov

Editorial note. The answer to these letters is given on p. 225.

JM/MS  
13 September 1983

Dr Stefan Marinov  
Niederschlockstr. 62  
A-8044 Graz  
Austria

Dear Dr Marinov:

I have only just read your shocking letter of 20 July. Naturally I sympathise with your objective, but on past experience there is no reason to suppose that your letter to Mr Andropov will have any effect. I fear that your threat to commit suicide in Paris on 16 January 1984 will leave Mr Andropov and his colleagues entirely unmoved. My own belief is that your immolation would be a tragic and foolish waste and I am afraid that I cannot agree that Nature should assist you in this enterprise either by publishing your letter in our editorial columns or even as an advertisement.

I tried to reach you on the telephone this morning. By the time you get this letter, I shall be in the United States, but when I get back I shall make a point of calling you again.

With all good wishes,  
Yours sincerely,



John Maddox  
Editor

Dear Stefan Marinov:

Miami, Sept.14, 1983

Excuse me for not writing to you sooner but I am having so many things to do concerning my wedding, the new house, the party, the airline tickets, and especially I am having problems in getting my visas. We are passing by Spain, France, Germany and finally Austria and since I am an exiled from a communist dominated country, (Cuba), all sorts of obstacles arise. Our plans are to arrive to Madrid on October 3rd. Then we will pass to Paris, then Lisieux, then to some German city and finally Graz. We want to make a quick trip going forward. In our return through the same places then we would like to "enjoy" longer times in the different places.

Meanwhile, I have been reading as much as I can of the ICSTA Proceedings. I am impressed with your articles but I would have to have a much more complete knowledge of your entire approach to Classical Physics in order to really understand everything. My electromagnetic induction experiments are not as revolutionary as your optical or mechanical ones. In that sense it should be easier for me to convince the scientific community that Relativity Theory is wrong because it is wrong at the very heart of electro-dynamical principles. So perhaps my contribution to the Non-Relativistic movement might be to prepare the way to your more radically anti-relativistic experiments. And yet, I have been able to publish not even half a word of my work.

Concerning my electromagnetic generator without sliding contacts I wish I could obtain some kind of a patent for it. This was a by-product of my experiments. It came out as a surprise for me. It is essentially a D.C. generator without brushes, (something which, like the moto perpetuo, was supposed to be impossible). Yet, the D.C. voltage cannot be obtained through a complete revolution. So it is a sort of "interrupted" DC generator. For a while I thought that the voltage was generated without a "back EMF". But then I demonstrated, experimentally, that it has, indeed, a back EMF, so it can be used also as a motor. The way this back EMF is developed is still intriguing for me, and it lead me to my last article entitled: "Motional Induction at a Distance". Again, there is nothing too revolutionary here. It is almost as what you say concerning your perpetual motion machine, that you see it everywhere in everyday phenomena. Likewise, this "motional-induction-at-a-distance", can be proven to exist in ANY COMMON generator or motor used today.

Consider, for example, a motor in which the conductors, as is the usual case, are embedded into slots in the <sup>armature</sup>. Traditionally, students are told that induction occurs because the conductors "cut" the B lines as they rotate (see Fig. 1). But in reality, the conductors are practically shielded from the magnetic field inside the slots. (Fig.2). In other words, the field concentrates in the teeth around the conductors and as these move they NEVER CUT a magnetic line. Yet, the voltage can be calculated AS IF the conductors cut the flux per unit time  $d\phi/dt$ . I have found only two references concerning this problem. One is Bewley's monography "Flux Linkages and Electromagnetic Induction" published by Dover, 1962. The other by Williams and Mamak, "Electromagnetic forces in Slotted Structures" (Proc.Inst.Elect.Eng.,GreatBrit.Monograph 456, July 1961). The latter I have been unable to find it. In the first one Bewley says that here we have a case of "quasi-motional emf" and that "one of the oldest and most cherished examples of (line)cutting action goes into the discard"... I am enclosing a copy of page 82 of his book. As you can see his experiment



Fig.1

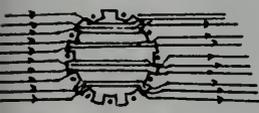
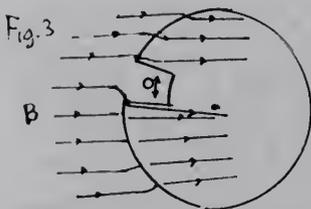


Fig. 2

involves not a rotation but a linear translation and is not quite like the case of the rotating motor or generator. Yet it shows a practical detail of extreme theoretical importance. I can show to the last evidence that there is a whole world of a difference between: A) moving a magnetic source or ferromagnetic material which is continuous, has no edges and creates no  $dB/dt$  anywhere in the Universe, and B) moving one that, because it is finite, or its symmetry or asymmetry respect the motion, creates some  $dB/dt$  somewhere in the Universe. In case (B), IF THERE IS SOME CONDUCTOR THAT CAN REACT ELECTROMAGNETICALLY AS TO OPPOSE THE  $dB/dt$ , A VOLTAGE AND/OR CURRENT WILL BE INDUCED IN SUCH A CONDUCTOR, EVEN IF THE CONDUCTOR IS NOT LOCATED AT THE SITE WHERE THE  $dB/dt$  EXISTS. In other words, this is a NON LOCAL field action. This will go against Relativity theory which can only function with LOCAL field actions, and even against current Quantum Mechanics which depends on the potential A, also in a local fashion.

Let us look at this problem more in detail. For simplicity, suppose that there is only one slot in the rotor and one conductor. If the conductor is moved or slightly oscillated as indicated by the arrow in the Figure while keeping the rotor at rest, NO VOLTAGE is induced at all. Yet, if the rotor is similarly oscillated, while keeping the conductor at rest, A POSITIVE VOLTAGE will be induced (of course, an alternating voltage) From this you can deduce that if the rotor is moved together with the conductor, a positive voltage will be also induced. But the relevant thing is to move the rotor. Motion of the conductor is



entirely irrelevant. I have performed this experiment in a slightly different way, but the results are equivalent. In an enclosed page you can see the oscilloscopic tracings of the three cases. A number of conclusions that can be derived from here are the following:

- 1-First of all we see that the induction DOES NOT REQUIRE relative motion between the conductor and the magnetized material. When the conductor moves alone, nothing happens; movement of the iron rotor is required. We do not have, therefore, that RECIPROCIITY upon which Einstein insists so much from the very beginning of his 1905 paper.
- 2.-The fact that no induction occurs when the conductor moves freely inside the slot indicates: a) that  $B = 0$  inside the slot, (and this of course is trivial to say) but also: (B), that even if a finite value of the vector potential A exists inside the slot, the gradient of A, is not adequate to produce induction by motion of the conductor. Therefore,  $\nabla \cdot A$  does not explain the origin of the induction inside the slot. If  $\nabla \cdot A$  had an adequate configuration then we should obtain induction by moving the iron alone, as well as by moving the conductor alone, because in both cases  $dA/dt$  produced by convection,  $(v \cdot \nabla)A$ , would be identical. But only when the iron moves we have induction. So we ask: what is the explanation for the induced voltage when only the iron moves and the conductor stays at rest?

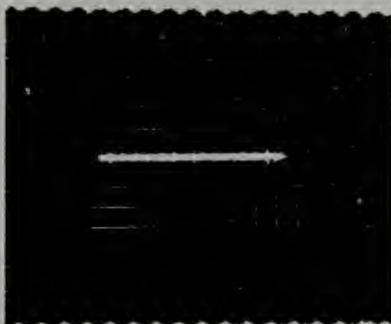
3-Engineers will answer: the flux rule,  $d\phi/dt$ , when applied to the WHOLE loop, is the answer. And this is true. But the flux rule is a CALCULATION, IS NOT AN EXPLANATION. In fact, if we use the flux rule, 1) we have to introduce those branches that have nothing to do with the induction SITE. This site is at the conductor INSIDE the slot, (and I have other type of experiments where I can proof this). 2) we also have to speak like Bewley, that the lines are "transferred" from one tooth to the next one across the slot or gap. But this is a most irritating way of talking.

The lines, we know, are fictitious concepts. How can we admit that "lines" are transferred across a region of space where  $B=0$  ALL THE TIME? No. Resort to the flux rule is to ESCAPE from an explanation, not to give a true physical EXPLANATION.

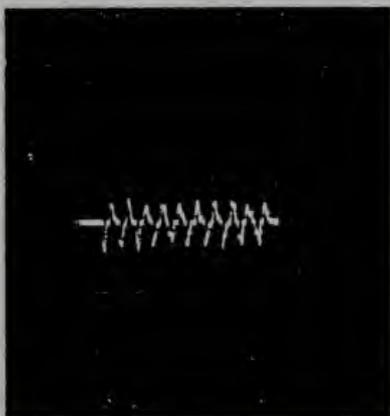
RESULTS FOR FIG 3



CONDUCTOR and  
ROTOR oscillating  
together.



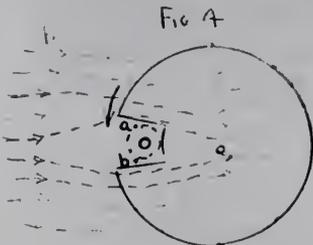
CONDUCTOR oscillating  
alone



ROTOR oscillating  
alone

In search for a better explanation one could: 1) resort to the Amperian-German type of electrodynamics, disregarding the concept of magnetic field and lines, or 2) one could still use the field concepts and introduce NON-LOCAL field interactions.

I have tried the first direction, by equating the magnetized material to a system of equivalent (amperian) currents and then analyzing the direct interaction between currents and moving charges in the conductor. But I do not know how to handle, then, the simple case of "transformer induction". So, at least temporarily, I choose a hybrid theory, using the  $dB/dt$  concept, the non-local interaction, and, fundamentally, the principle enunciated by Lenz's law. In this fashion, then, going back to the slotted conductor I would say:



Suppose that the rotor is moving as indicated by the arrow. Then at point (a), considered to be fixed in absolute space, there is a sudden increase of B field. (This point had  $B=0$  inside the gap, but gets a sudden finite B value when the edge of the magnet reaches it). At point (b) the opposite is true. (It was at the edge inside the magnet and now it is where  $B=0$ ). Now, Lenz's law establishes that the slotted conductor, (green circle), should react in such a way as to create a B field that opposes the previous changes. So a current should flow out

of the paper, (not shown), so that the B field, (red dotted line) due to this current opposes the B increasing at (a) and reinforces the B collapsing at (b).

I do not know if my explanation is clear to you, but I have applied it to all possible induction experiments and it never fails. It has the advantage of permitting analysis in terms of isolated portions of conductor, without having to consider "integral" circuits. But it has a tremendous non-classical novelty: I am assuming that the conductor can react to the B changes occurring at a distant point (a) or (b), not where the conductor is located. Where the conductor is located nothing happens, ( $B=0$  always), so  $dB/dt=0$ ; yet the conductor "feels" at a distance, the  $dB/dt$  changes occurring at far points, and indeed, occurring everywhere in the Universe.

I have described this theory in a rather lengthy article (enclosed here): "The Amazing Problem of the Electromagnetic Unipolar Inductor". (The figures are collected at the end.) The article was written in 1979, coinciding with Einstein's centennial celebration and I tried to be rather moderate in my discrepancy with relativity theory. (This was only for strategic reasons). In pages 2-6 I give a historical review of the problem. Then in pages 6 to 9 I describe my own original experiments, called A, B, C and D. (The experiments are described also in the accompanying publication for the "Amateur Scientist" and there I give all the details). Continuing with the main publication I become a little bit sarcastic towards General Relativity at the bottom of page 9. Then I proceed to describe the three crucial Tests of page 10. Finally on pages 12 and 13 I give the theory previously outlined.

I hope this material might be of interest to you and that we can discuss it if we finally meet next month.

I am also enclosing a complete set of "answers" for the experimental sketches I had send you before. The difference between F2-F3 and G2-G3 is the crucial point of interest. Again let me clarify that I have not performed experiment F3. Using arguments from relativists like Panofsky & Phillips I can demonstrate that a positive result should be expected.

But it would be crucial to perform this particular experiment. I have ideas of how could it be done which I would like to discuss with you personally.

Thanks very much for your attention.

Truly yours,

Francisco J. Miller

I made this test up for students in U.S.A.  
I would like to know your predictions for each case

A SURVEY TEST IN EXPERIMENTAL ELECTROMAGNETISM (S.T.E.E.M.)

Instructions: Read carefully each experiment. All motions are measured respect the laboratory frame of reference. All magnets are permanent and also good conductors, (unless otherwise stated). Except in the two last problems you are required only a qualitative answer, (+) for positive results and (0) for null results. If you need, however, to qualify your answer with conditional specifications you can use the space for "Comments" in the answer sheet. If you consulted any reference, please indicate so. If you worked in combination with someone else, use a single answer sheet, indicating the number of people involved. No personal identifications are required. The correct answers will be provided after Sept. 1, only to those institutions where at least one test has been completed and returned. No experiment is trivial. Four of them, however, are classical and should be answered correctly by all.

Experiments involving rotation.

Exp. A: Copper disk above a cylindrical magnet. - (Faraday's disk).

abcde is a wire circuit bearing on a rotatable copper disk through sliding contacts at a and e. The B field is symmetric about the axis of rotation.

Answer if galvanometer G will read (+), or not read, (0), a current intensity for the following cases:

- 1) Disk rotating; circuit and magnet at rest
- 2) Magnet rotating; disk and circuit at rest
- 3) Circuit rotating; disk and magnet at rest
- 4) Circuit and magnet rotating; disk at rest
- 5) Circuit and disk rotating; magnet at rest
- 6) Magnet and disk rotating; circuit at rest
- 7) Magnet, Disk & circuit rotating

Exp. B: Similar to Experiment A but without the disk.

(Recall that the magnet is also a conductor.)

Answer if G will read, or not, a current for the following cases:

- 1) Magnet rotating; circuit at rest
- 2) Circuit rotating; magnet at rest
- 3) Magnet and circuit rotating together

This is KENNARD'S Exp. (1917)

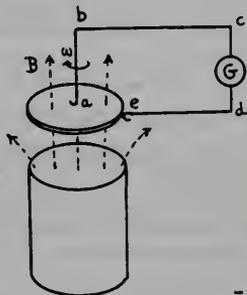
Exp. C: Cylindrical capacitor in a longitudinal B field.

CC' is a cylindrical capacitor connected to an electrometer E through sliding contacts at a and b. The external shell C is closed as shown. SS' is a coaxial solenoid providing a uniform and constant magnetic field B in the space within the capacitor. The solenoid can be rotated independently of the capacitor. Wires aE and bE are essentially coaxial and colinear.

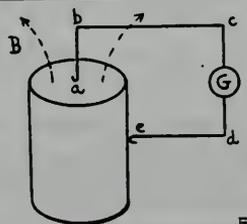
Considering rotations about axis EE', answer if any charge difference,  $\Delta Q$ , between C and C', will develop and will be measured (+), or not (0), by Electrometer E, when:

- 1) The capacitor rotates; solenoid and E are at rest
- 2) The solenoid rotates; capacitor and E are at rest
- 3) The capacitor and solenoid rotate together; E at rest
- 4) E rotates alone; capacitor and solenoid are at rest
- 5) All three components rotate together

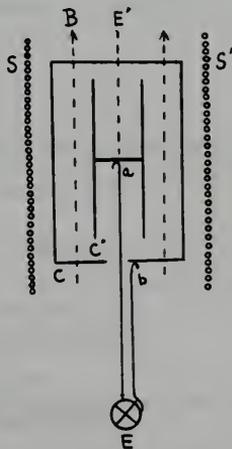
- 6) Solenoid + E rotate, C at rest
- 7) Capacitor + E rotate, S at rest



EXP. A



Exp. B



EXP. C

Experiments involving rectilinear translation

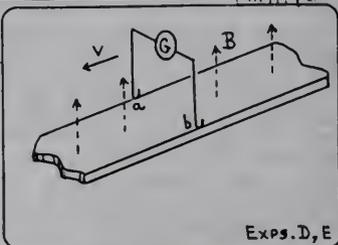
Exp. D: Circuit sliding over a magnetized and infinitely long conducting slab.

PANAFILIC and  
PHIL. PS  
revised  
Elec. &  
Mag. No. 1  
page 115  
(1962)

The galvanometer link,  $aGb$ , is such a circuit. The slab is magnetized across its thickness and it is infinite in both directions. (In practice it might be the straight section of an endless magnetized conducting belt.)

Answer if  $G$  will read, or not, a current when:

- 1)  $aGb$  moves; the belt is at rest
- 2) The belt moves;  $aGb$  is at rest
- 3) The belt and  $aGb$  move together



Exp. E: Same as Experiment D but with a FINITE slab.

If the slab in the previous figure is finite, field inhomogeneities will appear at both ends. Suppose, however, that the link circuit is restrained to move only within the region where the  $B$  field is strictly homogeneous (parallel and constant).

In such a case,  $G$  will read (+), or not (0), a current, when:

- 1)  $aGb$  moves; the slab is at rest
- 2) The slab moves;  $aGb$  is at rest
- 3) The slab and  $aGb$  move together

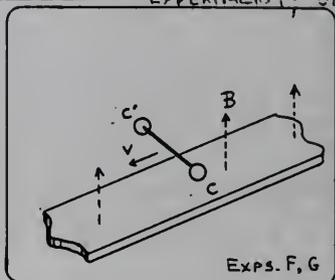
Exp. F: Same as Experiment D but with a capacitive, (open), system.

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EXPERIMENT COPY  
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MAKE

$C$  and  $C'$  are two conducting spheres joined by a rigid conducting rod. The system can move over the magnetized and infinitely long slab, (or endless belt), without touching it. (You can think of an airplane flying over the Earth's magnetic field). The slab or belt need not be a conductor this time, (a ceramic magnet would do).

If induction occurs along the rod, the spheres will become oppositely charged, according to their capacities. Such charge separation will occur, (+) or not occur, (0), when:

- 1) The rod moves and the belt is at rest
- 2) The belt moves and the rod is at rest
- 3) The belt and rod move together



Exp. G: Same as experiment F but with a FINITE magnetized slab.

Now field inhomogeneities reappear at each end. Restricting, again, the motion of the rod to the region where  $B$  is homogeneous, answer if charge separation will occur (+), or not occur (0), when:

- 1) The rod moves; slab at rest.
- 2) The slab moves; rod at rest.
- 3) Both move together.

ANSWER SHEET (detach)

EXP. (+ or 0)	Comments	Any reference consulted?
A1---	<input checked="" type="checkbox"/> Done by FARADAY	
A2---	<input checked="" type="checkbox"/> " " "	
A3---	<input checked="" type="checkbox"/> (By deduction)	
A4---	<input checked="" type="checkbox"/> Same as A3. Rotation of magnet is irrelevant here.	
A5---	<input checked="" type="checkbox"/> Induction across the disk is opposite to induction at the circuit. Net emf = 0	
A6---	<input checked="" type="checkbox"/> Same as A1	
B1---	<input checked="" type="checkbox"/> Now the magnet acts like the disk. This is the remarkable "unipolar inductor"	
B2---	<input checked="" type="checkbox"/> Reciprocal of B1	
B3---	<input checked="" type="checkbox"/> Both inductions ( $B_1 - B_2$ ) cancel each other.	
C1---	<input checked="" type="checkbox"/> Done by KENNARD (1917)	
C2---	<input checked="" type="checkbox"/> "	
C3---	<input checked="" type="checkbox"/> "	
C4---	<input checked="" type="checkbox"/> (TRIVIAL)	
C5---	<input checked="" type="checkbox"/> Done by Kennard. Beautiful demonstration of absolute rotation by electromagnetic induction.	
D1---	<input checked="" type="checkbox"/> aGb "cuts" the lines of B. (See PANOFKY & PHILLIPS, section 9-5, 1962 BOOK)	
D2---	<input checked="" type="checkbox"/> ab "cuts" " " " " in spite of being the source of B. (Same as in B1 above)	
D3---	<input checked="" type="checkbox"/> Both inductions, (at aGb and at ab), cancel each other	This is a "rectilinear unipolar inductor"
E1---	<input checked="" type="checkbox"/> (+) Same as D1.	
E2---	<input checked="" type="checkbox"/> This case appears to be like D2. But I can phrase, indirectly, that the emf is not across ab but along aGb.	
E3---	<input checked="" type="checkbox"/> Satisfying relativistic facts.	
F1---	<input checked="" type="checkbox"/> o.k. by all theories, as in D1 and E1.	
F2---	<input checked="" type="checkbox"/> Nothing happens in the rod, since $\partial B/\partial t = 0$ everywhere in the universe. (Some rotation might occur in the slab)	
F3---	<input checked="" type="checkbox"/> Expected result if you "add" cases F1 and F2	
G1---	<input checked="" type="checkbox"/> Same as F1	THIS EXPERIMENT WOULD DEMONSTRATE ABSOLUTE RECTILINEAR MOTION, if the belt were INFINITE or ENDLESS, AGAINST RELATIVITY THEORY, AS CASE C5 above BUT WITH FINITE SLAB.
G2---	<input checked="" type="checkbox"/> in contrast with 0 of case F2, since now $\partial B/\partial t \neq 0$	
G3---	<input checked="" type="checkbox"/> Since G1 + G2 would oppose each other, again in agreement with Einstein	

Circle correct answer:	Prob.I	1	2	3	4	Other: emf =
	Prob.II	1	2	3	4	Other: emf =

(Information)

Your institution: \_\_\_\_\_ (This has to be identified to send you the results)

Pseudonym or arbitrary identification if desired: \_\_\_\_\_

Number of people answering this sheet: \_\_\_\_\_

Academic standing of each: \_\_\_\_\_ . Major(s) \_\_\_\_\_

At completion, save your questionnaire, Xerox this sheet and send original to:  
 S.T.E.E.M. (F.J.Muller, director)  
 8025 S.W. 15 St.  
 Miami, FLORIDA, 33144  
 (self addressed envelopes are enclosed)  
 No stamp needed.

DEADLINE is Sept. 1, 76.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

19 September 1983

Ref.: Your letter of the  
13 September 1983, JM/MS

Dear Dr. Maddox,

Thank you very much for your letter of the 13 September. I think that any person decides for himself the problem of sacrifice, suicide, assassination, etc. We can, of course, discuss with you this problem, however, I think, here one has to dedicate too much time, which neither you nor I have at our disposal. I am 52 and in my life I have many times taken decisions which with a great probability had to lead to a death, mutilation, or long years imprisonment. However, as you see, I am save, sane and "free". If my 1984-Paris-action will pass on the same level as in 1980, I shall not immolate myself, as the impact of this death will be too feeble. However, if I shall see that the impact will be enough big, I am decided to immolate myself. On the other hand, if the noise suscitated by my ultimatum will be enough big, Orlov will be liberated. Thus, if you think logically, you will come to the conclusion, that I shall not die. Take into account that in February 1984 Orlov must be released from the camp, as he was condemned in February 1978 to 7 years. Thus there is the life of a man for one month imprisonment. Andropov cannot be a MONSTER if he will hear my ultimatum.

I intended to perform a repetition of my 1980 action in 1982, then in 1983, but at that time still my scientific reputation was too feeble. I had the hope that the 1983 Nobel prize for physics will be awarded to me, and thus the action can be successfully carried out in January 1984. I did all what was needed from my part, however, although expecting (and being prepared) for a hard resistance of the scientific community and of the political forces in the West, this resistance surpassed my expectations. Thus, as I see, the Nobel prize for 1983 will be not awarded to me. Nevertheless, I have decided to prepare the action in Paris. Thus, I beg you to publish *in toto* my letter to Andropov (in Russian and in English) on the same page. All journals to which I sent it (DER SPIEGEL, LE MONDE, TIME, THE ECONOMIST, etc. etc. - about twenty) not only have not published it but only 20% answered my letter presenting (or not) motivations for the rejection. If you will also reject to publish it, I shall do some other efforts in trying to publish it in a big journal. I beg you, however, to take into account that almost whole my time is dedicated to scientific activity and few time remains for writing letters, phoning, and searching contacts with journalists. Humanity firmly rejects to resist to the preparation of the war and it will, of course, have it soon. If you wish to SAVE YOURSELF, publish my letter! If you wish to condemn you to the nuclear death, reject it.

I submit now to NATURE my new article

MATHEMATICAL NONSENSSES SLIPPED INTO THE FUNDAMENTALS OF  
CONVENTIONAL ELECTROMAGNETISM MUST FINALLY BE CORRECTED.

It is obvious for ANY STUDENT that this article CANNOT BE REJECTED. No referee in no country of the world can find a single objection to this lucid paper. If you will reject it, dear Dr. Maddox, excuse me, but, I think, there is no more sense to submit papers to NATURE. The beauty of a really beautiful woman cannot be denied. THIS ARTICLE IS UNREJECTABLE!

I beg you once more to publish my letter to Andropov, if necessary as advertisement. Hoping to receive your answer soon,

Sincerely yours,

*S. Marinov*  
Stefan Marinov

In reply please quote:  
JM/MS/JAC

3 October 1983

Dr Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
AUSTRIA

Dear Dr Marinov

Thank you for your letter, but I am afraid that I cannot modify my earlier decision not to publish your advertisement. You may say that it's more important than many of the other advertisements that we publish, and I allow that it is a good deal more interesting; but it is entirely irrelevant to Nature's purpose.

As to your paper, I shall see that it is sympathetically reviewed and will write again soon.

Yours sincerely



John Maddox  
Editor

Raum zum Aufkleben der Stempelmarken

An das

Österreichische Patentamt

IPC .....

Wien I.,

Techn. Abteilung .....

Kohlmarkt 8-10

(Postanschrift: Postfach 95, 1014 Wien)

Referent .....

Der... Unterzeichnete ..... [Vor- und Zunamen (Firma), Wohnort (Sitz der Firma), Straße und Hausnummer, Staat, Provinz] Stefan MARINOV, Niederschöcklstr. 62, A-8044 Graz, Austria. Tel. 03132/2609

vertreten durch [Vor- und Zunamen, Wohnort, Straße und Hausnummer des (der) Vertreters(s)] (\*)

meldet (~~erklärt~~) hiemit [kurzer sachgemäßer Titel der Erfindung] Gleichstrom Generator und Motor ohne Bürsten (Bul-Cub Generator und Motor). DIRECT CURRENT GENERATOR AND MOTOR WITHOUT BRUSHES. (BUL-CUB GENERATOR AND MOTOR)

zur Patentierung an und beantragt (~~beantragt~~), ihm (~~ihnen~~) auf diese Erfindung ein Patent (~~in~~ Fall der Anmeldung eines Zusatzpatentes als Zusatzpatent zu dem Patent Nr.

oder zu dem unter dem Aktenzeichen A ..... angemeldeten Patent Nr. 2) zu erteilen.

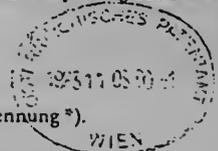
a) \*) Für diese Anmeldung wird die Priorität der (einer) denselben Gegenstand betreffenden Anmeldung(en) ..... (Land, in dem diese Anmeldung als Erstanmeldung bewirkt worden ist)

vom ..... in Anspruch genommen. (Tag der Anmeldung, deren Priorität in Anspruch genommen wird sowie Aktenzeichen dieser Anmeldung)

b) \*) Die Anmeldung ist eine Erstanmeldung.

Dieser Anmeldung liegen bei:

Beschreibung (2-fach), Zeichnungen (2-fach), ~~Modelle~~, Erfindernennung \*).



Die Anmeldegebühr wurde laut beiliegendem, vom Postamt bestätigten Empfangschein auf das Postscheckkonto Nr. 5160.000 des Patentamtes eingezahlt.

Empfangschein über den Betrag von S 538 eingereicht

Wien, am 8. November 1983

H 02k  
A: 3

3923/83

Stefan Marinov

Unterschrift des (der) Anmelders(s) oder des (der) Vertreters(s)

\*) Nichtzutreffendes streichen!

In reply please quote  
M11142 JM/MS  
25 November 1983

Dr Stefan Marinov  
Niederschöckstr. 62  
A-8044 Graz  
AUSTRIA

Dear Dr Marinov:

My colleagues and I have now read your paper but I am afraid there is no possibility that we could publish it. The explanation is quite straightforward - the theoretical part of your paper is entirely based on the assumption that your theory of absolute space-time is correct - an assumption with which none of us and no referee whom I trust agrees - while your account of how your brushless electromagnetic devices function is too obscure for us to follow.

I am naturally sorry once again to have to send you disappointing news like this.

With all good wishes,  
Yours sincerely,



John Maddox  
Editor

Editorial note. This is the rejection letter for the paper "Coup de grace to relativity", an earlier variation of the paper given on p. 112.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

Tel. 03132/2609

9 Decembre 1983

Уважаемой редакции  
"РУССКОЙ МЫСЛИ!"  
На внимание В. Рыбакова,  
если он в редакции  
217, rue de Фобур Сен-т-Оноре  
75008 Париж

Глубокоуважаемый г-н Рыбаков,

После четырех лет подготовки, снова пытаюсь провести в исполнение акцию по освобождению Орлова, которую в 1980 г. задушила жаскаровская полиция, как Вы, надеюсь, себе вспоминаете.

Посылаю мой ультиматум Андропову, с просьбой опубликовать его в следующем номере РУССКОЙ МЫСЛИ. Прошу Вас опубликовать текст полностью. Если из-за каких-то соображений редакция не хотела бы опубликовать текст ультиматума, прошу немедленно сообщить мне если я могу отпечатать его в виде "адвертисмент", т.е., оплатив соответную квадратуру страницы согласно вашим ставкам.

Я посылаю текст ультиматума Вл. Максимова в КОМПЛИМЕНТ, с просьбой передать копию также РУССКОЙ МЫСЛИ, но 4 месяца уже никакого ответа от Максимова не получаю, хотя дважды спрашивал дополнительным письмом. Теперь я нашел адрес РУССКОЙ МЫСЛИ и посылаю ультиматум непосредственно.

За эти четыре месяца я попробовал отпечатать текст ультиматума в ряде европейских и американских газетах и журналах, но отовсюду ответ был тот как и неизвестной Маруси: ПИВО, т.е., "Попробовал Итпытывать Все Отказали" /если Вам анекдот с марусиным ПИВО неизвестен, рад буду рассказать в следующем письме/. Все эти газеты как ДЕР ШПИГЕЛЬ, ДИ ЦАЙТ, ДИ ВЕЛТ, ДИ ИКОНОМИСТ, ТАГМ, и т.д. отказали даже отпечатать ультиматум как "адвертисмент". Журналу НЕЙЧЕР я предложил тройную ставку за страницу, чтобы отпечатать русский и английский переводы рядышком. После нескольких разговоров по телефону, редактор д-р Маддокс обещал сообщить мне свое решение телеграммой, но неделя прошла, а телеграммы нет. Я угрозил некоторым редакциям, что если не хотят отпечатать текст как "адвертисмент", то проведу голодовку перед входом в редакцию.

Хочу надеяться, что РУССКАЯ МЫСЛЬ не поступит как все редакции левых и правых западных газет и журналов. И прошу послать мне Ваше решение СРАЗУ ЖЕ ПО ПОЛУЧЕНИЮ ЭТОГО ПИСЬМА, так как времени нет, если должен проводить голодовку перед редакциями.

Пользуюсь случаем послать Вам мою книгу ИЗЫДИ, САТАНА!. Буду очень рад, если критическая оценка этой книги выйдет на страницах РУССКОЙ МЫСЛИ.

Буду также чрезвычайно Вам благодарен, если отправите копию ультиматума Андропову редакции НОВОГО РУССКОГО СЛОВА, чьей адрес мне неизвестен, с просьбой, с моей стороны, отпечатать ультиматум.

Я один из немногих восточно-европейских мюгикан-руссофилов. Прошу этого не забывать.

С искренним уважением:

*Р. Маринов*  
Стефан Маринов

Editorial note. This letter remained without answer.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
12 December 1983

Mr. P. Kinard  
Belgische Botschaft  
Operngasse 20 b  
1040 WIEN

Dear Mr. Kinard,

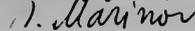
During our phone conversation about a month ago, you promised to send me writtenly the statement that the Belgian government does not give me a visa to my FREMDEN-PASS (valid for Belgium) to visit my wife, whom I have not seen since three years, as the Belgian government does not allow me to enter the country, after having deprived me of political asylum and of my Belgian conventional pass.

I explained you that I need this declaration of the Belgian Embassy to address the Madrid Conference for Security and Cooperation in which the European governments have taken the obligation to not hamper the unification of families. Of course, I shall bring this decision of the Belgian government also to the press.

I wish to visit my wife for Christmas.

I have done nothing against the laws of Belgium. This attitude of the Belgian government is shameful and I do not find words to express my indignation. If in our totalitarian countries one asks for a permission to join his wife, at least the authorities give one WRITTENLY the negative answer. In my case the Belgian government (and you personally) have overpassed the inhumanity and brutality even of the totalitarian countries. I am perplexed WHY.

Sincerely yours,



Stefan Marinov

PS. You said me on the phone that you have not received my book THE THORNY WAY OF TRUTH. I maintain a very active correspondence since three years that I live in Austria. No single letter of me was lost. This parcel to the Belgian Embassy is the first one. As in three years I sent about 1000 letters that were not lost, then I can affirm with a probability 999 to 1000 that you LIE that the book was not received. If you have this book indeed, please, be so kind to send it back to me.

I excuse me for the hard tone of my letter, but I fight since 20 years against the totalitarian monster in the East and the bureaucratic monster in the West. Nevertheless, I think, I keep my nerves cold. Understand, dear Mr. Kinard, you are paid to serve the people, not to torment the people.

Ha-ha-ha! I found a documentary proof for your lie. See enclosed my letter of the 20.I.83 with which I sent you my book and your answer of the 8.II.83. The book is in your hands, you simply LIE, LIE, LIE.

Editorial note. This letter remained without answer, however Dr. Haberl from the Sicherheitsdirektion, Graz, said to Marinov that the Belgian Embassy has asked the Sicherheitsdirektion whether indeed Marinov has a Fremdenpass valid for Belgium.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

12 December 1983

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

Dear Dr. Maddox,

During our phone conversation on the 2 December you promised to send me by a cable your decision concerning the publication of my ULTIMATUM to Andropov. A fortnight is over and still I have not your decision. I am very anxious about because my all hopes are with NATURE, as in no other journal I found understanding. I repeat, I am ready to pay you the tripple price for one page of NATURE where the RUSSIAN and English texts of the ultimatum are to be published, possibly with a picture of Orlov in the middle. But the ultimatum is to be published THIS YEAR and I wish to see the PROOFS. If I have no objections, I shall send you my consent for print on the phone. I beg you to act quickly.

I hope you have received my letter of the 5 December and you have finally elaborated your decision on my paper MATHEMATICAL NONSENSSES... I repeat, this paper is UNREFUTABLE. I point in this paper to obvious MATHEMATICAL nonsenses in conventional electromagnetism. Now one has not to discuss whether my absolute conceptions are right and whether Einstein is wrong (I am sure that you are sure that he is wrong). In this paper the problem is to correct MATHEMATICAL NONSENSSES. You cannot find objection for the rejection of this paper (especially in its final version of the 5 December). If this will succeed, then you will demonstrate that NATURE is afraid to have my papers on its pages. The question is WHY. Why so many journals all over the world have such a fear from an Austrian groom? If you think that relativity is right, why this fear?

As I promised you in my letter of the 7 November, I send you now the review on my book CLASSICAL PHYSICS appeared in the BULL. TYCH. SOC. Nature could appear with a similar review two years ago. Now it would be more easy for NATURE to accept the failure of relativity. With any day this acceptance becomes more difficult. It is good that NATURE has not taken a negative attitude (good for NATURE, not for me). So I repeat once more: I AM READY TO PAY \$ 10,000 FOR A NEGATIVE REVIEW OF MY BOOK. Of course, one can continue to cover my work by silence. But until when? We live in an open society, silence cannot be maintained eternally, can it?

I insist for an answer for the Andropov-ultimatum, so that I can take a decision what to do.

Sincerely yours,

*S. Marinov*  
Stefan Marinov

Editorial note. The review of the BULL. TYCH. SOC. on Marinov's CLASSICAL PHYSICS is given on p. 186.

**DER SPIEGEL**  
DAS DEUTSCHE NACHRICHTEN-MAGAZIN

DER SPIEGEL POSTFACH 11 04 20 2000 HAMBURG 11

Herrn  
Stefan Marinov  
Niederschöcklstraße 62

A-8044 Graz/österreich

SPIEGEL-VERLAG  
RUDOLF AUGSTEIN GMBH & CO KG  
SITZ UND REGISTERGERICHT HAMBURG HRA 61 755  
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TELEFON (040) 3 00 71 TELEX 02-162 477  
TELEGRAMM SPIEGELVERLAG  
BLZ 200 400 00  
KOMMERZBANK AG, HAMBURG, KONTO-NR 618 1986  
BLZ 200 304 00  
BANKHAUS MARCARD & CO., HAMBURG, KONTO-NR 1413 004  
DURCHWAHLNUMMER  
(040) 30 07  
HAMBURG.

21. Dezember 1983 A/Gü/B

Ihr Schreiben vom 10. Dezember 1983

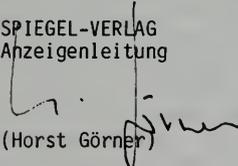
Sehr geehrter Herr Marinov,

leider kann die von Ihnen geplante Anzeige im SPIEGEL nicht  
erscheinen.

Der SPIEGEL veröffentlicht - im Gegensatz zu Tages- oder Wochen-  
zeitungen - grundsätzlich keine privaten 'Gelegenheitsanzeigen'.  
Dies ist eine Entscheidung, die nicht für den Einzelfall, son-  
dern generell getroffen wurde.

Mit freundlichen Grüßen

SPIEGEL-VERLAG  
Anzeigenleitung

  
(Horst Görner)

Editorial note. This is the answer of DER SPIEGEL to Marinov's letter of the 21  
September 1983, a copy of which was sent also on the 10 December  
1983 (see p. 209).

## **In brief**

### **Appeal for freedom**

In July 1983 an open letter was sent to the President of the USSR Supreme Soviet, Yuri Andropov, by Bulgarian dissident scientist Stefan Marinov, now living in Austria. The letter threatened that Dr Marinov would commit suicide on the steps of the Soviet Embassy in Paris on 16 January 1984 if Dr Yuri Orlov, the Soviet physicist, had not been freed by then from his imprisonment. Four years ago Dr Marinov had requested the intervention of President Carter on the same subject, but he received no satisfactory response; this act resulted in his removal to a psychiatric hospital and eventual expulsion from France, where he was living at that time.

Since then Dr Marinov has been working on the measurement of the earth's absolute velocity, as well as experiments on the principles of relativity and equivalence and his own absolute space-time theory. His five-volume encyclopaedia *Classical Physics* was published in 1981, and he has been involved in the organisation of international conferences on space-time absoluteness.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

2 February 1984

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

Dear Dr. Maddox,

I am perplexed. Why have you played this unfair joke with me? During our phone conversation after the New Year, you promised me to print in toto the Russian and English texts of my ultimatum to Andropov for a tripple page charge and to send me a cable for the day of issue. Thus I went to Paris to carry out my action for Orlov's liberation in front of the Soviet Embassy. But the ultimatum did not appear. WHY? Why give a promise knowing well that the promise will be not maintained? I understand (and explain in a perfect historic-dialectical manner) the whole Kafkian nightmare in which the editors of the scientific journals in the world entwine me. But the proceeding in such a cruel manner is outside my comprehension. I have only one consolation: This cold shower on my head was not for the first time and will be not for the last one... And the only wish which I have is to forget, to forget the whole pitiable joke, because otherwise I become too sad and lose any esteem for my fellow-creature, whom, as Jesus taught, one must love.

Permit me to give you a short information on my Paris action. On the 16 January at 12.00 I was received by the First Secretary of the Soviet Embassy, Mr. Mordvincev. We had an one-hour conversation, the last part of which was in Bulgarian, as Mr. Mordvincev spoke my mother language perfectly. I said him that since the Western press and public opinion have not given a support to my action, my immolation is senseless, as it will be used only by the cold- and hot-war politicians and generals. Mr. Mordvincev expressed the satisfaction of the Soviet government that my action has not taken a tragic issue. I begged Mr. Mordvincev to present to Mr. Andropov my plea for mercy, giving freedom to Orlov, who has not infringed the Soviet laws. Mr. Mordvincev promised me that my plea will be transmitted personally to Andropov. Then Mr. Mordvincev said that the Soviet government may become inclined to invite me for delivering speeches on my physical theories in a couple of Soviet unversities. I answered that I will accept such an invitation.

Now let us return to science.

On the 28 December 1983 I sent you the five volumes of my CLASSICAL PHYSICS, granting them to NATURE. Until now I have not received an acknowledgement for the reception. I do not know which are the customs on the Island, but here, on the Continent, one uses to acknowledge the reception of presents. With my 28-December-letter I promised to pay to NATURE \$ 10,000 if a negative review will appear before the end of January. Such a review has not appeared (today I consulted the issue for 26 January - 1 February). For a negative review published before the end of February I shall pay you only \$ 5,000, before the end of March \$ 2,500, and then nothing. ---- You still do not send me your decision on the acceptance or rejection of my paper "Mathematical nonsenses...". As it is to be seen from the acknowledgement of the J. PHYS. A, which is enclosed, not only I but also the Institute of Physics is awaiting for your decision. The paper was submitted to you on the 19 Sept. 1983. Thus you examine this paper almost half a year. Meanwhile the time of examination of this paper must be only 10 minutes. I beg you to send me your decision on the mentioned paper immediately after the reception of this letter, sending (in the case of a negative decision) a copy of the rejection letter also to the J. PHYS. A. However, let me declare that if the decision will be negative, this will be a shame for NATURE. Be responsible for the good fame of this torch of truth.

I wish to inform you that I found finally a laboratory for the execution of my Graz' "coupled shutters" experiment. I received very good accuracy working in vacuum with a powerful laser. Now I perform precise measurements and in a couple of days I shall send you the report on this experiment. With this letter, with anticipation, I beg you for an expedient examination. I beg you to appoint a referee for this paper after the reception of this letter, who has to study \$50 of vol. III of CLASSICAL PHYSICS, as my Graz' experiment is a repetition of my Brussels' experiment.

Sincerely yours, *J. Marinov* Stefan Marinov

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

2 February 1984

Dr. D. Nordstrom  
THE PHYSICAL REVIEW  
1 Research Road  
Box 1000 - Ridge  
NY 11961  
U. S. A.

Dear Dr. Nordstrom,

On the 2 Decmeber 1983 I submitted to PHYS. REV. D my paper  
COUP DE GRACE TO RELATIVITY.

As no acknowledgement for reception reached me, with a letter of the 5 January 1984 I asked you whether the paper has arrived in New York. Again silence. What is the matter, Dr. Nordstrom? I beg you to acknowledge the reception of this paper either by phone (to the Austrian number 03132/2609, saying to the person who will receive the call whether the paper has arrived), or by cable or by an express letter.

I wish once more to emphasize that I am fighting for the 1984-Nobel-prize. I have no time. We were 15 years in a honest and gentleman correspondence. If you are afraid of my papers and you cannot find more scientific reasons for their rejection, please, be so kind to say me this clearly (as did IL NUOVO CIMENTO - see pp. 164 and 250 of THE THORNY WAY OF TRUTH). However, if you wish to maintian with me relations based on the widely accepted scientific ethics, please, answer my letters, acknowledge the reception of my papers and examine them in a due time.

The paper COUP DE GRACE TO RELATIVITY is decisive in my fight for restoration of absolute space-time. The reason is that in this paper I give the description of the bul-cub generators and motors which will tomorrow replace the existing collector dc machines because of their technical advantages. Thus, I will have money and people will speak about me. This signifies that the discussion on the space-time problems will begin and in a couple of months we will clean the Augean stables of "relativity".

I am looking forward for your answer with a deep belief in your scientific honesty,

Sincerely yours,

*D. Marinov*  
Stefan Marinov

# THE PHYSICAL REVIEW

AND

## PHYSICAL REVIEW LETTERS

EDITORIAL OFFICES 1 RESEARCH ROAD

BOX 1000 RIDGE NEW YORK 11961

Telephone: (516) 334-5533

Telex Number: 971599

Cable Address: PHYSREV RIDGENY

7 February 1984

Dr. Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz, Austria

Dear Dr. Marinov:

Your manuscript entitled "Coup de grace to relativity" based on your absolute space-time theory, which earlier work was judged to be unacceptable for the Physical Review, is not considered suitable for publication in the Physical Review. We are therefore returning your manuscript.

Yours sincerely,



D. Nordstrom  
Editor  
Physical Review D

DN:cp  
enc.

# Newman's Impossible Motor

*The patent office does not believe that Joseph Newman has built a generator that is more than 100 percent efficient, but New Orleans does*

At least one physicist in Louisiana swears that CBS News anchorman Dan Rather was smiling on 9 January when he reported that an inventor near New Orleans has built a generator that defies the second law of thermodynamics. Others did not see any smile. What they did see, to their surprise, was an earnest but fantastic news story that has been running on New Orleans' biggest television channel being repeated on the network news.

The story is about an inventor, a self-educated Mississippian named Joseph Westley Newman. He was pleased with the CBS broadcast because it may help him in a fight with the U.S. Patent and Trademark Office, which has denied him a patent on the grounds that his latest invention "smacks of a perpetual motion machine," meaning that by definition it cannot do what is claimed. On 25 June, the U.S. District Court for the District of Columbia will hear a suit Newman has brought against the patent office arguing that his device does not aim at perpetual motion but converts mass to energy in a finite but very efficient manner. He simply wants a patent.

Newman's invention is hard to describe, partly because its behavior seems to be at odds with the laws of physics, and partly because the details are being kept secret while the litigation goes on. Newman says his own theory of magnetic fields that underlies the invention is "10,000 times more important" than the invention itself, which he built to demonstrate the concept. He claims to have discovered the mechanical principles of a gyroscopic particle of matter that orbits in a magnetic field much as an electron orbits in an atomic shell. Several readers of his theory say it is incomprehensible and would not get attention were it not for the illustrative devices. The patent Newman seeks is for an "Energy Generation System Having Higher Energy Output than Input." Those who have seen it say it is a crude direct current motor powered by a bank of lantern batteries with a heavy, rotating magnet at its center.

Readings of the machine's performance, like those of Dan Rather's expression, depend on the reader. As a result of the TV coverage, the people of New Orleans may be convinced that Newman has invented a simple device that pro-

duces more energy than it consumes and could end the world's energy squabbles if only an arrogant scientific community would pay attention. That is Newman's message. It has been taken up and broadcast in a sort of crusade by Garland Robinette, the evening news anchorman at the CBS affiliate in New Orleans, WVL-TV.

Last autumn Robinette aired an eight-part series on Newman's device, charging that jealous academics and frightened executives tried to stifle information about it. Robinette concedes that his intense coverage of Newman began on a slow news day when he was looking for a cute show-closer. He claims he was skeptical at first and saw Newman's invention as a curiosity. But the story soon

They were skeptics at first, but, after looking at oscilloscope readings and watching the machine recharge batteries, they agreed with their anchorman that the claims seemed valid.

Engineer Ralph Hartwell described the tests he ran. When he arrived at Newman's house, he connected some weak penlight batteries he had brought along to a small conventional motor in Newman's back yard. It was allowed to run until the batteries were drained of power, taking about 1 minute. He then moved the dead batteries over to the smallest of Newman's three demonstration motors, connected them as a power source, and started this motor spinning. It ran until it was time for the camera crew to leave, for something between 1 and 2 hours. Finally, the batteries were taken from Newman's machine back to the conventional motor and reconnected. This time the motor ran for about twice as long as before, around 3 minutes. Hartwell ran another experiment on a large device and concluded that it also appeared to generate more power than it used. Other measurements were taken with oscilloscopes and current meters, but these readings have been questioned. After signing a confidentiality pledge, Hartwell was allowed to examine the machine's inner wiring. He is certain that there is no hidden source of energy. Although he still feels uncomfortable about it, he says he could not disprove Newman's claim and would like to see a university run a controlled test.

Newman's key endorsement comes from Roger Hastings, a solid-state physicist for the Sperry Univac Company in Minneapolis. A colleague who knew him as a postdoc fellow at the University of Virginia says Hastings was regarded as an adventurous and excellent theorist. Hastings' brother, a screener of new ideas for Tonka Toys, met Newman when he submitted an invention to Tonka. Although skeptical, Hastings (the physicist) was persuaded to make a trip to Lucedale. "I used to teach physics at North Dakota State University," says Hastings, "and we would get three or four people a year who had some kind of device that was going to save the world. I assumed that this was the same." Newman talked Hastings into flying down for a visit anyway. He returned five times, testing and retesting the motors, until he



**Joseph Newman**

*Inventor of the 100 percent efficient motor, as he appeared on New Orleans television.*

grew into a "monster that I couldn't let go" when New Orleans viewers, facing a 200 percent increase in utility rates, demanded to know more. Furthermore, a Mississippi state energy official and a credible scientist had recently vouched for Newman's claims. Robinette says that since he began reporting on the invention, no one has come forward to rebut Newman. He challenges people to come "get this story off my back."

Newman has benefited from the television coverage and from several weighty endorsements. For example, the television station engineers backed him. Last year, Robinette dragged two reluctant engineers on WVL-TV's staff to Newman's garage in Lucedale, Mississippi, about 2½ hours from New Orleans.

was satisfied that he had made no mistake. He eventually signed an affidavit describing the invention in detail and stating unequivocally that it runs at greater than 100 percent efficiency, producing more power than it consumes. "I'm sticking my neck out," he says, "because this is an important issue that should be resolved."

Endorsements such as this are essential for the credibility of the patent application. Although Newman has read the works of the great electrical thinkers Michael Faraday and James Clerk Maxwell, he is not proficient in math or physics.

Newman is collecting several more endorsements. He claims to have won the backing recently of, a German aerospace engineer and a liaison officer between the National Aeronautics and Space Administration (NASA) and the European space consortium. Gerald Miller, a mechanical engineer, student of advanced physics, and electrical industry consultant in California, has inspected the devices and says, "I saw things that I cannot explain in conventional terms." He found that the device produced more energy than it used, adding, "I am absolutely certain that there is no hidden energy source." Milton Everett, a mechanical engineer and director of the biomass program for the Mississippi department of energy and transportation, says, "I think Joe has discovered something the world is going to benefit from. It's not a perpetual motion machine; it converts mass to energy." Excluding investors, Newman claims to have about 27 such endorsers.

But there have been and continue to be prominent doubters. Oddly, TV anchorman Robinette has given little attention or credence to the only thorough analysis ever performed on Newman's device. It was arranged by Everett (before he became a full convert to Newman's cause) and was paid for by the Mississippi energy department. Two electrical engineers from Mississippi State University (MSU)—Karl Carlson and Donald Fitzgerald—tested one of Newman's devices last March. The conditions were unfavorable, because the motor kept breaking down every "couple of minutes," says Carlson, as a huge spark from the induction coil shorted out a switch on the commutator. Thus, while it was fairly easy to measure the power going in, it was not easy to tell what was coming out. Newman has built a smaller, less quirky motor since then.

The pattern on the oscilloscope at the output end of a cycle was difficult to read because as one observer says, the dis-

charge spark appeared as "a bright flash" or "a mess" on the face of the screen. Newman sweeps this point aside as a quibble, saying it merely indicates his machine's tremendous power. The efficiency claimed for the device is anywhere from the impossible (slightly over 100 percent) to the fantastic (800 percent and up). A normal electric motor may be 80 percent efficient, Carlson says, and transformers are generally in the 90's. Carlson and Fitzgerald found that Newman's machine was between 55 and 76 percent efficient, based on their reading of the most favorable oscillograms.

They wrote that they found "an output which is definitely less than the input." However, they hedged by saying that it was impossible to measure the mechanical energy lost in the machine, which could affect the rating. They declined to call Newman's invention a breakthrough but reported that it was remarkably efficient given its "obviously crude configuration." In a standard tag line, they

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**"I'm sticking my neck out," says one physicist who has come out on Newman's side, "because this is an important issue that should be resolved."**

---

wrote that "further investigation is in order." Newman reads this qualified rejection as a qualified endorsement, explaining that when it comes to praising new discoveries, academics are mean. He speaks of Carlson and Fitzgerald with harsher adjectives.

The physics faculties of Loyola and Tulane Universities, both in New Orleans, have protested Robinette's reports. Daniel Purrington, Tulane's physics chairman, says: "We all dispute it. A number of us have told him [Robinette] we think what he's doing is irresponsible. I talked to him for about 2 hours about the principles involved." Carl Brans, a theorist at Loyola, wrote Robinette a two-page letter of protest. "It's just sensational journalism. In our opinion, it's not worth the cost" to try to take the measurements that would end the discussion.

David Keiffer, an experimental physicist at Loyola, along with another faculty member, offered to check Newman's device if he would bring it to the laboratory. (Newman's patent attorney is a physics graduate of Loyola.) But in the

preliminary talks, Keiffer says, Newman insisted that he be present during the entire procedure. Then he and Keiffer got into an argument. Newman packed up and left, never to return. The Loyola physicists also sought to advise WWL-TV's engineers on testing the device, but this proved to be a touchy proposition, because WWL is owned by Loyola and was originally founded by Loyola's physics department. No one wanted the advice to be interpreted as pressure.

"I have a fairly good reputation here," Robinette says of his science reporting, "and this thing just has the potential to make me look like an absolute ignoramus. So I've tried desperately to get people to disprove this and all I've done so far is get more and more people who are convinced."

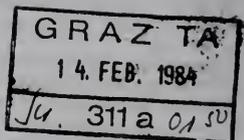
What about the negative conclusion reached by the MSU engineers? Robinette maintains (like Newman and Everett) that while the engineers were testing the machine, they agreed that it was producing more energy than it used. But "when they went back, they wrote a very ambiguous response that didn't say it didn't work and didn't say it did." Robinette mentions that the MSU engineers are retired, as though to diminish their reliability. He finds it "very surprising" that they never called to challenge his report, which gave the Newman-Everett version of events.

Some who might otherwise voice skepticism seem to sympathize with Newman because of the way the patent office rebuffed him. In court filings, the patent office concedes that Newman is correct that it rejected his claim without fully reading the documents he submitted; that his application was handled by an examiner—Donovan Duggan—who seems to specialize in rejecting perpetual motion machines; that Duggan said he would not allow a patent on Newman's device, no matter how much supportive evidence was submitted; that patent office officials never tested the Newman device for efficacy and refused to observe oscilloscope readings of its input and output; and, finally, that the office issued a patent in 1979 to a man named Howard Johnson for a perpetual motion machine that Johnson has since agreed is inoperable.

If there were an association of militant patent rejectees, Newman's battle with the patent office could be its rallying cause. But there is no such association. However, Newman has done reasonably well attracting attention by himself, especially in New Orleans. In a few months, he will get his day in court.

—ELIOT MARSHALL

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lt  
dr. stefan marinov  
niederschöcklstrasse 62  
a8044 graz

american producer interested in generator. please send copy of  
coup de grace paper without delay.

cordially

van der merwe

physics department  
university of denver

unrzsearch dvr  
910 931 0586

col 62/a8044 910 931 0586

Editorial note. The American producer Dr. Lars Wahlin (Colutron Research, Boulder, Colorado) visited Marinov in June and found him cleaning the horses. They made an agreement that when Marinov will receive the patent for the "bul-cub" generators and motors Wahlin will register the patent in the USA and the income from the sale of the patent in the USA will be divided "fifty-fifty".

KP/CH/

16 March 1984

Dr Stefan Marinov  
Niederschöcklstr. 62  
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Physics Trust Publications  
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Redcliffe Way  
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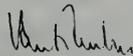
Telex 449149  
Telephone 0272 297481

Dear Dr Marinov

I acknowledge receipt of your letter dated 29 December and also the new copy of Classical Physics volume 5.

When books have been reviewed in our journals we send them on to our Research Institute library as we have no space to store the large quantity of new publications here in Bristol. I therefore sent the original volumes of Classical Physics on. I have been in contact with the library and I am afraid they have not retained these volumes, I am therefore unable to exchange the new volume 5 with the old copy. I am thus returning this book to you as we have no further use for it here.

Yours sincerely



Kurt Paulus  
Executive Editor

Editorial note. From this letter it is clear that the Institute of Physics has BURNED the five volumes of CLASSICAL PHYSICS which Marinov granted the the Institute.

Erwache, Adolf, erwache und jauchze,  
es brennen wieder Bücher!

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

- 234 -

Macmillan Journals Ltd.  
To the owner of NATURE

27 March 1984

4 Little Essex Street  
London WC2R 3LF

Dear Sir,

I am addressing you concerning certain basic problems of the editorial policy of your journal NATURE. I shall point out only to certain facts and I shall try to evade any discussion of the motivations leading to those facts.

In the last dozen of years I am involved in a very intensive contact with NATURE, having submitted at least half a hundred of papers and exchanged hundreds of letters, telexes and phone calls. I do not exaggerate those figures, as you can always verify them. Nevertheless I could not succeed to publish a single paper. Well. May be my papers are stupid. However, I proposed to Dr. Maddox, in the case of rejection of my last three papers (the first of which was examined during half a year), to print them as advertisements by paying the triple sum of the usual page charge. Dr. Maddox did not agree. Do you consider the decision of Dr. Maddox as a decision in favour of your interests? May be someone has paid to Dr. Maddox a bigger sum, so that my papers do not appear? If this is the case, tell me what was this sum; may be, I will be able to pay a bigger one.

The motivations of Dr. Maddox for the rejection of my papers are that they are wrong. Well. I sent to Dr. Maddox my fundamental work CLASSICAL PHYSICS and declared writtenly that if NATURE will appear with a negative review on that book, I shall pay to NATURE \$ 10,000. Dr. Maddox refused to appear with such a review. Do you consider the decision of Dr. Maddox coinciding with your interests?

May be, Dr. Maddox will try to convince you that I am a poor man and I cannot pay all those big sums. Here I wish only to inform you that once Dr. Maddox made a similar conclusion, agreeing to publish my announcement on the International Conference on Space-Time Absoluteness (NATURE, 293, p. xxix, 24 Sept. 1981) and being convinced that I will not find money to pay the whole page charge. However, in a couple of days after his agreement the requested sum arrived at the bank account of NATURE.

I wish to turn your attention to the fact that in a big paper dedicated to me (NATURE, 271, 296, 1978) your writer on "Eastern science" Mrs. V. Rich announced to the world that I am a mad man, putting this accusation in the mouth of Acad. Sakharov, who remained shocked when, after a couple of days after the appearance of the accusation, I showed it to him, visiting him in Moscow. With my scientific discoveries I wish to show to the world not only that I am not a mad man, but that I understand physics much better than certain persons categorized as geni. Why NATURE accuses me in madness but does not allow me to defend the integrity of my soul? It is true that I was "cured" compulsorily during a dozen of years in the Bulgarian psychiatrics, but even the Bulgarian spiritual sadists are afraid to accuse me as a mad man IN THE PRESS, meanwhile NATURE did it.

I enclose a copy of my letter sent to Dr. Maddox on the 22 March. If Dr. Maddox will dare to write at least one scientifically motivated objection to one of my recently submitted three papers, I promise to pay to NATURE \$ 1000. The objection must be of the kind: "Marinov asserts that... According to me this is not true because..." Nothing more.

I think, dear Sir, that the intolerance against dissension must have certain limits. Otherwise the progress in science is impossible.

I would be very happy to receive (AND I HOPE TO RECEIVE) your prompt answer. In the case that NATURE will agree to publish my last three papers (as scientific communications or as advertisement) I (and science) will remain highly obliged to you.

I beg you to bring this letter to the attention of Dr. Maddox.

Sincerely yours,

Stefan Marinov



# КОНТИНЕНТ

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Tel. 089-37 05 34

Уважаемый господин Маринов,

по поручению В.Е.Максимова я посылаю ваши труды.  
С ними ознакомились специалисты Сахаровского  
Университета и по их заключению труды эти не  
вызвали у них особого научного интереса.

28.3.84



Виктор Кондырев.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Austria

TeL. 03132/2609

30 March 1984

Dr. John Ringle  
Dr. Philip Abelson  
SCIENCE  
1515 Massachusetts Av., N.W.  
Washington, DC 20005

Dear Dr. Ringle  
dear Dr. Abelson,

My long years contacts with SCIENCE were unproductive and even my personal contacts with Dr. Ringle during my sojourn in Washington in 1978 have not brought some fruits.

However, reading today the article in SCIENCE (223, 572, 10 Febr. 1984), I decided to submit to your journal the following three papers:

1. NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY WITH THE HELP OF THE "COUPLED SHUTTERS" EXPERIMENT.
2. MATHEMATICAL NONSENSSES SLIPPED INTO THE FUNDAMENTALS OF CONVENTIONAL ELECTROMAGNETISM MUST FINALLY BE CORRECTED.
3. COUP DE GRACE TO RELATIVITY.

Those papers, after long examination, have been rejected by Dr. Maddox (Nature) on the 22 March 1984 during our phone conversation. For your information I send you my letters to Dr. Maddox of the 22 March and 30 March and my letter to the owner of Nature of the 27 March. I do not hope that NATURE will change its opinion and publish my papers and for this reason I submit them to SCIENCE. My hopes with SCIENCE are also feeble, but I wish to hope that if your journal is really dedicated to the revealing of the scientific truth, you will change your long-years negative attitude to me and publish all my three papers. The fact that you have published the paper on Newman's motor gives me certain hopes, however I must once more give expression of my indignation against such a STUPIDLY written paper (see also my letter to Dr. Maddox of the 30 March). Why do not inform the scientific community about FACTS? When shall we begin to speak and write openly and clearly?

I will be extremely thankful to you, if you will give me the information on the acceptance (or rejection) of my papers on the phone (by a collect call). I would like to fly to New Orleans and see what Newman has done. My flight depends on the speedy appearance of my papers. I think the construction of a *perpetuum mobile* concerns you. Publish then my papers (at least COUP DE GRACE TO RELATIVITY!).

Hoping to receive your VERY SPEEDY answer,

Sincerely yours,



Stefan Marinov

Editorial note. This letter remained without answer. Three months later Marinov received the submitted papers, together with the above letter, shipped from Washington by sea mail.

Dr. Ringle Dr. Ringle, you spoke with Marinov at least 10 times when he was in Washington. O tempora, o mores!

# AMERICAN JOURNAL of PHYSICS

A Journal of the American Association of Physics Teachers

John S. Rigden, Editor  
Philip B. James, Assistant Editor

Room 240 Benton Hall  
University of Missouri - St. Louis  
St. Louis, Missouri 63121 U.S.A.

April 6, 1984

Dr. Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz, AUSTRIA

Dear Dr. Marinov:

Your manuscript "Coup De Grace to Relativity" has been received by the American Journal of Physics. I am afraid that your hunch concerning the fate of your paper at AJP is correct; it does clearly run afoul of our editorial policy as stated in the January issue. In particular, papers which propose new theories or attempt to discredit widely accepted theories should be published in the research literature.

I personally sympathize with your predicament inasmuch as you seem to be sincerely convinced that your results are correct. On the other hand, my sympathy is not sufficient to publish your article in AJP. Our readership is quite broad in general and may or may not include some of the specialists whom you are actually trying to convince. If you have approached journals such as Foundations of Physics, which sometimes consider fundamental issues such as this, you might wish to try Speculations in Science and Technology published in Australia. The latter journal specializes in in nonconventional theories, etc.

Sincerely



Philip B. James  
Assistant Editor

PBJ/gls

# Freitag, 13. April,

19 30 Prof. A. Keyserling (Wien): Das Wissen der Erde

# Samstag, 14. April

- 10.00 10 30 Wolfgang Haller: Stirbt mit den Bäumen der Wald? (Stuttgart)
- 10.30 11 00 Ing. Albert Ortis: Baubiologie in der Praxis (Frohneifen)
- 11 00 11 30 Prof. Stefan Marinov (Bulgarien): Bul-Cub Generatoren und Motoren ohne Kollektoren Ein Weg zur unerschöpflichen Energie?
- 11.30 12.00 Dr. Johann Theurl: Alternativen und politische Verantwortung
- 12.00 12 30 Dipl.-Ing. Fleischanderl: Vegetarisch ist „In“
- 12.30- 14.00 Mittagspause
- 14.00- 14.30 Max Loidl (Bruck/Mur): Millionen könnten besser sehen - ohne Brille bis ins hohe Alter
- 14.30- 15.00 Richard Mayr (Innsbruck): Hochfrequenzfotografie (nach Kirlian) - ein Blick in die fantastische Welt der Bioenergie (mit Lichtbildern)
- 15.00- 15.30 Barbara Luetgebrune (München): Erdstrahlenbelastungen - einfache Tests an Ihrem Körper
- 15.30 16.00 Norbert Matko + Doris Dreier (St. Andrä): Sufi-Praxis und -Tanz
- 16.00- 16.30 Martina Sorgner: Selbsthilfe durch die Coue-Methode
- 16.30- 17.00 Bruno Böhm (Wien): Die Schlüssel zur Entwicklung
- 17.00 17 30 Ernst Sumpich (Wien): Lernen als Voraussetzung zur Umweltgestaltung



# Sonntag, 15. April

- 10.00 - 13.00 **Forumsdiskussion** mit den interessantesten Ideenpionieren der Ausstellung  
Einleitung:  
Dr. Claudius Kern (Volksbildungswerk) und Hansjörg Lenz (Österr. Hochschülerschaft)  
Moderation:  
Prof. Arnold Keyserling (Wien)

... mit freundlichen Grüßen!

*Hansjörg Lenz* + *Arnold Keyserling* ...



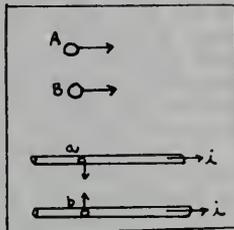
Wir danken für die Druckunterstützung: die steiermärkische Druckerei

Miami, April 15th., 1984

My dears Marinov, Wesley and Aspden:

Due to my limited time for Physics I thought I saved some time if I wrote to you as a group and this in an informal way concerning some of the experiments we have been considering lately in electrodynamics. Wesley asks me if I am interested in electrodynamics, (because he has seen more my specialization in unipolar induction), but actually both things are related. In fact my initial interest was, precisely, to analyze the problem of isolated charge interactions. It might be of interest to you, therefore, to see why, historically, I was led from that problem to Faraday's unipolar induction.

Consider first the very simple situation of two isolated charges moving side by side in parallel straight lines and with equal speeds. I do not care now about the different electrodynamic formulae that have been proposed and that Wesley has summarized so magnificently in his latest article. All of them, to my knowledge, will predict a positive attraction (if both charges have the same sign), superimposed upon the common Coulomb electrostatic repulsion. (Correct me in this if I am wrong). We tend to think that this electromagnetic attraction, (the "pinch" force), EXISTS simply because of the famous Ampere's experiment on parallel current bearing wires. In other words we think that whatever happens between electrons 'a' and 'b' within the wires will also happen between A and B outside the wires. (The only difference being the extra repulsion in the latter case which is cancelled by the positive nuclei in the former.)



The dilemma starts now. We know that experiments between isolated moving parallel charges is practically impossible. The closest one has been the famous Trouton and Noble experiment, repeated by Tomaschek, with capacitors moving with the Earth. This, like the Michelson-Morley experiment is one more null result experiment, apparently confirming the relativistic principle forbidding absolute motion detection. Most probably, therefore, isolated charges moving with the earth will show no force. The fact remains, however that in the Ampere case there IS an attractive electromagnetic force and that if one thinks in terms of moving charges, (something that Marinov would question) the two electrons A and B are NOT moving relative to each other (in the case of equal velocities to the right, as was supposed above).

The relativists insist, then, that what is essential is motion relative to the OBSERVER. (!Ah! that phantasmagoric entity.) Thus the charges moving with the earth and the observer will show nothing, but those moving in the wire relative to the observer will show the Ampere force. In the case, therefore, that the isolated parallel charges moved relative to the Laboratory, then, they say, an amperian force will be detected, for sure, in agreement with ALL electrodynamic formulae.

Well, not quite by all. As far as I remember Weber in 1846 produced a formulation in which the interaction in wires<sup>or</sup> supposed currents in opposite directions of both signs. The pinch force was supposed to exist only between opposite and relatively moving charges. This idea has been defended in this century by Tripp in 1945 (Elect. Engineering, 64, 351, 1945). So the force will be null when only two equal charges exist, moving side by side. This formulation as we know was criticized by Helmholtz in 1873 (because it would violate energy conservation) and by Clausius in 1877 since it would yield a force between a current and a static charge Q, (something that has not been observed so far). We should, therefore, disregard Weber's and Tripp's idea.

Put let us consider, again, WHY should the Ampere force appear only when moving relatively to the observer, i.e., to the lab. What is the "massive" Lab. supposed to do to the charges? What is what Wesley means when he says that the magnetic field lines are attached to the Lab.?

I keep searching and I keep thinking in the Ampere experiment as seen by somebody moving with the charges. Put this is a little bit like the "phantasmagoric" type of thinking done by relativists. In fact, if they consider such an observer comoving with the electrons then they say that the force detected is not between

the electrons but between the positive nuclei which that observer will see as moving "backwards". Remarkable change! So for a lab. observer the force exists between electrons. But for a comoving observer it will occur between the protons. Which is true? They don't care. They think that the net effect is the same because, obviously a push between electrons will produce the same effect as a push between the protons of the wire. Yet in plasma physics this is not true since electrons and ions are separated one from the other. In addition, as far as the EXISTENCE of the force is concerned, to say that the SEAT of the force can change just by a mere change of the observer's viewpoint is to say that the very existence of the force is only a phenomenon dependent upon the observer. This, obviously, cannot be tolerated. If physics were pure mathematics, the intensity of the force would be the only thing that counts, and this, being the same in both cases, no relevance would be attached to changing the observer's viewpoint. But if physics is something more than mathematics then IT IS VERY IMPORTANT TO KNOW WHERE ARE THE FORCES OPERATING: BETWEEN ELECTRONS OR BETWEEN PROTONS? In other words: the problem of the SEAT of electrodynamic interactions is a PHYSICAL problem, one that pure mathematicians tend to ignore.

So I kept thinking on these ideas around the year 1970-72. I tried to be a realistic physicist. I started to dislike einsteinian relativities. I decided to turn to experiments and for inspiration I read a little bit of Faraday. Then I hit upon #217 of his researches of 1832. (see enclosed copy). There I saw a marvelous thing that nobody in school or college ever mentioned; that a rotating cylindrical magnet could induce a potential difference upon a copper disk CO-ROTATING with the magnet. At least, this was the conclusion of Faraday in #220. I beg you to read this glorious page of research and savour it and analyze it for yourselves. The effect and inspiration it produced in me launched me in a ten years research which I would have never dreamed of otherwise. (See my figures 1 and 2 for an illustration of Faraday's "unipolar induction" experiment.). (See also Faraday's figures 6 and 7)

Then what? What has this to do with the electrodynamic basic forces? Very much. On the one hand you can try to assimilate the unipolar inductor into the amperian school of thought. This is not too difficult since the electrons in the disk can be thought of as forming parallel circular currents with the equivalent currents around the rim of the magnet. You will see that this agrees with the conventional Lorentz force and the three fingers rule. The free electrons should move either to the center or the rim of the disk depending on the polarity of the magnet closest to the disk.

But on the other hand you can start designing experiments with comoving wires and magnets, or comoving charges and magnets and see if, in the case of the earth motion, an effect could be detected. A simple one could be my Fig. 3. Put a charged sphere in a torsion balance and between the poles of a strong magnet. If the direction of absolute motion is  $v$ , and the field is  $B$ , a force  $F=qv \times B$  should be expected. The experiment however is still difficult because you would easily loose the charge unless you connect it to an electrostatic machine. (A difficult task). But do not take the trouble of doing this. It will produce no results, just like the Trouton and Noble experiment. And yet, in Faraday's inductor no relative motion is needed between magnet and the copper's electrons. Again we might be tempted to think that motion relative to the Lab, or to the observer is essential. But WHY?

Let's try another experiment, this time a more feasible one and certainly closer to Faraday's inductor. Suppose that you wind a rectangular loop around a bar magnet as shown in Fig. 4 but instead of spinning the magnet around a longitudinal axis you do it around a transversal one, YY'. Nobody would object if we use Lorentz's to predict the outcome. In branch RI (nomenclature will be explained later) a downward force (and current) should result whereas in branch CE an upward one should exist. Nice! This should result in a net circulation of charges around the close loop. And since we can put many loops in series this might be a nice experiment to try. Why not? So I mounted the magnet and about 40 such loops in a centrifuge in the biochemistry Lab where I work for a living. Spun it at about 4000 rpm and... no current was produced.

To measure the current I covered the system with asbestos cloth. If a current of the magnitude expected passed through the loop a certain heating by Joule effect should result. I calibrated this heating by passing such a current using batteries as Emf and throwing the whole magnet and loops in a calorimeter. The temperature rise was as expected. Then I spun the magnet as explained, threw the same in the calorimeter and no temperature rise was observed, (perhaps only a 10% of the effect, due, obviously to heating by friction with the surrounding air). You might want to repeat this experiment. Is a nice one; but a negative one, unfortunately.

What about moving the magnet in a straight line? Then branch CE would also have a downward current opposing that of branch RI and no net effect should be observed. But then we can "trick" the lines of force by conforming the loop in the way shown in Fig. 5. If I am not mistaken, mere translation should produce only a force on branch RI, and not being opposed by that of any other branch, a net current should be expected. So I took the opportunity when flying in a jet to Nicaragua, Central America, with a ballet company for which I was playing the piano. Can you imagine? I took my little box inside the plane, with a magnet, many loops and a voltmeter. When high upon the air I peek into the box only to see that nothing happened. Again and again the image of Einstein appeared to me like a nightmare. But by then I was well fortified philosophically not to believe in Einstein any more. (Fortunately since my adolescence I have been reading the classical philosophers like Aristotle, Plato, St. Augustine, St. Thomas Aquinas, and their ideas about time and space sounded much more reasonable than the einsteinian hotdodge-podge). Yet the appearances seemed to favor Einstein in the highest degree.

So I kept thinking in Faraday's inductor, (1972)

By the time, I came to the knowledge of two other experiments that came to my "rescue", so to speak. One was Arago's disk (Fig. 6). In fact, this was the experiment that inspired Faraday himself to set up his own disk experiment. Arago noticed that a horizontal magnetized needle, oscillating about a central pivot, would almost stop immediately when a copper metal was set under it. Likewise, if the copper disk was forced to rotate, the needle would tend to follow it, but always with a frequency lag. This indeed is the basis for our modern electromagnetic brake (needle stopping) and the induction motor: (if the magnet is forced to rotate then the disk would tend to follow it). In both cases there must exist some RELATIVE MOTION between the magnet and copper conductor. Faraday was smart enough to "induce" (in the logical sense of the word) that the magnet was "inducing" some currents (in the Faradaic sense of the word) in the extended metal surface, (what we now call "eddy currents").

These currents would be equivalent to magnetic poles in the disk which in turn will be attracted or repelled by the revolving magnet. It is not easy to show how this happens in detail. Maxwell has an "explanation" of this phenomenon in his Classical Treatise which I challenge you to try to understand. For Faraday, however, the problem was to show that those eddy currents existed. So he managed to collect them by setting sliding electrodes as shown in his Plate III, Fig. 9. (see Faraday's page).

Thus Faraday not only proved his point but invented the first D.C. generator ever in history. (He was also delighted to see that all mathematicians were mistaken; they thought the phenomenon consisted in magnetic induction (as in electric magnetism). This was obviously wrong since the "induced" poles disappeared immediately upon stopping of the disk and needle.)

We shall note, however, that Arago's disk requires relative motion between magnet and conductor. (What engineers call "slip" between the field and the squirrel cage in the induction motor). If both co-rotate at exactly the same frequency no motor effect is produced (no eddies are induced). On the other hand, Faraday's disk of Fig. 1 may co-rotate with the magnet and still produce a current. WHY SUCH A DIFFERENCE? Notice that in both cases we have rotation (so forget about the taboo Einstein has spread about rectilinear motion like in Fig. 5). Also notice that in both cases we have motion relative to the LAB. I do not exaggerate if I say that to find the answer to this problem is a fundamental point in electrodynamics. So let us take a closer look at the situation.

We can better compare Fig. 1 with Fig. 6 if we reduce the bar magnet just to a slab as shown in Fig. 7. Then Fig. 7 will behave like Fig. 6: rotating the slab will carry the disk around due to induced eddy currents that subsequently interact with the north face of the slab. (i.e. with the equivalent amperian currents of that face). Again, if both slab and disk rotate together no such eddies are induced and no subsequent interaction results. In contrast, the disk of Fig. 1 produces an emf even when corotating with the cylindrical magnet.

Another way of looking at the difference between the two situations is by noting that in Fig. 7, eddies are induced whether the disk rotates above the slab at rest or whether the slab rotates under the disk at rest, but in Fig. 1 induction occurs when the disk rotates and ONLY when the disk rotates. Rotation of the magnet alone or with the disk is irrelevant. Rotating the magnet alone produces nothing.

WHY? I think you don't have to be too smart to realize that the BIG DIFFERENCE between the two cases lies in the fact that rotation of the cylindrical magnet produces no magnetic changes anywhere in the Universe, whereas rotation of the slab does, indeed, produce such magnetic changes. Put more technically: in Fig. 1 the motion is symmetric respect the magnetic field configuration (i.e., axisymmetric) whereas in Fig. 7 it is not. I am not the first one to call the attention to such a distinction between homogeneous and heterogeneous magnetic fields in motion. J.W. Then in A.J.P. 30,411,1962 has also compared the two cases experimentally.

So what? Well, a similar difference exists in the sketch of page 1 of this letter. When the two "charges", a and b, travel as part of the parallel wires currents, (i.e., of a continuous stream of current) no magnetic field changes occur in the universe whereas the two isolated charges, A, B, DO produce such changes. (Or not? Don't you agree with me that a singly moving charge produces some sort of "magnetic" intensity variations in the neighborhoods it traverses? If A, for example is moving and B is at rest, wouldn't B "feel" some sort of "induction" as a response and reaction to the perturbations produced by the motion of A?) Roughly, therefore, we can imagine that

the isolated A and B behave similarly to Arago's disk, Fig. 7, whereas the "continuous" a and b behave more like the unipolar inductor. If this is true then between A and B there should be NO FORCE (!) when comoving together (just like in Fig.7 without relative motion), whereas between a and b there will always be an electromagnetic force even in the absence of relative motion, (just like in Fig. 1). This might sound too crude and simplistic but I think I have enough arguments with some additional experiments to prove the hypothesis. Vaguely you can visualize, also, the relevance of this hypothesis for example, for plasma research. Both Wesley (in the IGSTA report) and Aspden (Space, Energy and Creation, p.7) have noted that ignorance of the real electrodynamic forces might be the cause that paralyzes the progress in nuclear fusion, due to the unexpected "pinch" instabilities. They have, however, emphasized the problem of longitudinal forces. I don't think they have questioned the existence of the force between A and B. (Am I right? What I say now is that ONLY WHEN the charged stream is a perfectly continuous current, would a plasma ring condense itself due to the electromagnetic amperian attraction between parallel currents. IF THERE ARE DISCONTINUITIES, (i.e., gaps between the charges) then the force diminishes, (being zero in the limiting case of two charges totally isolated from the stream). This decrease is due to the local dB/dt variations that occur in the "gaps" Such dB/dt "evokes" mutual reactions between the parallel moving charges in such a way that the induced "eddy potentials" exactly cancel the amperian or lorentzian forces,  $F = q \cdot v \times B$ . (Some mathematics will help to defend this point).

Again if this is true we would have to imagine that electronic magnetic interactions in the atom can take place if the electron is conceived somehow as a continuous ring of current. An absolutely isolated electron, like the little ball we use to imagine, would produce no net interaction with a neighboring co-revolving electron. This seems to agree with current quantum mechanical concepts about the structure of matter. (Wesley can be a better authority in this field).

But I am getting too far ahead of my own story.

Let us go back to the comparison between Faraday's disk and Arago's disk. Are we here in the presence of two irreducibly different physical phenomena or both disks show the same basic phenomenon? From an experimental viewpoint what is needed is to start with Faraday's inductor and little by little transform it into Fig. 7, for example, by cutting slices from the cylindrical magnet and reduce it to a slab. Another difficulty exists however when doing this comparison. In Fig. 1 there is a part of the conducting circuit that slides relatively to the disk, whereas in Fig. 6 or 7 there does not seem to exist the need for closing the current path with an external connector. Faraday was aware that the "eddies" are possible, in Arago's disk, because the "collateral" mass of the metal served as a return path. This implies his conviction that the "induction" occurs mainly in the zones of the disk in Fig. 7 directly above the magnetic pole, i.e. along a radius. Likewise, in Fig. 1 the same effect would be obtained if we reduced the disk to a single radius and perhaps leave only an immovable ring (the rim) to act as sliding collector of whatever current is generated along that radius. These ideas are integrated into the experimental design of Fig. 8 Here the disk is reduced to a radius, IR (meaning "Internal Radius") and to a ring wire RE that never moves. At R a sliding contact allows connection between the two as RI revolves (or oscillates) about point C.

To close the circuit an External Connector, EC is connected as shown and also remains always at rest. The dashed line indicates the cylindrical magnet underneath or of a slab extending only from R to C. By adding many similar slabs one can reconstruct the whole cylindrical magnet. Thus, the experimenter can observe what happens starting with a single slab and ending with the whole cylinder and he can in either case move the wire RI alone, or together with the magnet, or just the magnet alone. Unfortunately I have not done the experiment in exactly the manner described since at least here in Miami no such slabs can be found, (actually the slabs would have to be sectorial in cross section, like a wedge, if they are going to fit into the cylinder). What there exists in commerce are rectangular ceramic magnets that are magnetized across their thickness, (Fig. 9). So the poles are not at the ends but rather on the large surfaces.

$(2" \times \frac{1}{4}" \times \frac{1}{4}").$

What I did then was to assemble around 80 such magnets in the form of a ring (Fig.10) and fastened them to a wooden disk of 0.31 m radius (not shown). To one of the magnets I attached a vertical wire RI and then completed the circuit with two collector rings and an External Connector, EC, as shown in Fig.11. (I did not put the two figures together, for clarity's sake). In this way RI can slide around the rings while rotating with or without the magnets. Note that with such an arrangement what we have created is essentially a magnetic monopole at the equatorial level of the array, i.e. wherever you look at it from the outside it will present to you, say, a North face. Of course the magnetic lines have to return to the inner faces (south poles) as indicated partially by the dashed lines in Fig.10; but at the very "equatorial" level, the B lines extend to infinity, like spokes from a wheel, (arrows in the same figure).

Now the experimenter can see what happens when the magnets are withdrawn one by one starting, for example, at the point diametrically opposed to RI.

(Some other details:

The magnets are held in position against the wooden disk by means of brass screws and washers.(Fig.12). The strength of the B field was about 280 gauss at the equatorial level. This strength did not vary significantly by the mere addition or withdrawal of the magnets. Rotation of the disk was made with a small motor at about 2 mln.per rev. or a tangential speed of 1 m/sec. In reality I put a double ring of magnets, one on top of the other, making for a total length  $L = RI$  of 5 cm. The expected potential difference across RI is:  $\Delta V = v \cdot B \cdot L = (1)(0.0280)(0.05) = 0.0014$  volts, or 1.4  $\mu$ volts. This requires some electronic amplification. Using the popular 740 operational amplifiers with a gain of 100 to 500 times you can read these voltages with any ordinary voltmeter.

The first test is, of course, to rotate the system as mentioned above and, in fact, verify: 1) that when RI moves alone a voltage of the expected magnitude is obtained. (This is obvious and in agreement with all theories).

2) that the same voltage is generated when RI rotates WITH the whole ring of magnets. This, indeed, is a replica of Faraday's unipolar inductor.) 3) Nothing happens when the magnets move alone.

Now you start withdrawing the magnets. I started by taking away 10 magnets from the point diametrically opposed to RI; then 10 more, and 10 more and so on till I withdrew the 84 magnets used. In this way you create an increasing gap of magnets in the form of an arc subtended by a certain angle  $\theta$ , (see Fig. 13). The angle will increase from 0, (full magnet load) to 360, (no magnets present). As the lack of magnets increases what you observe is a significant decrease in the voltage generated at the moment the gap passes by the external connector, EC, (See position I in Fig.14) Otherwise the voltage remains constant at almost the same level as when all the magnets were present, (positions II, III and IV).

In particular you can observe what happens when  $\theta = 180$ , (half of the magnets present). Fig. 15 illustrates the four positions I, II, III, IV, and the generated voltage. If somebody looks at this diagram isolated from the rest of this investigation he will get the (superficial) impression that the source of voltage occurs at CE, not at RI comoving with the magnets. He will think that no voltage occurs at I because CE "cuts" no magnetic lines, whereas in position III the lines, moving with the magnets, are "cut" by CE. Thus, such a physicist will advocate the following conclusions: a) induction occurs because a certain wire (CE) cuts magnetic lines; b) the lines move together with their magnetic sources; c) it is absolutely impossible that an induction occurs at RI, corotating with the magnets. Indeed, as Einstein says, motional unipolar induction requires relative motion between a magnet and a conductor.

Thus, we are led into one of the most perplexing problems of 19th century electro-dynamics: TO DETERMINE, WHEN ALL MAGNETS ARE PRESENT, IF THE SEAT OF INDUCTION IS LOCATED AT RI, COMOVING WITH THE MAGNETS, OR AT CE, RELATIVE TO WHICH THE MAGNETS ARE MOVING.

I have made all possible efforts to experimentally prove that the seat, indeed, is located at RI and not at CE. After seven years I think I finally succeeded by adding a capacitive branch into the circuit. I sent my results to A.J.P in 1979, rewrote it in 1980, but it was rejected in both occasions. Recently I sent it to Marinov and to Wesley. The latter has taken the pain of rewriting it, since he thinks it should be published, (a favor which I appreciate immensely).

But before I refer to the 1979 result I have to fill in the gaps that led me to it. In this way you might be able to have a better judgement of these problems.

When you look again at Fig.15 one is tempted to believe what the relativist says and go all the way along with the so-called "moving line theory" and with the "cutting line" type of induction. (By the way, the little peaks that you see in the diagram are somehow idealized. They represent some discontinuities I observed at the moment the gap "edges" passed by CE, whatever the reason might be.) But these little peaks, which of course are not a function of the constant tangential speed of rotation, ARE telling us that superimposed to the so-called "line cutting induction" there is some induction by dB/dt effects, which are more prominent at the magnetic edges.

We can still think, therefore, that we are in the presence of two different physical phenomena. In fact, the moving wire, RI, might still be thought of as "cutting" the magnetic lines of the magnets, (even when there is no relative motion). Remember: from an amperian point of view (Fig. 16) what is happening here is that a charge Q inside wire RI forms a current, when moving along v, which is parallel to the equivalent current, x, and antiparallel to that at z. Thus Q should be attracted by x and repelled by z. This coincides with the three fingers rule and with Lorentz's (vxB) force.

But the stationary connector EC forms no interaction with the equivalent magnetic currents of Ampere. Yet, EC "feels", indeed, ANOTHER phenomenon: the variations of magnetic intensities when the gap, the magnets and their edges pass by the neighborhood. To isolate this effect from the "amperian induction", (cutting line induction, to please the maxwellians), let us, for the moment get rid of RI and simply use another stationary connector, C'E', diametrically opposed to CE. So now the conductors look as in Fig. 17. None of them move. Only the magnets move. Suppose again a gap of  $\theta = 180$ .

Fig. 18 gives you an idea of the results. Still the potential difference is the same as in Fig. 15. But now we see that there is a "negative" potential when the lines pass by C'E' and a positive one when they "pass" by CE. A relativist and a partisan of the moving line theory will still be happy with these results. In each case they will attribute the induction to that wire which receives the "cutting" of the magnetic lines as the magnets pass by them. Obviously, the current direction has to change because in both connectors the voltage is in the same direction.

So far so good for the relativist. But let us combine now the two connectors of Fig. 17 with the moving branch RI. In other words, let's have all three wires as in Fig. 19. The result for  $\theta=180$  is Fig. 20. The pattern now is like that of Fig. 18, but shifted above the zero level. It is as if you have added a constant voltage to Fig. 18. What is the cause of this added D.C. voltage? It can be no other than a voltage induced across RI AS IT MOVES TOGETHER WITH THE MAGNETS.

I admit that when I first performed these experiments I did not have the precision I would have desired. For one thing, the sliding of metal against metal produces a lot of noise in the electronic amplifiers. Perhaps more precise determinations are needed so that a correlation could be made with conventional maxwellian theory. For example, the three experiments, Fig. 15, 18, and 20 can be analyzed in terms of the flux passing through the "curved" areas, RIEC, and ECE'C'. I think that no violation of the flux rule will be found.

One thing that I was able to quantify with more certainty was the fact that the maximum potential difference in Fig. 20 DECREASED as the  $\theta$  gap increased, (Fig. 21). This is a remarkable thing if you remember that the intensity of B in front of each magnet varies very little when  $\theta$  increases. So if the effect here is due to the "cutting" of lines done by CE and C'E' (as the moving line theory asserts), then what should be observed is not a decrease in the maximum  $\Delta V$  observed as  $\theta$  increases but simply a shortening of the times during which the  $\Delta V$  occurred.

The decrease of  $\Delta V$ , however, might be explainable using Maxwell's flux rule, (I have not tried this). So the relativist-maxwellian will tend to ignore the hint given by these experiments that there is an active induction in the comoving wire, RI.

In order to make analysis in terms of flux variations more feasible I tried next a rectilinear version of the same experiments. Fig. 22 shows a single rectangular

(but much bigger: 6"x2") traveling on a wooden block with a sliding wire RI attached to it, and sliding over two aluminum bars connected at EC to an amplifier and voltmeter. In this case no induction is noted at all. No matter how long the magnet is. As long as it does not pass over EC, no induction is produced. If you repeat this experiment there is a word of warning. The first time I tried it I got a strong induction. But this was simply the effect of some eddy currents induced in the aluminum bars at the point where R and I touched it. (I will not go into the details). Obviously this case should yield no induction, or else the relativistic principle is denied immediately, (since somebody traveling with the magnet might measure his speed by noting the potential difference across RI. Maxwell's flux rule would be also violated, since the flux through RICE remains constant.). The situation of Fig. 22 is, indeed, the most adequately in harmony with relativistic theory. But this fact did not bother me too much. By that time I had knowledge of another experiment that definitely favored the view that induction occurs at RI and not at EC in the rotational experiments. This was Kennard's experiment of 1917, which I found in Phil. Magazine, 33,179,(1917). Marinov and Wesley are already familiarized with this unjustly forgotten experiment. (Fig.23).

Kennard's breakthrough was that he eliminated the connector EC. He literally measured the potential difference, induced electrostatically between R and I when two cylindrical capacitors and RI rotated in the presence of a longitudinal magnetic field established by a coaxial external solenoid. Since along the practically axial wires that connected the capacitors to an electrometer E no induction can occur, by any theory, there is no question that the potential difference exists across RI, leading to a charge separation between the two capacitors

Kennard was able to prove that: 1) a voltage existed when RI and the capacitors rotated alone; 2) that NO VOLTAGE occurred when only the solenoid rotated; 3) the same voltage of (1) existed when everything rotated together. Thus he proved that the magnetic lines do not rotate when their source is rotated. Otherwise (2) should have shown a positive result. Kennard interpreted his findings as a proof of absolute rotation and as evidence for the aether, raising a word of warning to "those ultrarelativists that want to deny the aether".

If this is true why, then, in the rectilinear experiment of Fig. 22 we don't get a positive induction? Why we cannot think that in Fig. 22 the transversal wire RI is "cutting" the B lines even if the source is comoving with the wire? Here we are again facing the dilemma of comparing a positive experiment, Fig.23, with a negative one, Fig.22. Of course, we are again comparing rotation of axisymmetric magnetic sources, with translation of finite magnets, just like in the negative results of Figures 3 and 5. I do not exaggerate if I say that any electrodynamic theory is defined by the answer it shall give to this dilemma. I would like to mention some points.

1) In Fig. 22 even relativity theory admits that wire RI gets some induction by the fact that "is moving relatively to the OBSERVER, in the presence of a magnetic field. But at the same time, they say, the OBSERVER "sees" a moving magnet and this, according to their famous "transformation equations", leads to an electric polarization of the magnet that exactly cancels the previous induction.

2) This idea of canceling the  $v \times B$  induction with an additional electric field is not unique of relativity theory. In fact, many other 19th century physicists thought along the same lines. Hertz advocated the idea that since a moving charge produces a magnetic field, a moving magnet should produce also an electric one, and he reasoned in terms of the "symmetry of forces". In 1880 Budde (Ann.d.Phys.,10,p.553) objected against Fröhlich (Ann.d.Phys.p.261) that a charge Q and field B comoving with the Earth will NOT interact, (my Fig.3) because there is an induced static charge that will cancel the  $v \times B$  force. W.F.G.Swann, in this century (Phys.Rev.,15,365,1920) also reasoned along the same lines, joining relativity theory with the idea that an amperian ring of current will acquire an electrostatic distribution of charge whose field E would cancel and be in equilibrium with the inductive cause,  $v \times B$ , or  $-dA/dt$ .

3) As you can see in all these approaches the explanation consists in considering TWO OPPOSING phenomena that annul one another. In a sense they all admit that the moving conductor and comoving magnetic source will interact, but the very same interaction pro-

duces an electrostatic field that annuls the possibility of any further observation of any of the two processes involved.

4) This is exactly like the situation of an airplane cutting the magnetic lines of the Earth in its flight say, from East to West. Elementary Physics textbooks usually contain this problem and they ask the student to calculate the potential difference induced across the wings if the speed of flight is given and the strength of the B field. J.K. The problem is really to measure this potential difference. If you come with an electrometer and connect it from one wing tip to another you will NOT find anything. Fig.24 shows the vertical component of the geomagnetic field. Across the wing the  $v \times B$  force causes the separation of charges as shown. But this separation implies an extra field  $E = -v \times B$ . So any other object comoving within the airplane will not "feel" any effect. Therefore, NOTHING MORE HAPPENS BECAUSE IT HAS ALREADY HAPPENED, (i.e., the charges have already separated in two groups). But the charge separation is a sufficient proof that the  $v \times B$  force exists. How could we detect such charges?

5) With a rotating antenna. I came to this idea around 1974. Then I read in Smythe's Electrostatics that the device has already been patented to measure the speed of an airplane from within. Suppose in Fig.25 that P is + charged and Q negatively. If you now rotate the antenna, when Q takes the position of P it must change from (-) to (+) and likewise, P goes from (+) to (-). This means that the charges must actually move from one sphere to the other. Hence if you break the wire PQ in the middle and insert there an infinite impedance electrometer amplifier, you can detect a feeble alternating current. Its intensity is proportional to  $\omega$  of rotation and to the speed of translation.

6) All this seems to be accepted by conventional science. But suppose now that the airplane, or the rotating dipolar antenna, are just sitting in the airport or in your home and that they are oriented from North to South so that when comoving with the Earth's rotation they "cut" the perpendicular component of the geomagnetic field. Should we expect a charge separation then? Of course we should. In other words, we have exactly the same situation as Faraday's unipolar inductor and Kennard's rotating capacitor. We already know that when rotation about an axisymmetric magnetic field is involved we DON'T need relative rotation between the conductor and the magnetic field source. Yet, conventional physics will not accept this. I sent an article to AJP in 1973 making the point that in addition to the E produced by the airplane's flight relative to the Earth's surface there is another amount due to the tangential speed of the Earth's rotation, and that this latter would exist even when the airplane was standing by in the airport. It was rejected, as usual. You have to see the sort of incoherent reasons given by the two reviewers. One of them even mentioned the component of the magnetic field due to the Sun. The other said that I was "oblivious of the Lorentz's transformation". Obviously, none of them have ever heard about Faraday's unipolar inductor, much less about Kennard's experiment. The second one went even as far as pretending me to apply Lorentz's transformation to a ROTATIONAL motion(!), something I don't think even Einstein would have approved.

7) Fortunately there are a good number of relativists that admit that extension of special relativity is "dangerous" in the case of revolving magnets. (see Webster, AJP, 1961, pg.266). Panofsky and Phillips, in pg.338 of their classical book (1962 edition) admit that, in principle the absolute rotation of Faraday's disk can be detected. But then for the final word about the rotating unipolar inductor they quote an article by Schiff, (Proc.Nat.Acad.Sci.,25,391,1939) which is based upon General Relativity. So finally the conclusion is that unipolar induction is due to the "warping of the metric" due to the counter-rotations of the distant galaxies of the Universe when the magnet rotates forward. Can you imagine? To resort to such an abstruse and phantasmagoric theory as Gen.Relat. just to solve that "old puzzle of a rotating magnet", (as Cullwick calls it). No. We certainly must produce a better, I mean, a true explanation.

8) Panofsky and Phillips, however, in spite of their tribute to special relativity (since they say on page 336 of the quoted book that unipolar induction, in its rectilinear version, is "fundamentally a relativistic effect"). One, in fact, due to the "apparent polarization P' seen by a nonproper observer when a magnet translates, namely,  $P' = \gamma(P - v \times M/c^2)$ , where M is the magnetization)- in spite of this they have made a few useful observations: on pg.165 they say that the motion of the magnetic source is entirely irrelevant, "as long as such motion does not produce a time-varying field", pg.338.

It is worthwhile reading the section 9-5 of their book. At the end there is a good hint as to the equivalence between  $v \times B$  when the magnet is an endless bar or belt, and the effect of  $-dB/dt$  when the magnet is finite and has "edge" effects. Other authors that seem to admit that in the unipolar inductor the emf originates at RI and not at EC are Crooks et al. in AJP, 46, 729, 1978. These authors thought they had discovered a new phenomenon to later realize, with surprise, that Faraday had done it already in 1850. They had some fun tricking engineers that thought that the inductor would not work. But they quote Pugh, and even Hering (1908) to leave the final word to Webster, the relativist mentioned before.

9) Another problem that is connected with the unipolar inductor is the origin of the Earth's magnetic field. As you probably know, the prestigious theory by Bullard, currently in acceptance, does not seem to be aware that no relative motion would be required between the earth's magnetic core and the conducting mantle to produce a  $v \times B$  force that keeps regenerating the field. Present theories speak a lot about the relative motion between core and mantle. I think they are ignoring the basic phenomenon discovered by Faraday.

10) The other problem is the debate concerning the applicability of Maxwell's flux rule to Faraday's disk. Feynman (Lectures in Phys. sec. 17-1-2, vol. II) and G. Cohn, (Elect. Eng. 68, 441, 1949) think it is NOT applicable; whereas Scanlon (AJP, 37, 698, 1969) and Panofsky & Phillips think it IS. To me the rule is ambiguous, being unapplicable when extended surfaces act as conductors (like the disk), but being applicable when the conducting paths are filamentary in shape and well defined.

11) Finally, and I will finish this long list, there might exist some doubt concerning the applicability of Kennard's results, that apply to solenoids, also to the case of permanent magnetized materials. This was raised by Tate (Bull. Nat. Res. Council, 4, 75, 1922). On account of this I have tried to repeat Kennard's experiment but using a permanent cylindrical magnet instead of a solenoid. This has proven almost impossible, (see Fig. 26) due to the enormous interference of electronic noises, especially coming from triboelectricity. When one reads Kennard's paper one realizes that he measured the differential effect turning On and OFF the solenoid current. In this way he could screen out the static interference due to the mere mechanical rotation of the apparatus. Obviously this cannot be done with a permanent magnet. The only thing you could do to obtain a sort of On-Off effect is to oscillate the system instead of rotating it continuously. But even oscillations produce interference and, in addition, they cannot be as fast as continuous rotations. I spent many years trying to do this type of "open circuit" or capacitive experiments. In the process I became acquainted with a lot of knowledge in practical electronics, (use of Op Amps, of LED's, of optical couplers, of digital readouts, of photoresistors, etc. But to no avail. Perhaps I did not have the sophisticated equipment needed to isolate the signals adequately. Believe me, I became an expert building "Faraday cages" of all sizes and shapes)

At this point of my report I think it is convenient to propose to you a number of things that could be investigated, both theoretically and experimentally around this study of unipolar induction. Some of them I have tried; in some I have succeeded. In others I have not. My list now will not be as long as the previous one, I promise...

1) At the theoretical level you can try to incorporate unipolar induction to amperian electrodynamics as I have hinted on Fig. 16.

2) But at the same time we need to incorporate the  $dB/dt$  effects that seem to be crucial when finite charges or finite magnetic sources move.

3) Using Panofsky & Phillips' hint on their section 9-5 mentioned above one can try to show that the two effects, "line cutting induction" and varying field induction,  $dB/dt$ , are equal and might cancel each other in rectilinear translation, but not in continuous (axisymmetric) rotations. Thus we would be very close to explaining the famous relativistic impossibility of electromagnetically detecting an absolute rectilinear motion.

4) By the same token, an absolute rotation could be detected by electromagnetic means, (the electromagnetic analog of Foucault's pendulum experiment or of the Sagnac effect and Michelson-Gale's experiment). I have tried to do this for the Earth's rotation using the dipolar rotating antenna of Fig. 25. (See photo, fig. 27). But this

experiment is doomed to fail due to the exceedingly higher intensity of the ordinary electrostatic vertical gradient in the atmosphere, (about 150 volts/meter!). The expected potential due to earth rotation is only about 14 millivolts/meter at Miami's latitude. This cannot compete with the atmospheric one.

5) But we can try such an electromagnetic detection of absolute rotation in a system similar to that of Fig. 10 by using no collector rings and converting RI into the dipolar antenna of Fig. 25. (See photo, Fig. 28). I have been unable to rotate the antenna without introducing too much noise into the amplifier's input, which necessarily has to be very sensitive. (I have used the Burr-Brown electrometers, purchased in 1974 for \$60.00 each. The engineers advised me to use two such devices so that the system could have a "floating ground", as shown in Fig. 29.). Another possibility instead of rotating the antenna is to oscillate the turntable where the whole system is contained. Then the antenna should show an A.C. of the same frequency as that of the oscillations. This has the inconvenience that such oscillations could never be too fast, in detriment of the vBL intensity, (v is now  $2\pi$  rf).

6) Again at the theoretical level one should be able to propose a better theory than that of Bullard. Along these lines I sent an article to Nature in Sept. 1974 entitled, "A Neglected Geomagnetic Fact". Again, no acceptance. The excuse was that "electromagnetic induction is too debated an issue". (My God! I thought electromagnetic induction was 150 years old. How come we are still debating this issue?)

Any way, using Faraday's inductor one can visualize that it suffices that the clouds in the atmosphere were originally charged due to friction. If, as we know to be the case, the radii of positive charges respect the rotation of the Earth is bigger than that of the negative charges (on account of the vertical electrostatic potential mentioned before) the mere rotation of the system should produce a net magnetic moment whose axis coincides almost with that of the Earth, (except perhaps a little inclined due to the inclination of the winds and clouds respect Earth's rotation, (Coriolis effect). Hence any magnetizable substance in the Earth core will be slowly magnetized by this moment, reinforcing the net geomagnetic field. Then this secondary magnetization will, in turn, produce a  $v \times B$  on any length directed along the North-South direction on account of the unipolar induction effect, even without relative motion between core and mantle (as naively required by Bullard's theory). Somehow the unipolar induction will further separate the charges so as to enhance the amount of the original charge imbalance and will thus magnetize the core to a greater extent. The process, therefore, is self regenerative. I do not have all the details but these could be worked out. An indirect proof of this theory might be the fact that "earth currents" are known to vary and to follow the same patterns as magnetic variations during magnetic storms, but with a certain lag. Isn't this an indication that earth's charges do redistribute when the magnetic field changes, the moving force being the  $v \times B$  effect of unipolar induction?

7) Another type of endeavor using the rotating antenna idea is similar to that of #5 but to detect absolute translation. YES! I am sure this can be done provided we translate the magnetic sources without producing any dB/dt whatsoever in the universe. A continuous magnetized belt, or system of magnets, as shown in Fig. 30 will do. You should show that when only the antenna and amplifiers move over the belt an A.C. is induced, (this is like the airplane flying over the Earth. Next you move only the belt and... nothing happens. (With this you have already disproven the relativistic idea that a moving magnet creates a polarization P for a nonproper observer). Finally you move the whole thing, antenna and belt, and you get the same AC as when only the antenna moved. Thus, you have detected, from within the "airplane" a rectilinear unipolar induction even in the case where magnets and conductors were comoving together. Then you can announce to the world that you have disproven relativity theory and this in its own field of original application: the electrodynamics of moving bodies... As I said, I have tried my rotating antenna experiments but with little success. Concerning the endless magnetized rectilinear "belt" I have never tried.

8) What I have had success with was in determining the seat of emf in the case of rotational unipolar induction. This was the subject of my 1979 paper, rejected by AJP and that Wesley rewrote recently. (Will you...)

F. J. MÜLLER (FIGURES) ①

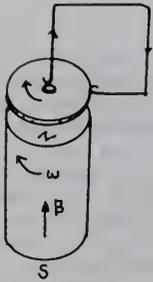


Fig. 1

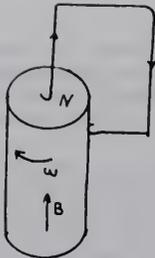


Fig. 2

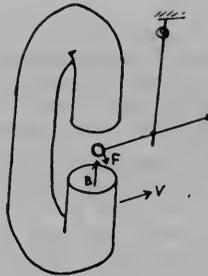


Fig. 3

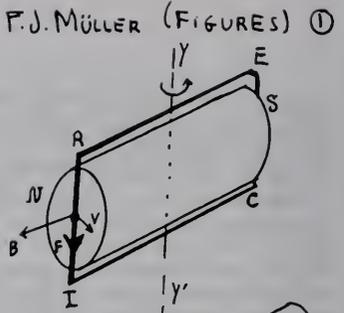


Fig. 4



Fig. 6

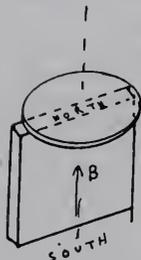


Fig. 7

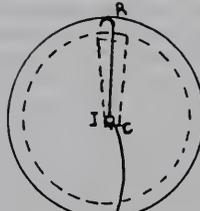


Fig. 8

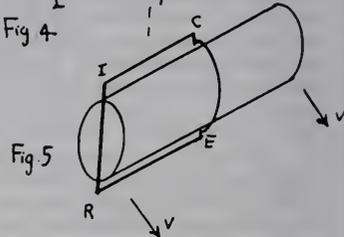


Fig. 5

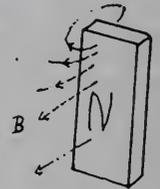


Fig. 9

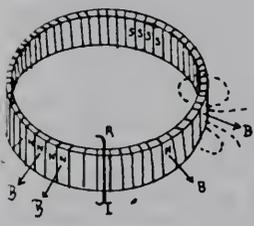


Fig. 10

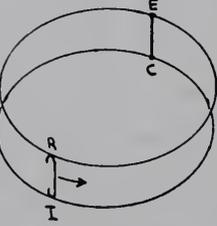


Fig. 11

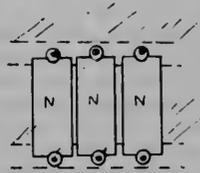


Fig. 12

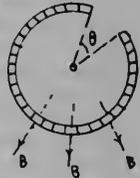


Fig. 13

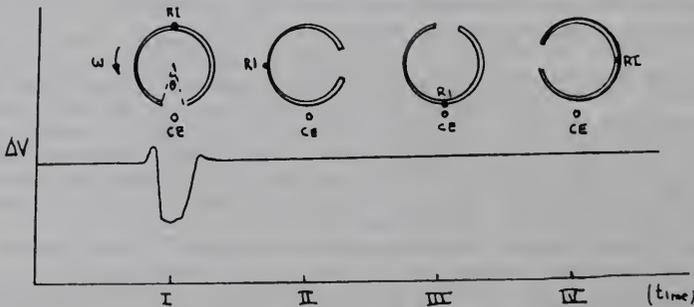


Fig. 14

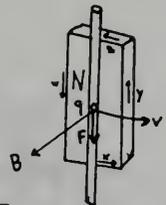
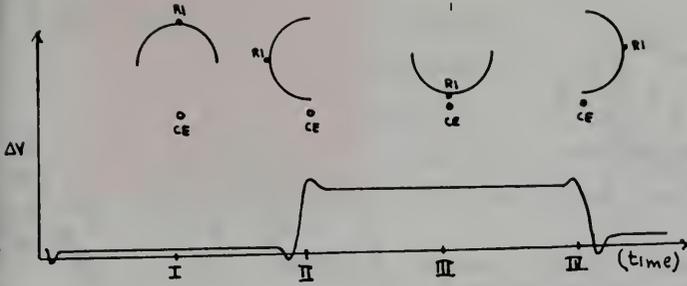


Fig. 16

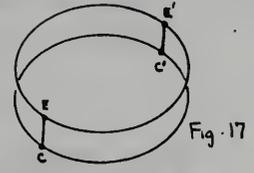
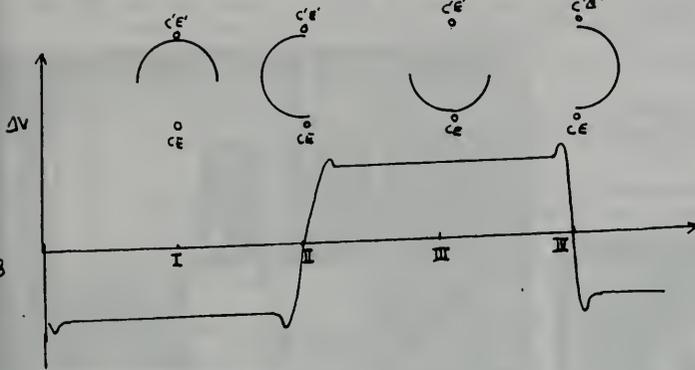


Fig. 17

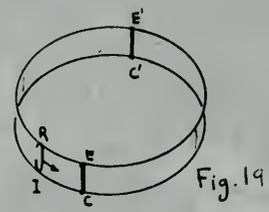
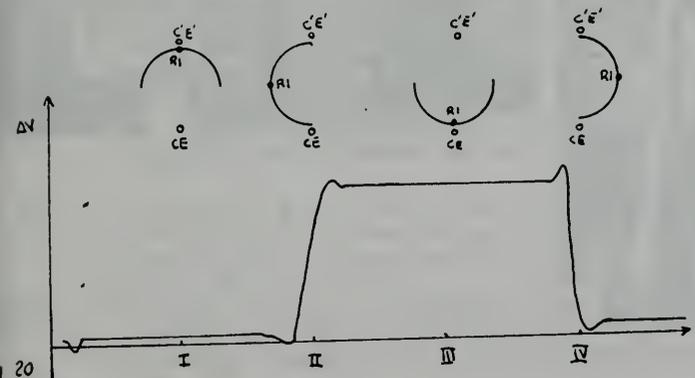


Fig. 19

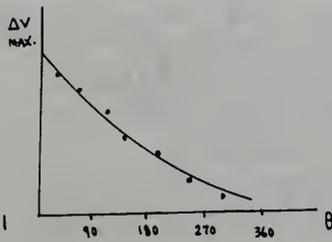


Fig. 21

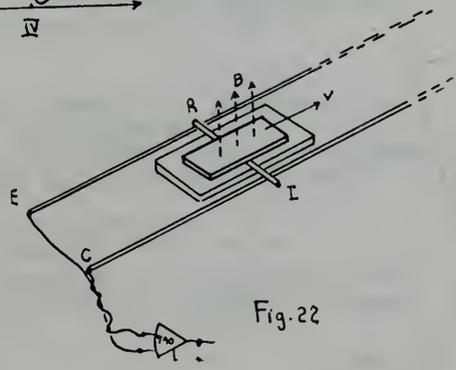


Fig. 22

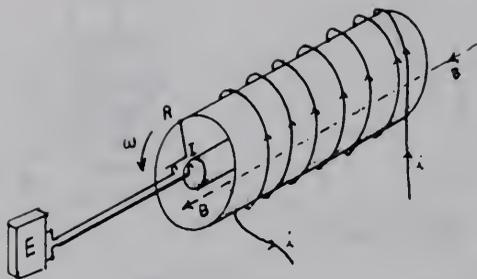


Fig 23

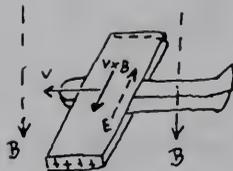


Fig. 24



Fig. 25



Fig. 26

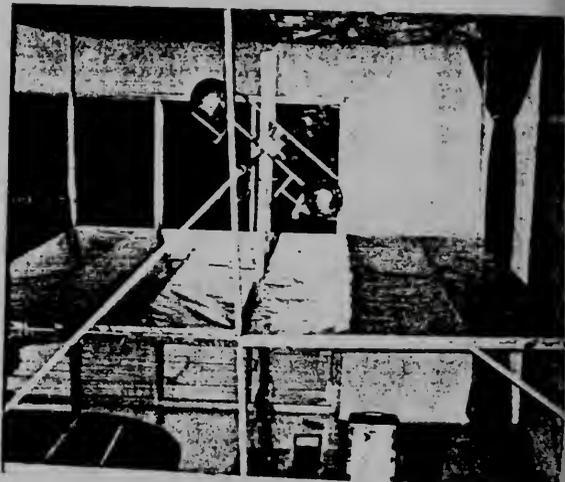


Fig. 27

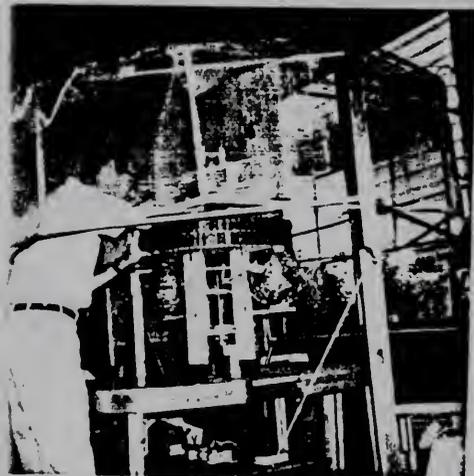


Fig. 28

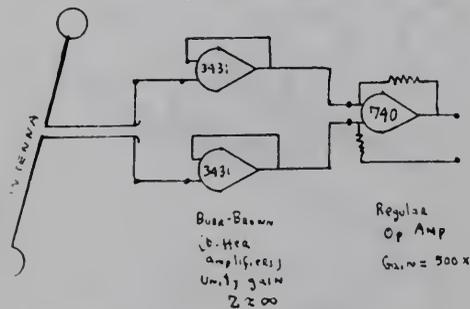


Fig. 29

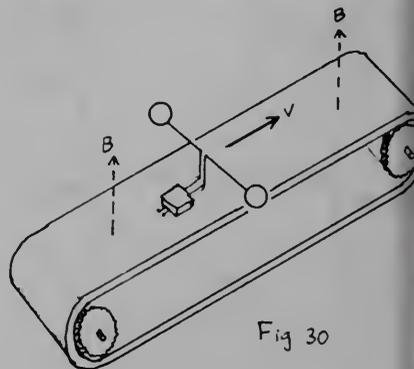


Fig 30

THE 'REJECTED' PAPERS

(C) Physical: (still un-published)

- 1- A Systematic Philosophical Physics. (Book, 180 pages), (1970).
- 2- Who is the "observer"? (An analysis of relativity theory), (1973).
- 3- A neglected geomagnetic fact. (A new approach to the cause of terrestrial magnetism), (1973).
- 4- The induced electromagnetic voltage difference between airplane wing tips. (A revision of a currently ill treated problem in physics textbooks), (1973).
- 5- The two charge problem. (A rediscussion of the fundamental electromagnetic interaction between two moving electrons.), (1974).
- 6- Relativity and Unipolar Induction. (A review.), (1975).
- 7- Did Einstein deduce the Lorentz equations in 1905? (A detailed critique of the first three sections of Einstein's famous 1905 paper), (1976).
- 8- Classical and Non-classical Experiments in Electromagnetic Induction. (These data are collected in 19 notebooks as a result of 7 years of research in electromagnetic induction, with special emphasis in "unipolar induction" and induction in open (capacitive) circuits. A summary was presented at a Colloquium in Feb. 1979, Physics Dept. Univ. of Miami.
- 9- The amazing problem of electromagnetic unipolar induction. (A popular account of this phenomenon), (1979).
- 10- A new electric generator without sliding contacts. (Disclosure for patent application). (A generator has been designed that requires no relative motion between the field windings and the armature winding. Requires no permanent magnets either), (1979).
- 11- Electromagnetic induction without relative motion. (A more extensive treatment on the experiments that led to the previous generator), (1979).
- 12- Experimental E.M.F. localization in motional induction. (An R-C-R circuit is used to locate the true seat of emf in a closed circuit. Application to the new generator.), (1980).
- 13- Motional induction at a distance. (In preparation. This article studies the problem of conductors embedded in slotted armatures; these conductors never "cut" a magnetic line, yet they receive an emf.) (1982).

Marinov's note. Those are the scientific papers of Francisco Müller which he has sent to different journals but no one was accepted. These papers are a real treasury which the malicious referees have concealed from the eyes of the researchers. And raising my both fists to the heavens, I exclaim for a thousandth and one time:

О, referee, какой владетель русской лиры  
не проклинал твоей губительной секеры!

The references to Faraday's writings in Müller's letter concern plate III and notes 217 - 222 (Jan. 1932) of Faraday's ELECTRICITY. The note 218 is cited by me on p. 123.

# ELIN



FABRIK WEIZ

ELIN UNION AG, Elingasse 3, A-8160 Weiz

Herrn  
Stefan Marinov



Niederschöcklstraße 62  
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Editorial note. See also p. 294.

Einstein-Laboratorium für Theoretische Physik  
der Akademie der Wissenschaften der DDR

Direktor AkM Prof. Dr. habil. Dr. h. c. mult. H.-J. Treder

Herrn

Dr. St. Marinov

Niederschöcklstr. 62

Babelsberg, 8. Mai 1984

A-8044 Graz, Austria  
Österreich

~~1506 Caputh~~  
~~Am Waldrand 3/3a~~  
~~den~~

Sehr geehrter Herr Dr. Marinov,

mit Ihrem Manuskript geht es mir genau so wie den amerikanischen Kollegen, gegen die Sie polemisieren. Ich kann ebenfalls nicht einsehen, wie Sie eine absolute Erdgeschwindigkeit von  $300 \text{ km sec}^{-1}$  messen können, während Ihre Einweg-Meßanordnung für die Lichtgeschwindigkeit (gemäß Ihren eigenen Angaben auf Seite 6) einen Meßfehler von  $\pm 60.000 \text{ km sec}^{-1}$  enthält.

Hochachtungsvoll

Prof. Dr. habil. Dr. h. c. mult.  
Hans-Jürgen Treder

PS: Anbei Ihr Manuskript zurück.

Editorial note. This is the opinion of the referee of ANNALEN DER PHYSIK on Marinov's paper "New measurement of the Earth's absolute velocity with the help of the 'coupled shutters' experiment", submitted to this journal on the 23 March 1984 (see p. 68).

Sekretariats-Anschrift:  
Einstein-Laboratorium  
der Akademie der Wissenschaften der DDR  
1502 Potsdam-Babelsberg  
Rosa-Luxemburg-Str. 17 a

Einstein-Laboratorium  
1506 Caputh  
Am Waldrand 3/3 a

11 May 1984

Dr Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
AUSTRIA

In reply please quote:  
MO3098 JM/MS/JAC

Dear Dr Marinov

I am so sorry to have inferred from your letters at the end of March that you are once more in a state of great agitation with Nature's editorial policy. Let me say that I have great sympathy with your frustration, even despair; but I must tell you frankly how your intellectual position must seem to the outside world.

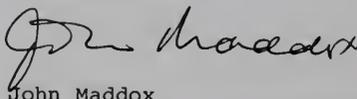
You are persuaded that special relativity is wrong, but your conviction is based on a single experiment carried out in Sofia and not afterwards repeated (for reasons which I understand). In your "Coup de Grace" paper, you also outline a number of theoretical formulations which, frankly, I do not understand.

Nowhere in the huge correspondence between us have I detected a trace of awareness on your part of the enormity of the point you wish to establish. Special relativity sprang from the contradictions of electromagnetism at the end of the nineteenth century, was recognized in 1905 as a valid amendment to Newton's mechanics and has since been shown to be (1) consistent with general relativity, a local approximation if you like, and (2) amply confirmed by, for example, the accelerator experiments which show that this energy of a particle increases with its velocity as  $(1-v^2/c^2)^{-1/2}$ . Relativity has been used to open unexpected avenues of inquiry, such as Dirac's relativistic quantum mechanics (and the existence of the positron).

You ask the world to give up all this on the strength of a single experiment, and because you say so! But unlike Jesus Christ and others successful at changing the way the world thinks, you offer nothing in exchange. If special relativity is flawed, as you insist, what then is the valid amendment to Newton's mechanics that you would put in its place? (You will say that the first part of your Coup de Grace paper contains the answer, but I cannot follow it).

Please do not reply with another version of that, or an offer to pay to have it published, Try instead to understand that people like me are not acting (or failing to act as you would wish) out of disregard for you, but because we think your arguments, honestly put though it is, is unconvincing.

Yours sincerely



John Maddox  
Editor

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
27 May 1984

- 257 -

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2r 3LF  
Your Ref. M03098 JM/MS/JAC

Dear Dr. Maddox,

Thank you very much for your letter of the 11 May 1984. I do not see much sense in answering your letter, but my principle is to answer any criticism, because some of the critics may remain with the opinion that he has said something of value.

You write: "You are persuaded that special relativity is wrong, but your conviction is based on a simple experiment carried out in Sofia and not afterwards repeated."

This sentence shows that you even have not read my paper NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY WITH THE HELP OF THE "COUPLED SHUTTERS" EXPERIMENT submitted on the 14 February 1984 and rejected by you during our phone conversation on the 22 March 1984. In this paper I give the report on the Graz execution of my "coupled shutters" experiment which after so many difficulties and sacrifices I succeeded to execute this year. Your above cited sentence impels me to REQUIRE A MOTIVATED REJECTION FOR THE MENTIONED PAPER (yours or of an anonymous referee), so that I can see that the paper was read. Searching to help you, I send you the rejection letter on this paper sent to me by Prof. H.-J. Treder, so that you at least do not repeat his stupid remark. I also enclose my answer, so that you do not remain with the opinion that Prof. Treder has said something of value.

Trying to present objections against my papers, you give such <sup>alone</sup> which I have received at least in 100 referees' opinions on my papers. I DO NOT EXAGGERATE THE FIGURE! In at least 100 referees' opinion one objected that my theory can be not right because "Special relativity... was amply confirmed by, for example, the accelerator experiments which show that the energy of a particle increases with its velocity as  $(1 - v^2/c^2)^{-1/2}$ ". Dear Dr. Maddox, read my papers, read CLASSICAL PHYSICS: I calculated with my theory all effects in the accelerators, I calculated, if you wish, the polarization in the synchrotron radiation. The mentioned by you formula is fundamental in my theory and it results from the fact that the gravitational potential is velocity dependent and that the rest plus kinetic energy is nothing else than the gravitational energy of the particle with the mass of the whole universe. There are so many formulas in my theory which disagree with the formulas of special relativity. Write something against THOSE FORMULAS, but do NOT REPEAT THE SAME untenable objection as 100 other referees which, of course, have not your quality.

I wrote in my letter to the owner of NATURE of the 27 March 1984 that if you present an objection of the kind "Marinov asserts... According to me this is not true because..." I shall pay to NATURE 1000 dollars. I will do this if after "Marinov asserts..." will stay something which I really assert. Meanwhile you can find the formula  $e_0 = mc^2(1 - v^2/c^2)^{-1/2}$  on EVERY SECOND PAGE of CLASSICAL PHYSICS. Dear Dr. Maddox, present real objections. If you can not find such, I can help you. Write, for example, "Marinov asserts that the equation of Lorentz in a moving frame is given by formula (15) in his paper COUP DE GRACE TO RELATIVITY. This is not true, as the equation of Lorentz has in any inertial frame the same form." But since you wrote me that COUP DE GRACE TO RELATIVITY was a hard nut for you ("In your paper COUP DE GRACE, you also outline a number of theoretical formulations which, frankly, I do not understand") I can offer you certain moresimple stuff. Write, for example: "Marinov asserts that the velocity of light in a moving frame is  $c \pm v$ . This is not true, as this velocity is in any inertial frame  $c$ ". If you will sign this second stupidity, I shall pay you even 2000 dollars.

Let me end the letter. You have things to do, I have things to do. I beg you only for one thing, if you steem all sacrifices which I do for science:

1. Send me in 10 days a motivated rejection of the paper NEW MEASUREMENT OF THE...
2. Confirm EXPLICITLY the reception of my letters of the: 28.XII.83 and of the following letters of this year: 2.II., 14.II., 1.III., 14.III., 17.III., 22.III., 27.III (addressed to the owner of NATURE), 30.III.
3. Send me EXPLICIT rejection of my last three papers which you rejected in our phone conversation on the 22.III.1984.

If you will not do this in 10 days after the reception of this letter, you do not steem me, and, may be, it will be better to break our relations.

Yours: *S. Marinov* Stefan Marinov

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Tel. 03132/2609

Prof. Dr. H.-J. Treder  
Einstein-Laboratorium  
Rosa-Luxemburg-Str. 17 a  
DDR-1502 Potsdam-Babelsberg

27 May 1984

Dear Prof. Treder,

Thank you very much for your letter of the 8 May 1984 with which you declined the publication of my paper NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY WITH THE HELP OF THE "COUPLED SHUTTERS" EXPERIMENT in the ANN. PHYS.

I was shocked to see with what an incompetent motivation you rejected my paper. The error of  $\pm 60,000$  km/sec of my experiment given on p. 6 is for the absolute measurement of light velocity, while on p. 8 I show that the error for the measurement of the variations of light velocity, i.e., for a relative measurement of those variations with respect to  $c$ , which is taken as known, is  $\pm 30$  km/sec.

If you have not understood the difference between the measurement of  $c$  (Section 3) and of the measurement of  $v$  (Section 4), this signifies that either you have not read attentively the paper or that experimental physics is a *terra incognita* for you.

I wish to hope that you will re-examine my paper and withdraw your criticism, suggesting the paper for publication. In the case that you will further insist for a rejection, I shall beg you very much to present me competent motivations.

Before taking a decision, I should suggest you to phone to Prof. Schmutzer in Jena who knows me very well from the GR9 and GR10 conferences. Such a conversation surely will be profitable for the elaboration of your decision on my paper.

In the end I wish to emphasize that my "coupled shutters" experiment (together with the previously done "coupled mirrors" experiment) is one of the most important experiments in the history of physics.

Looking forward for your answer and excusing me of not having written you in German,

Sincerely yours,



Stefan Marinov

PS. I send you again the manuscript of my paper, so that you can revise your negative decision.



THE INSTITUTE FOR BASIC RESEARCH  
Harvard Grounds, 96 Prescott Street  
Cambridge, Massachusetts 02138, tel. (617) 864 9859

Professor Ruggero Maria Santilli, President

June 7, 1984

Professor S. MARINOV  
Laboratory for Fundamental Physical Problems  
SOFIA, Bulgaria

Dear Professor Marinov,

I am here inviting you to be a member of the Organization Committee of the  
SECOND INTERNATIONAL CONFERENCE ON NONPOTENTIAL INTERACTIONS  
AND THEIR LIE-ADMISSIBLE TREATMENT

to be held in Patras, Greece, as per enclosed preliminary announcement,  
in early January 1986. In particular, I would like to invite to chair  
the experimental session in Special Relativity (Lorentz symmetry).

In case you can accept this invitation, you would have no obligations  
other than that of being an invited lecturer at the Conference. In fact,  
this invitation is the result of your studies presented in General Relativity  
and Gravitation, 12, 57 (1980). We will be all eager to hear the latest  
status of the studies directly from you.

Nevertheless, you should feel free to invite, at your option and discretion,  
a representative number of other experimentalists who have or are conducting  
tests of the Lorentz symmetry and who would be valuable addition to the  
general lines of the Conference. In this way, our Conference could  
set the status of experiments on the special relativity on a world wide basis.

For your information, Professor Jannussis of the University of Patras,  
Greece, is in charge of all financial matters. He is currently applying  
for funds in Europe with quite encouraging results. All members of the  
Organization Committee are expected to receive full travel support from  
the Conference, as well as some lodging assistance.

Most members of the Committee will meet this summer in the occasion of  
the SECOND WORKSHOP ON HADRONIC MECHANICS, where several aspects and  
preparatory actions toward the Conference will be considered. I would like  
to invite you to be a speaker at the Second Workshop in Como, Italy (see  
enclosed announcement). In fact, your studies would be of great interests  
to all workshops participants. Regrettably, however, we have no funds  
for this informal meeting, and I cannot support you. In case your  
Institute can support you, please let me know. It would be a pleasure  
to issue a specialized invitation for a talk.

Thank you for your courtesy and time.

Very Truly Yours

Ruggero M. Santilli  
Chairman, Organization Committee

SECOND INTERNATIONAL CONFERENCE ON NONPOTENTIAL INTERACTIONS AND THEIR  
LIR-ADMISSIBLE TREATMENT

RMS-mlw

Einstein-Laboratorium für Theoretische Physik  
der Akademie der Wissenschaften der DDR

Direktor AkM Prof. Dr. habil. Dr. h. c. mult. H.-J. Treder

Österreich

Einschreiben

Herrn  
Stefan Marinov  
Niederschöcklstr. 62

A-8044 G r a z

~~1506 Caputh~~  
~~Am Waldrand 3/3a,~~ Babelsberg,  
den 8. Juni 1984

Sehr geehrter Herr Dr. Marinov!

Aus Ihrem Text glaubte ich zu ersehen, daß Sie in Graz wohnen und Österreicher sind; deshalb antworte ich Ihnen in deutscher Sprache. Im übrigen sind Sie mir unbekannt. Ich beurteile als Redakteur der "Annalen der Physik" nur die vorliegenden Arbeiten.

Die von Ihnen vorgeschlagene Meßanordnung zur Bestimmung der Lichtgeschwindigkeit ist die schlechteste der Welt. Da Sie mit einem Fehler von  $\pm 60\ 000$  km/s arbeitet, könnte sie höchstens zur Demonstration der Endlichkeit der Lichtgeschwindigkeit verwendet werden.

Ich weiß nicht, inwieweit Ihre Vorschläge originell sind, würde Ihnen aber vorschlagen, sich an eine didaktische Zeitschrift zu wenden. Ich schicke das Manuskript zurück.

Anlage

Hochachtungsvoll

Prof. Dr. Dr. H.-J. Treder

Editorial note. This is the answer to Marinov's letter of the 27 May 1985 (see p. 258).

Sekretariats-Anschrift:  
Einstein-Laboratorium  
der Akademie der Wissenschaften der DDR  
1502 Potsdam-Babelsberg  
Rosa-Luxemburg-Str. 17 a

Einstein-Laboratorium  
1506 Caputh  
Am Waldrand 3/3 a

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
24 June 1984

Prof. Dr. H.-J. Treder  
Einstein-Laboratorium  
Rosa-Luxemburg-Str. 17a  
DDR-1502 Potsdam-Babelsberg

Dear Dr. Treder,

Thank you for your letter of the 8 June 1984, although I remained shocked to see that you have not recognized your blunt error and you insist that the error in the measurement of the variations of the light velocity due to the Earth's absolute motion must be the same as the error for the absolute measurement of the light velocity, i.e., 60,000 km/sec, instead of 30 km/sec. I supposed that you made this error in your letter of the 8 May because you have not read the paper attentively. Now I see that this error is due to your clamorous incompetence in experimental physics. I beg you, dear Prof. Treder, to take in attention the fact that one can never be a good theoretician if one is unable, if not to execute experiments, at least to grasp and to understand critically their description. Unfortunately, there is a numerous army of theoreticians who have extremely scarce knowledges in experimental physics and this is one of the reasons for the highly critical situation in space-time physics, where the scientific community lives in a realm of prejudices and dogmas which do not correspond to reality as very few people do experiments (relevant experiments and not measurements of non-existing effects). But the worse thing in space-time physics is that the scientific community pays no attention to executed experiments which contradict the dogmas of the existing relativity theory. I measured the Earth's absolute velocity 10 years ago and you who are a specialist in the field even do not know my name. Meanwhile I published 10 big papers in FOUNDATIONS OF PHYSICS, a journal where you are member of the Editorial Board. May be I am the most frequently published author in this journal, I publish papers in your field of competence and you have not heard my name. This can be said for about 80% of the space-time specialists in the world. Do you think that in this way science can progress?

And now when I submit to ANNALEN DER PHYSIK a paper where an account on my recent measurement of the Earth's absolute velocity is presented, you reject the paper with absolute incompetent and stupid remark, and after I have pointed to your error, you repeat it. ERWACHE, Dr. Treder, ERWACHE!

As I can not accept your incompetent motivations for the rejection of the paper, I resubmit it again to the Editor, Dr. Richter, begging him to appoint another referee, who has certain elementary knowledges in experimental physics.

A remark. In your letter of the 8 June you write: "Die von Ihnen vorgeschlagene Meßanordnung zur Bestimmung der Lichtgeschwindigkeit ist die schlechteste der Welt." My setup cannot be the worse in the world as it is a unique one. There is no experiment done in the world where one measures the one-way light velocity. All existing experiments measure the two-way light velocity. I shall cite from my paper published in SPEC. SC. TECHN. 3, 57 (1980), where the account on the Brussel's variation of the "coupled shutters" experiment is given, hoping that you will understand what I am saying:

Thus with my method the absolute measurement of the one-way light velocity will always include an error of not less than 10%. The best measurements of the two-way light velocity (NBS, Colorado) have given an accuracy of  $10^{-8}\%$ , i.e., one accuracy one milliard times higher than that of my experiment. However, I believe that this is the first time that the one-way light velocity has been measured.

However the variations in the one-way light velocity have been measured in Brussels with an accuracy of 1% and in Graz with an accuracy of 0,01%. With no two-way experiment can one measure those variations. Do you understand, Dr. Treder? Thus as my experiment is the unique one for measuring  $v$ , it is the best one. This experiment must be not submitted to a didactical journal (as you suggest) but to the most responsible physical journals, as it will change radically our space-time conceptions. If now you will recognize your error and suggest the paper for publication, I shall be thankful to you, if you will further insist in your opinion, I can only increase the enormous grief which I have accumulated in my heart during long years of knocking against heads of stones.

Please, accept all my respects,

Sincerely yours,  
Stefan Marinov

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
24 June 1984

Prof. Dr. G. Richter  
ANNALEN DER PHYSIK  
Rudower Chaussee 5  
DDR-1199 Berlin - Adlershof

Dear Dr. Richter,

I send you the letters of Dr. H.-J. Treder to me of the 8 Mai and 8 June 1984 and my answers to him of the 27 May and 24 June 1984 concerning the rejection of my paper

NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY WITH THE HELP  
OF THE "COUPLED SHUTTERS" EXPERIMENT,

which I submitted to you with my letter of the 28 March 1984.

As you can see from my letters to Dr. Treder, he, according to me, is unable critically to judge my experiment, as, obviously, his knowledges in experimental physics are not sufficient. For this reason I beg you to appoint another referee with better knowledges in experimental physics, who, in the case of rejection, will be able to present scientifically relevant objections. I wish to hope, however, that you, being also a specialist in the field (you sent me some 10 years ago in Sofia your publications in the field), will understand the enormous importance of my experiment for the further evolution of space-time physics and you will accept the paper, becoming a referee yourself.

During our more frequent correspondence in the years when I lived in Sofia, I wrote you once: The ANNALEN haben das Relativitätsungeheuer zur Welt gebracht, die ANNALEN müssen es töten (Я тебя породил, я тебя и убью /Тарас Бульба/). I wish to hope that you will accept the paper, and kill relativity. If you also will reject it, I can only repeat the same words as at the end of my letter to Dr. Treder of the 24 June.

I hope to receive an acknowledgement for the reception of that paper and in a due time your final decision.

Soon I will visit Berlin (in the autumn) and if you are interested to see me and have a talk, I shall gladly visit you (as you may remember, my second wife, Tea van Bovensiepen, who visited once you, lives in Berlin).

Sending you my best regards,

Sincerely yours,

*S. Marinov*

Stefan Marinov

c/c Dr. H.-J. Treder.

Editorial note. This letter remained without answer.

The Institute of Physics

CAW/SDB/CQG

29 June 1984

Dr S Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
AUSTRIA

Physics Trust Publications  
Techno House  
Redcliffe Way  
Bristol BS1 6NX  
England  
Telex 449149  
Telephone 0272 297481

Dear Dr Marinov

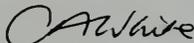
Paper: New measurement of the Earth's absolute velocity with the ...  
Author: S Marinov

I am afraid this paper has received unfavourable reports from our referees; copies of their comments are enclosed for your information.

In view of these adverse reports, I would suggest that you withdraw the paper from consideration (please note that we are not prepared to consider a revised version). Alternatively, if you wish, the paper can be given final consideration at the next meeting of the Editorial Board, but I must point out that it is unlikely the Board will go against the referees' recommendations.

Please send a typed reply to the referees' comments if you do wish the paper to be considered by the Board. If we do not hear from you within two months, we shall assume you wish to withdraw the paper.

Yours sincerely



Christina A White  
Editorial Assistant  
for The Institute of Physics

FIRST REFEREE'S REPORT

I have now had an opportunity to referee this paper and I find it difficult to make sense of in places. Firstly, the suggestions that the experiment lay beyond the expertise of JILA in the University of Colorado are I believe a strong overstatement of some comments by one of the research workers of that laboratory. I have spoken with him about this, and we both feel that if the paper were to be published such statements must be removed or corrected.

*I find the overall tone of the paper annoying, full of irrelevant detail and lacking in relevant information. His descriptions are hard to follow and I cannot find the reference he gives to his work in Nature. However his results are interesting.*

*He certainly finds a 24 periodicity in the differential velocity signal but one has to be extremely careful about such an effect. For example I believe it could perhaps arise from a diurnal variation in the power or the pointing direction of the beam from the argon ion laser used. Such laser fluctuations can result from a) cyclic fluctuations in the temperature and pressure of the coolingwater and b) power line voltage fluctuations.*

*Similarly, differential thermal expansion inside the vacuum system, with a diurnal period, has to be considered.*

*I should be much more convinced if Marinov had searched for and failed to find a 24 hour periodicity with the rotating shutters held at rest. He would of course still have to have carried out the experiment exactly as if the shutters were rotating and having their direction of rotation regularly reversed.*

*I feel that the paper should not be published in its present form.*

SECOND REFEREE'S REPORT

I recommend that this paper be rejected. First, I regret that I am unable to accept that the measurements reported are of sufficient quality to support the author's conclusions. Second, I do not believe that the author's analysis of the ideal experiment is correct even if his views on the velocity of light are accepted.

The core of the experiment, as presented, is that two sets of holes at the opposite ends of a long shaft must remain in perfect register when the shaft is rotated rapidly, first in one direction and then in the reverse direction. The tolerance on this stability is (using the author's rotation) better than

$\Delta b \cdot v/c$  or much better than one Angstrom. I would draw the author's attention to work on diffraction grating ruling<sup>(1)</sup> and on precision lens mounts<sup>(2)</sup> - in both these field apparatus which moves very much more slowly than the coupled shutters significantly fails to achieve this level of accuracy.

I share other referees doubts about the precision of the bearings and the effect of vibration, but the author seems unwilling to accept these particular criticisms. I am also of the opinion that the model used for the light distribution across the apertures is still far from adequate - in particular it assumes the same distribution at both ends of the machine.

The point I wish to emphasize, and perhaps the most obvious defect in the author's pursuit of a mechanically (and electrically) perfect system, is the lack of any temperature control. Extremely small changes in temperature gradients (milli-degrees per metre)

are enough to distort the apparatus by many times the tolerance required. The diurnal variation of observed current shown in Fig.2 - minimum at 3 am, maximum at 3 pm is very much what we would expect from temperature induced effects. [The positive result from the Michelson Morley experiment reported by Miller was traced to just such effects]. I very much fear that the author has constructed, under conditions of extreme difficulty, an expensive thermometer. My fears are increased when I read "The performance of the experiment in vacuum has the advantage that people..... cannot raise the objection that the observed effect is due to temperature differences". This is precisely the opposite of my experience - an evacuated environment greatly reduces (by removal of convection and air conduction) the heat transfer to and from a piece of apparatus and so makes the attainment of thermal equilibrium more difficult. If there is a power source within the tank, as there is in this case, the heat generated (and the resulting mechanical distortion) becomes a major embarrassment. Equally the photo-detectors are receiving significant input energies from the laser. If the results are to be above criticism then the detectors must either be held at constant temperature or at the same temperature with an auxiliary experiment to show they have the same temperature coefficient, or if they are allowed to drift they must be shown to have zero temperature coefficient.

The author has an idea for an experiment which could have dramatic results. What is necessary, beyond this, is a practical realisation of an apparatus that can do the experiment and which is also able to answer all critics with demonstrations that the obvious problems - bearing precision, vibration, non-uniform illumination, temperature drift, etc, are not larger than the effect sought. Until this is achieved the existing scientific "orthodoxy" concerning the velocity of light (cf. page 3, para.1) will command much greater credibility than the measurement reported here. It is my considered opinion that, very sadly, the JILA team are right and the experiment is, at present, beyond the reach of the best of modern experimental technique.

There is also a far more fundamental objection to the experiment, even at the purely conceptual level. The author requires that the velocity of light shall be  $(c+v)$  when moving with the local frame, &  $(c-v)$  when moving against it. If we accept this as a working hypothesis then the law of reflection does not hold. If the light approaches the alignment mirror at the end of the apparatus more rapidly than it leaves, the angle of incidence will be less than the angle of reflection. If the apparatus is rotated through  $180^\circ$  (or we consider the mirror at the other end) the angle of incidence is now greater than the angle of reflection. The important point is that the paths taken by the two oppositely directed beams will be different at different orientations with respect to the velocity  $v$ . This transverse shear is not symmetrical and would probably be larger than the effect of differing transit times from hole to hole.

In conclusion - we have an experiment which is neither conceptually sound nor experimentally convincing. The paper should therefore be rejected.

#### References

1. Hutley, M., "Diffraction Gratings", Academic Press, 1982
2. Welford, W.T. et al. *Optica Acta* 21 615 1974

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Austria

Tel. 03132/2609

29 June 1984

- 266 -

Dr. John Maddox  
NATURE  
4 Little Esses Street  
London WC2R 3LF

Dear Dr. Maddox,

To my last letter of the 27 May 1984 I have not received an answer. With your silence you demonstrated that you do not esteem me, as my letter ended with the words:

If you will not answer my letter in 10 days after its reception, you do not esteem me, and, may be, it will be better to break our relations.

Unfortunately I cannot break our relations, because besides my personal dignity, there are interests of a whole humanity which are concerned. However, after seeing how uncolleaguely and unethically you act, I must also change my attitude which until now was based on the commonly accepted gentlemanhood.

I send you for publication the following three papers:

1. NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY WITH THE HELP OF THE "COUPLED MIRRORS" EXPERIMENT. (The paper is sent exactly in the same form as it was submitted to you on the 14 Febr. 1984 and rejected by you during a phone conversation on the 22 March 1984).
2. ON THE ACTION AND INTERACTION OF STATIONARY CURRENTS. (This is a slightly revised version of the paper "Mathematical nonsenses..." submitted to you on the 19 Sept. 1984 and rejected also during a phone conversation on the 22 March 1984).
3. COUP DE GRACE TO RELATIVITY AND TO SOMETHING ELSE (This is a slight variation with SUBSTANTIAL EXTENSION of the paper "Coup de grace to relativity" submitted on the 7 November 1983, rejected by you on the 25 November 1983, resubmitted on the 1 March 1984 and rejected by you during the phone conversation on the 22 March 1984).

I pose you (and to the editorial staff of NATURE) the following ULTIMATUM:

You have to sent ALL THREE PAPERS for composition at the same day of receiving this letter. You shall make better drawings of the figures which are not well drawn. You have the right to introduce only LINGUSTIC CORRECTIONS in the papers but no changes in the sense. In the most speedy way you have to send me by express letter the proofs of the papers which at the same day will be returned to you and all papers are to be published in the issue of NATURE which is on the schedule. I beg you to inform me by a phone call or by a telegram whether you will fulfill this ultimatum or not. If you will reject to fulfil it, I shall go immediately to the English Embassy in Vienna and after making a one-day warning strike (straik ostregawczy, jak mówią polacy) I shall commit myself to the flames in front of the Embassy.

If you again will play a non-gentleman and you will not phone (or cable) me your decision, please, say this decision to your secretary, so that she can communicate it to me when I phone.

I have discovered a perpetuum mobile. Any day of delaying its announcement costs milliards of dollars and poisoning of air, water and soil. I cannot permit you to make this crime against humanity, because you are unable to understand a couple of childish formulas.

Dear Dr. Maddox, I know how to wring the neck of a totalitarian power. The Internal minister of Bulgaria (who killed George Markov in London) fulfilled both my ultimata (of May 1977 and August 1977) in the given 48-hours time-limit. Beg Vera Rich to read you the corresponding pages in my book VADE RETRO, SATANAS! Do you think that you are a harder nut for me than the Internal Minister of Bulgaria? - I beg you - at the last moment become aware of the seriousness of the situation and do not provoke a scandal which will end with your complete scientific and moral bankruptcy. I send you the book CALVARIO. Look at least to the pictures to understand who I am.

Hoping first of all in your good heart,

Sincerely yours,

*S. Marinov*  
Stefan Marinov

PS. You may mention this ultimatum in the press and print excerpts of it in NATURE. You can make any comments.

In reply please quote  
M-07019-21/JM/MS  
5 July 1984

Dr Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Austria

Dear Dr Marinov:

This is to thank you for your letter and to comment in a preliminary way on the first of your three manuscripts.

Honestly, I am disappointed by the tone of your letter but, worse, by the quality of the physics that you describe in the first of your manuscripts (the only one I have read so far). You claim that your equipment is sufficiently sensitive, but you give absolutely no assistance to the reader who might wish to check that point. Here is the sort of thing I mean.

Obviously the sensitivity of your experiment will to a large extent be determined by the dependence of total light transmission on the rotational speed of the disks, the shape of the beam and the shape and size of the holes. Unfortunately, you do not even tell the reader how many holes there are in each disk, nor even the range of rotational speeds over which you have run the experiment. But from your photograph, I guess there may be about 40 holes/disk.

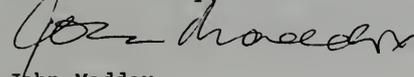
Moreover, as far as I can see, you quote only one set of results (at 200 revolutions/minute) but do not do what professional physicists would instinctively do - plot, say,  $I$  as a function of  $N$  and to estimate the slope of the line to infer the supposed velocity component along the axis.

Naturally I am disappointed and slightly shocked that, in matter that is of such great importance to you, no mention is made of what I would have thought must be a crucial set of considerations.

I'm afraid that I cannot comment on your other manuscripts, or consider them for publication, without hearing what you say on the questions I have now raised.

I am sorry about your loss of your girl friend. Please do not immolate yourself outside the British Embassy - the people there would be deeply embarrassed.

Yours sincerely,



John Maddox  
Editor

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

Tel. 03132/2609  
Den 10 Juli 1984

Herrn Minister Karl Blecha  
Das Innenministerium  
Wien

Kopie: Herrn Dr. Heinz Fischer  
Wissenschaftsminister  
Wien

Sehr geehrter Herr Minister,

Von den beigelegten Briefen und zwei Zeitungsartikel können Sie eine ausführliche Information über meinen Fall bekommen.

Ich verlange von Ihnen und von der österreichischen Regierung bis Ende Juli mir die österreichische Bürgerschaft zu verleihen und einen gültigen österreichischen Reisepaß zu geben, oder (im Falle, daß die Formalitäten in so einer kurzen Zeit das nicht erlauben) politisches Asyl in Österreich zu geben und einen Konventionspaß mir auszustellen.

Ich muß am 1. August in Italien an einer internationalen wissenschaftlichen Konferenz das entdeckte von mir perpetuum mobile bekannt geben (s. den beigelegten Brief von The Institute for Basic Research).

Im Falle, daß die österreichische Regierung wird mir kein gültiges Reisedokument geben weder einen Fremdenpaß (auf dem alle Regierungen in Europa lehnen ab mir visa zu geben, sogar die belgische Regierung läßt mich nicht - schon drei Jahre!!! - zu meiner Gattin nach Brüssel zu fahren - die Dokumentation mit der belgischen Regierung ist zu voluminös und ich habe nicht Geld um sie zu fotokopieren), werde ich gezwungen sein die österreich-italienische Grenze illegal durchzuqueren. Im Falle, daß ich an der Grenze verhaftet (wie im Dezember 1982 als ich wollte illegal zu meiner Frau über Salzburg fahren), verletzt oder erschossen werde, wird die ganze Verantwortung auf Sie persönlich und auf die österreichische Regierung fallen.

Noch vor dem Ende dieser Woche erwarte ich eine Bestätigung von Ihnen oder von Ihrem Stellvertreter, daß mein Brief erhalten ist und ob Sie werden etwas unternehmen um meinen Fall endlich zu klären, wie das in einem zivilisierten Lande üblich ist, und Schluß zu machen mit siebenjährigen Verspöttungen in ganz Europa und in den USA mit einem bulgarischen Dissidenten, der gekämpft hat und kämpft weiter nicht nur für die Freiheit Bulgariens und der Staaten in dem sowjetischen Imperium, aber auch für die Freiheit der anderen europäischen Staaten, die UNTRENBAR mit der Freiheit im Osten ist.

Im Falle, daß die österreichische Regierung schätzt als unerwünscht mich als österreichischen Bürger zu haben, oder mir politisches Asyl zu geben, verlange ich, daß die österreichische Polizei mich nach meinem Heimatland deportiert. Ich bin kein Bettler und ich habe keine Angst vor keiner Polizei in keinem Lande, weil ich kein Gesetz in keinem Lande verletzt hatte. Es waren immer die Regierungen, die in ihren Verhältnissen zu mir ihre Gesetze und die elementare menschliche Ethik verletzt und verstoßen haben.

Wie von meinem Brief vom 9.IV.1983 und von dem Brief Ihres Vorgängers, Dr. Lanc, vom 9.V.1983 zu ersehen ist, auf Dr. Lanc ist die ganze Verantwortung gefallen für meine zweite Einsperrung ins Gefängnis in 1983. Ich will hoffen, daß Sie von diesem Fall und von dem groben Fehler Ihres Vorgängers die nötige Konsequenzen ziehen werden.

Mit parteigenössischem Gruß:  
(ich bin Mitglied der PSI)

*S. Marinov*  
Stefan Marinov

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Tel. 03132/2609  
11 July 1984

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF  
Your ref. M-07019-21/JM/MS

Dear Dr. Maddox,

Thank you very much for your letter of the 5 July.

First I shall cite ENTIRELY your "comments" and questions and then I shall give my comments and answers. You write:

Obviously the sensitivity of your experiment will to a large extent be determined by the dependence of total light transmission on the rotational speed of the disks, the shape of the beam and the shape and size of the holes. Unfortunately, you do not even tell the reader how many holes are in each disk, nor even the range of rotational speeds over which you run the experiment. But from your photograph, I guess there may be about 40 holes/disk.

Moreover, as far as I can see, you quote only one set of results (at 200 revolutions/minute) but do not do what professional physicists would instinctively do - plot, say, I as a function of N and to estimate the slope of the line to infer the supposed velocity component along the axis.

The first sentence shows that you have basically understood the essence of the experiment. With the second sentence you state that the number of the holes is very important and must be quoted (although you could count the holes from the photograph, what you then did indeed). You counted 40 holes. The holes are 41. Are you now satisfied? --- Dear Dr. Maddox, how could you pose this stupid question about the number of the holes? This number is of NO importance. May be I knew this number when mastering the disks, but then I forget it. To count the holes, I must lose precious time and go there where the apparatus is. I cannot even say where the apparatus is, because the person who gave me possibility to use the equipment of his laboratory took from me the promise that I shall say to NOBODY where the experiment was done.

Dear Dr. Maddox, I am not obliged to answer any stupid referee's question. If I shall tell you how many holes are in the disks, then you will ask how many screws are in my apparatus or which is the distance from the room where the experiment was done to the toilet, etc.

About the range of rotation. I did the measurements at 200 rev/sec clockwise and counter-clockwise, as you mention it yourself. It signifies that the range of rotation is between 0 rev/sec and 200 rev/sec. From the plot of the line  $\delta I = f(N)$  (not of I, as you write; see the text about the significance of  $\delta I$ ) not only a "professional" physicist, but even GOD cannot find the velocity component along the axis. At any different rotational velocity N one has to measure  $\Delta I$  and  $\delta I$  (see the paper how this is to be done) and find v according to equation (7). The sensitivity is better at the highest rate of rotation and for this reason it is senseless to present the measurements obtained for lower rotational velocities.

And what did you wish to say with this adjective "professional"? Obviously, because now I am a groom and sleep in a stall (you know perfectly well why: you are one of the persons responsible for the fact that any morning I go not to a laboratory but to clean the excrements of horses), I am not, according to you, a "professional" physicist. And you with your stupid questions about the number of the holes and the slope of a line which one can never use for calculation of v, you are a "professional" physicist. Be more modest, Dr. Maddox, be more modest. "Скромность украшает большевика" /Юсиф Сталин/ - Ask Vera Rich to translate you this sentence.

Dr. Maddox, I do experiments to measure the Earth's absolute velocity 10 years. And in 10 minutes you intend to find flaws in my experiments. You are an unbelievable grandoman!

Dr. Maddox, do not lose your time and do not lose my time. Satisfy the requirements of my ultimatum. I shall be in Graz until the end of this month. Then I go to Como (Italy) where I shall present my perpetuum mobile at the Second Workshop on H-dronic Mechanics (see the enclosed letter of the Institute for Basic Research). Before the end of July I must have here, IN GRAZ, the proofs of all three of my papers (with all figures printed, so that I can check whether my drawings are redone well in London and the reproductions of the photographs are satisfying). If you will decline the papers before the end of the month, I shall immolate myself in front the the English Embassy in Vienna. If you will not decline the papers, but the proofs will not reach me before the end of the month, I shall immolate myself after the conference in Como (where this immolation will be announced), i.e., after the 3 of August, in front of the English General Consulate in Genoa. I have a whole army of journalists, friends of me in Genoa. I shall organize such a theater!!!

Dr. Maddox, do not play with the fire. Send me the acknowledgement for acceptance and send me the proofs before the end of the month (please, not in the last one or two days, be once a gentleman!).

Perpetuum mobile, Dr. Maddox, PERPETUUM MOBILE IS CONSTRUCTED BY ME!!!!!!!!!!!!!! How can you not understand this?! My apparatus rotated 5 seconds more when the current by the Faraday disk was sent to the Barlow disk. THE ENERGY FOR THIS ROTATION CAME FROM NOWHERE, FROM NOWHERE, Dr. Maddox, understand this!!!!

Important information: If you will reject the papers, I shall edit in the near future the following book:

THE BITTER THORNY WAY OF TRUTH

Documentation on the creation of the perpetuum mobile, on the centurial blindness of mankind and on its frantic perseverance in it.

You will be one of the principal performers in this book with your questions about the number of the holes, about slope of the line etc. I can edit this book before going to Italy (you know well that I have better possibilities for a speedy publication of a book than Macmillan Journals Ltd.), but I have not enough documents about the "frantic resistance".

Dr. Maddox, let be honest scientists, good colleagues and gentlemen. All depends only on your attitude. During a dozen of years you have seen that I am a real gentleman and a noble spirit.

Sincerely yours,



Stefan Marinov

PS. Please, acknowledge the reception of my letter to you of the 9 July. Write me EXPLICITLY that the pages which I sent are substituted for the respective pages of the previously sent version of the paper COUP DE GRACE TO RELATIVITY AND TO SOMETHING ELSE.

Freitag, 20. Juli 1984

Seite 13



„Ich will Ihnen nur sagen, daß am Tisch meines Stallknechtzimmers ein von mir gebautes Perpetuum mobile steht“, schrieb Marinov vor kurzem Wissenschaftsminister Fischer. In Graz nimmt man das „Wunderding“ derzeit peinlich genau unter die Lupe . . .

Foto: Jürgen Radspieler

## Fand Wahl-Grazer das „Perpetuum mobile“?

Ein „Perpetuum mobile“ ist jenes technische Wunder, das ewig läuft, wenn man es einmal in Bewegung setzt, also nach derzeitigen physikalischen Erkenntnissen ein Ding der Unmöglichkeit. Aber solche Nebensächlichkeiten interessieren den nicht, der es erfunden haben will. In Graz präsentierte ein bulgarischer Physiker am Donnerstag die „Lösung der weltweiten Energieproblematik“.

Irrer oder Scharlatan? Das werden sich bei Stefan Marinov, der nicht nur das „Perpetuum mobile“ entdeckt haben will, sondern auch behauptet, Einsteins Relativitätstheorie widerlegen zu können,

einem Genie, das mit seinen Ideen einen Wendepunkt für die ganze Menschheit bringt. Der Wahlgrazer fühlt sich reif für den Nobelpreis: „Ich kämpfe für die wissenschaftliche Wahrheit in der Physik . . .“

VON WERNER HUEMER

schon viele gefragt haben. Vorweg: Der bulgarische Wissenschaftler, der schon 30 Jahre in der experimentellen Physik tätig ist, ist keines von beiden. Immerhin aber wandelt er mit Vorliebe abseits althergebrachter Anschauungen, und zwar mit jenem Fanatismus, der sowohl einem Wahnsinnigen eigen ist als auch

Kein leichter Kampf. Besonders dann, wenn man nebenbei auch politischer Flüchtling ist und keine Staatsbürgerschaft besitzt. Sein „Perpetuum mobile“ will Marinov am 1. August bei einem Kongreß in Italien vorführen: „Über die Grenze gehe ich illegal. Sollte mir was geschehen, ist die Regierung dafür verantwortlich. Österreich verweigert mir seit Jahren die Staatsbürgerschaft . . .“



Der Physiker Stefan Marinov (53)

Freitag, 20. Juli 1984

Tagespost **5**



Stefan Marinov mit seiner Wundermaschine

## Doch das Perpetuum mobile klemmte

*Exilbulgare will Fachleute überzeugen*

„Seit Jahrhunderten versuchen die Menschen immer wieder, das Perpetuum mobile zu bauen – jene Maschine, die, einmal in Gang gesetzt, sich selbst erhält. Stefan Marinov hat es geschafft.“ Dies verkündete eine Einladung zu einer Pressekonferenz und Demonstration in Graz.

Stefan Marinov, ein Exilbulgare, konnte dort zwar nicht das Perpetuum mobile vorstellen, versuchte aber, den anwesenden Journalisten und Fachleuten die Mechanik seiner Wundermaschine zu erklären. Und erntete prompt Widerspruch. Und auch das müde Lächeln der Fachleute.

Solange die Theorie Marinovs nicht in einem Labor nachprüfbar sei, könne nicht von der Erfindung eines Perpetuum mobile gesprochen werden, argumentierten Vertreter der TU Graz.

Am Nachmittag sollte Marinovs Maschine – ein Generator, der angeblich mehr Strom lie-

fert als er verbraucht – auf den Prüfstand der „Gesellschaft für computer-orientierte Meßtechnik“ (COM). Nach regelrechten Versuchsreihen war man kaum klüger als zuvor, das Perpetuum mobile war alles andere als bewiesen. Nur Marinov blieb wacker: „Ich bin sicher, daß ich noch heuer den Nobelpreis bekomme!“

Der 54jährige verhinderte Nobelpreisträger fühlt sich von der Fachwelt jedenfalls verkannt. Er habe die naturwissenschaftliche Zeitschrift „nature“ schon öfter ersucht, das Modell für sein Perpetuum abzudrucken, jedoch ohne Erfolg.

Jetzt fährt er mit härteren Geschützen auf. Falls kein Artikel über seine Maschine erscheine, werde er sich verbrennen. Marinov, der zur Zeit als Roßknecht in Niederschöckl arbeitet und keinen Paß besitzt, will sich nun Gehör bei Vorträgen in Italien verschaffen – sofern er dort einreisen darf.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
20 July 1984

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF  
Your Ref. M-07019-21/JM/MS

Dear Dr. Maddox,

On the 18th July during our phone conversation you rejected all my three papers M-07019-21. Consequently at my press-conference on the 19th July I announced that after a one-day warning strike I shall immolate myself either in front of the English Embassy in Vienna, or in front of the English General Consulate in Genoa. I enclose two of the appeared articles. The articles in the other two Graz journals (DIE KLEINE ZEITUNG and DIE NEUE ZEIT) will appear tomorrow. As I wish to send my letter with the today's post, I shall not await for tomorrow. The broadcast transmitted also my interview and my ultimatum to NATURE.

In the next two-three days I shall decide with my press-man Mr. Thomas Stelzl, the editor of the Graz monthly CRASH, whether I shall make a press-conference in Vienna the day before beginning the warning strike and whether I have to execute my ultimatum in Vienna or in Genoa. At any rate I wish to inform you about the events here and once more to appear <sup>to you</sup> scientific and civic moral. It is still time to evade a scandal. I should be very glad if you will change your opinion and take a decision to print my papers and to do all possible for sending me the proofs before the end of the month here in Graz. For the case that you shall not be able to send the proofs to Graz (in the case that you will decide to publish the papers), please, send them to my Italian address, where I shall be until the end of August (if my plan will not be changed). My Italian address is:

Stefan Marinov  
via Puggia 47  
I-16131 Genova.

If you definitely will reject the papers, please, send me the rejection letter with MOTIVATED REJECTION, where, please, do not write such stupid questions as about the number of the holes in the "coupled shutters" experiment, or about the slope of the line  $\delta I = f(N)$ . At any rate, if you see that you cannot write certain tenable objection to my papers, send me the rejection letter without comments, BUT SEND ME THE REJECTION WRITTENLY. I need such a letter for the book THE BITTER THORNY WAY OF TRUTH, which I am now preparing for print.

I beg you also, to SIGN ANY PAGE OF ALL MY THREE PAPERS and to send me a photocopy of all pages. I wish to print these three papers in the book THE BITTER THORNY WAY OF TRUTH, having your signature on any of the pages. On other side, I wish to have these signatures for the case that someone AROUND "Nature" who has become aware of my papers would not try to STEEL their contents.

I am expecting your EXPRESS answer to this letter with the enclosure of all my three papers, WHERE ON EVERY PAGE I WISH TO SEE YOUR SIGNATURE.

Hoping once more (I am an unbelievable believer) that you will decide to evade an unnecessary scandal and you will show that the Western scientists give a hand of support to the politically persecuted scientists of the East who in terribly difficult conditions make discoveries which will change the whole trend of human history, I remain

Sincerely yours,

*S. Marinov*  
Stefan Marinov

PS. I send you my letter of the 16 July which has to replace my hand-written letter of the 16 July and is to be classified in your archives. Please, acknowledge the reception of the corrected edition of vol. V, sent to you on the 16 July and send back to me the old version of vol. V of my CLASSICAL PHYSICS. I beg you also to acknowledge the reception of pages 9, 15, 19, 20, 22, 23, 23<sub>1</sub>, 23<sub>2</sub>, 27, and 31 of my paper COUP DE GRACE, sent on the 9 July.

2048 East 7th Street  
Tucson, Arizona 85719

21 July 1984

Dr. Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz, Austria

Dear Dr. Marinov:

Your letter of 30 March 1984, was forwarded to me from New Orleans. I received it today, 21 July 1984. It is lucky I received it at all.

With regard to Joseph Newman, I visited this man at his home in Mississippi in January 1984. He lives in a very secluded place about 5 miles from the town of Lucedale, which in turn is about 125 miles from New Orleans. His address is: Joseph Newman, Route 1, Box 52, Lucedale, Mississippi 39452. His telephone number is 1-602-947-7147.

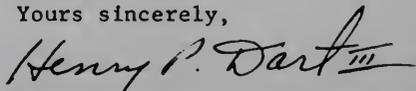
Newman gave me the enclosed affidavit to sign. I took it with me, and later refused to sign it because it does not show clearly that the number of units of energy coming out of the machine exceeds the number going in. The output power was clearly measured, but the input power was not at all clear.

Although Newman has little mathematical skill, I am not prejudiced against his machine. I think that a perpetual motion machine is possible. It does not violate conservation of energy. What it violates is the Second Law of Thermodynamics, a "law" which in my opinion is false.

Mr. Newman has not furnished me with any additional information because he has applied for a United States Patent which has been refused. He has employed a lawyer to sue the Patent Office to compel issuance of the patent. He says that when the patent is issued he will be glad to furnish the complete details of his machine.

It was good to hear from you again. I have taken the liberty of sending a copy of your letter to Joseph Newman, and I have requested him to answer you directly.

Yours sincerely,



HENRY P. DART, III

Editorial note. A page of Newman's AFFIDAVIT is reproduced on the next page.

$$\text{Horsepower (HP)} = \frac{2\pi}{33,000} \times F \times R \times N$$

Where,

F = Force in pounds

R = Radius of torque arm in feet

N = Revolutions per minute.

Date Gathered:

$$F = 3 \text{ oz.} = 0.020 \text{ lbs.}$$

$$R = 2\text{-}1/2" = 0.2083 \text{ feet}$$

$$N = \underline{222} \text{ RPM}$$

Calculation:

$$\text{HP} = \frac{2\pi}{33,000} \times 0.020 \times 0.2083 \times \underline{222}$$

$$\text{Horsepower} = \underline{\hspace{2cm}}$$

1 horsepower = 746 watts, therefore,

$$\text{Output watts} = \underline{\hspace{2cm}} \times 746 = \underline{\hspace{2cm}} \text{ watts}$$

8. OPINION: In my opinion, based on my education,

experience, and the tests described herein, Mr. Newman's device

A. has greater output power than input power, and accordingly,

B. does, indeed, have greater energy output than external energy input.

This opinion is my own and is in no way represented to be that of my employer.

\_\_\_\_\_

Sworn to and subscribed before me on this \_\_\_\_\_ day of

\_\_\_\_\_, 1983.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

25 July 1984

Dr. L. Richardson  
Dr. Ch. White  
Editorial Assistants  
Institute of Physics

Your Ref.: LMR/SDB/A, 4 May 1984  
CAW/SDB/CQG, 29 June 1984

Dear Dr. Richardson,  
dear Dr. White,

I thank you for the two above mentioned letters. With the letter of 4 May 1984 have been rejected my papers:

COUP DE GRACE TO RELATIVITY  
MATHEMATICAL NONSENSSES SLIPPED...  
COSMOLOGICAL ASPECTS OF THE...

The first two papers were submitted to J. PHYS. A and not to CLASS. & QUANTUM GRAV. (as wrote one of the referee of the first paper). Only the third paper was submitted to CLASS. & QUANTUM GRAV. I do not present my objections to the criticism on these three papers, as the papers have been unconditionally rejected. I must, however, make the statement that I found all criticism untenable.

With the letter of 29 June 1984 I was asked whether I still wish that my paper  
NEW MEASUREMENT OF THE...

should be considered at the next meeting of the Editorial Board. Yes, I wish that the paper should be considered. I cannot accept the criticisms of both referees which are totally untenable and I present my objections.

Now I submit two other papers to J. PHYS. A:

COUP DE GRACE TO RELATIVITY AND TO SOMETHING ELSE (this is the paper COUP DE GRACE TO RELATIVITY with a substantial extension in which I give the description and the theory of the perpetuum mobile constructed recently by me),

ON THE ACTION AND INTERACTION OF STATIONARY CURRENTS (this is a substantially revised version of my paper MATHEMATICAL NONSENSSES SLIPPED...).

These two papers, as well as the paper NEW MEASUREMENT... have been submitted to NATURE (after their rejection by the J. PHYS.). I enclose the whole recent correspondence with Dr. Maddox (his letter of the 5 July and my letters of the 11 July, 16 July, and 20 July). As you can see, Dr. Maddox has rejected the papers. Thus I shall execute my ultimatum and immolate myself in front of the English General Consulate in Genoa. If, however, the J. Phys. will decide to publish all these three papers, I shall not immolate myself. Thus the life of the discoverer of the first perpetuum mobile is in your hands. You can inform me about your decision on the phone: AUSTRIA, 03132/2609 until the 30 July. And on the phone Italy, 010/315978 after the 4 July.

I wish to hope that you will realize that my papers are of an extreme importance for mankind (any day humanity burns oil and coal for milliards of dollars) and you will decide to publish my papers which have been in the last year for many months discussed and analyzed in the editorial staffs of NATURE and J. PHYS., but besides stupid and irrelevant referees comments I received no single line with a tenable criticism.

I enclose also two articles of Graz news-papers after the presentation of my perpetuum mobile on a press-conference. Two other articles will appear with much more material, with a scheme of the experiment and with the opinions of many specialists.

One discovers the perpetuum mobile once in the history of mankind. Please, do not put my papers in a burocratic shelf. Although being during the summer vacations, take an extraordinary speedy decision. We are on the threshold of the atomic destruction of mankind. May be, the appearance of the perpetuum mobile will change the precipitation to the atomic death which is evident for any THINKING PERSON.

PS. The photographs will be sent after the acceptance of the papers.

Sincerely yours,

*S. Marinov*  
Stefan Marinov

AUTHOR'S ANSWER TO THE REFEREES COMMENTS (FIRST AND SECOND REFEREES)  
ON THE PAPER "NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY WITH  
THE HELP OF THE 'COUPLED SHUTTERS' EXPERIMENT"

by STEFAN MARINOV

I give my answer to both referees together because this will spare me time.

The FIRST REFEREE writes:

Firstly, the suggestions that the experiment lay beyond the expertise of JILA in the University of Colorado are I believe a strong overstatement of some comments by one of the research workers of that laboratory. I have spoken with him about this, and we both feel that if the paper were to be published such statements must be removed or corrected.

The SECOND REFEREE writes:

The author has an idea for an experiment which could have dramatic results. What is necessary, beyond this, is a practical realisation of an apparatus that can do the experiment and which is also able to answer all critics with demonstrations that the obvious problems - bearing precision, vibration, non-uniform illumination, temperature drift, etc, are not larger than the effect sought. Until this is achieved the existing scientific "orthodoxy" concerning the velocity of light will command much greater credibility than the measurement reported here. It is my considered opinion that, very sadly, the JILA team are right and the experiment is, at present, beyond the reach of the best of modern experimental technique.

The statement of the first referee is exactly opposite to the statement (underlined by me) of the second referee. The Editorial Board cannot reject a paper on the basis of two diametrically opposite criticisms. Thus the paper must be printed. But I shall not follow the suggestion of the first referee to delete the opinion which the scientific co-workers of JILA seminate in the WORLD with the aim of blocking the appearance of my papers in the press. This correction can be done ONLY BY THE CO-WORKERS OF JILA in the PRESS.

The first referee writes: "I find the overall tone of the paper annoying." My book VADE RETRO, SATANAS! (in Bulgarian and Russian) is considered as the best satirical book ever published in Bulgaria. I write poetries on six languages (see my collection ЛУКСТ ОТБРУЛЕН, Heter-Peter Editors, Washington, 1978). I beg the referee to let to me to know what is annoying tone and what is not. The reference in NATURE can be found on the cited locus. Am I guilty when the referee cannot find a publication in NATURE? At any rate to spare his time, I send him a reprint of that publication, for which I paid to Dr. Maddox £ 1,500.

The first referee writes:

He certainly finds a 24 periodicity in the differential velocity signal but one has to be extremely careful about such an effect. For example I believe it could perhaps arise from a diurnal variation in the power or the pointing direction of the beam from the argon laser used. Such laser fluctuations can result from a) cyclic fluctuations in the temperature and pressure of the cooling water and b) power line voltage fluctuations.

This is a typical example of annoying irrelevant rumanation of a man who has not grasped the essence of the experiment. Dear referee, the source for both light beams is the same. The fluctuations of its intensity lead to synchronous and equal fluctuations in both beams. The effect comes from the difference of both illuminations. In the mathematics there is a rule: if one adds the same number to two numbers, the difference of those two numbers remains the same.

The first referee writes:

I should be much more convinced if Marinov has searched for and failed to find a 24 hour periodicity with rotating shutters held at rest.

This suggestion is good. But who will clean my horses when I shall search for the lack of diurnal periodicity? But even at the availability of such a diurnal fluctua-

tion (it may be not periodical and different for the different days!) my experiment remains good. I measure the difference in the currents  $I'$  and  $I''$ . <sup>be</sup> ~~be~~ <sup>of</sup> ~~of~~ THUS ONLY FLUCTUATIONS WHICH APPEAR DURING THE TIME OF MEASUREMENT (tens seconds in which one changes the rotation of the axle from clockwise to counter-clockwise) can influence the result. Thus in those couple of seconds the temperature of one of the detectors must change to such a degree that the produced over-current has to mar the effect. Those fluctuations cannot be diurnally periodical but completely stochastic. Hence the measured by me effect with clearly expressed diurnal periodicity can be due only to the absolute velocity  $v$  and NOT to any kind of stochastic fluctuations. Have you, dear referee, understood finally the essence of the experiment or not? Read this "annoying, full or irrelevant detail and lacking in relevant information" paper. You can find there all answers to ALL your questions. In the paper I gave the whole necessary information. One has only to read the paper attentively.

The first referee concludes his criticism with the sentence: "I feel that the paper should not be published in its present form." No, dear referee. You have not presented a single tenable remark. Thus the paper is to be published exactly in its present form.

The criticism of the second referee is essentially in the same lines as the criticism of the first referee. I feel bored to explain now to him the same simple and clear things as to the first referee. His remark about the "not-holding of the law of reflection" is again irrelevant. The experiment is done in a couple of seconds. What appears with the beams in 24 hours is of no importance. However, the problem about the law of reflection (purely theoretically) in moving laboratory is too long to be discussed in comments to a paper. I suggest to the referee the reading of my CLASSICAL PHYSICS. I granted this book to the Institute of Physics, but as it is evident from the letter of Dr. Paulus of the 16 March 1984 (which is enclosed) my books have been BURNT. Thus not only Hitler enjoyed to throw books in a fire!!! A second time I shall not grant my books to the Institute of Physics. Now they have to be ordered and PAID (§ 125).

25 July 1984



Stefan Marinov

N. RUDAKOV  
P. O. BOX 723,  
GEELONG, VIC., 3220  
AUSTRALIA

26 July 1984

Dear Mr. Marinov,

I am very sorry I have not been able to write to you earlier. I have received your letter of 31 July 1983 and thank you for it. You have addressed me as "Dr. Rudakov". I have no claim to such title. In fact, I have not even a Bachelor's degree in science and no connection at all with physics or any other branch of science in an academic situation. Neither do I have an ambition to obtain any formal qualifications in science. My knowledge is derived from self-education, and from my medical studies in Germany during the war which I was not able to complete.

My present status is that of a retired librarian whose "hobby" is what some people may call "dabbling" in philosophy. To confuse you even further, I must say that I once considered becoming a mathematician but found the subject uninspiring and lifeless. I speak English, German and Russian equally well, although I have not been able to acquire the true Australian accent in all its finer points despite my 35 years' sojourn in Australia. I am of mixed Russian-German parentage, born in Russia but brought to Germany when I was 6 months old in 1921.

Apart from trying to find what I would simply call "the truth", I have a passion for logical analysis and clear thinking, and after familiarising myself with relativity I was appalled by the incredible muddle which is presented to the community at large as an outstanding scientific achievement. This prompted me to research the whole matter thoroughly and to express my conclusions on paper. Although I am at present writing a critical analysis of general relativity, I have no desire at all to become involved in any debate on relativity. I like to remain an outsider and to be left alone, so that I can pursue my "hobby" without interruption while I am still able to use my brain.

You are asking two specific questions, one about the "success" of my book, and the other about the story of the sale of Einstein's manuscript. I have not advertised my book at all. It has practically also not been reviewed anywhere. Nevertheless I have sold 200 copies. I have also distributed 400 copies free of charge. Naturally, the book is not a commercial success. But then I never expected it to be in great demand and was never motivated by considerations of material gain.

I can't remember exactly where I first read about the auction of Einstein's 1905 paper on electrodynamics in his own handwriting. I think it was in one of Kuznetsov's books, but the exact nature of the transaction was misunderstood by Kuznetsov. The episode is mentioned in some biographies of Einstein (e.g. R.W.Clark, Einstein. Lond., Hodder and Stoughton, 1973, p.535). In order to help the American war effort Einstein prepared a copy (the original manuscript was lost) and it was "auctioned" in 1944. However, the sum of 6½ million dollars was not a price received by anyone but an amount invested (by the Kansas City Insurance Co.) in American War Bonds.

I hope my letter has not disappointed you too much. May I return your compliment about my knowledge of English and congratulate you on your own high standard of proficiency in that language.

Yours sincerely,

*M. Rudakov*



Stefan Marinov  
via Puggia 47  
I-16131 Genova  
4 August 1984

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

Dear DR. Maddox,

After visiting the IInd Workshop on Hadronic Mechanics in Como, where for a first time I presented the account on my perpetuum mobile, before a scientific auditorium, I arrived in Genoa to execute my ultimatum in front of the General Consulate of Great Britain.

My very good friend, the Magician X, by the help of his pendulum, said me that also returning from the US (where you have consulted other people about the PM), you remain against the publication of my papers. Thus it is not necessary to phone you on Monday (the 6.VIII), asking about your last stand-point, as it is negative. The Magician X said me that he should like to try himself to constrain you (by the help of high magic) to publish the papers. I agreed and gave him a letter with your signature, leaving him 3 days; if after that time your decision will remain still negative, I shall execute my ultimatum.

Thus on Wednesday (the 8.VIII) I shall phone to NATURE. If even after the intervention of the Magician X your stand-point is still negative, I shall go the British Consulate.

The pendulum of the Magician X showed that my papers will be published in NATURE. It will be clever, dear Dr. Maddox to publish them without provoking a scandal. I made, from my part, all possible to evade it. More can I not do.

Sincerely yours,

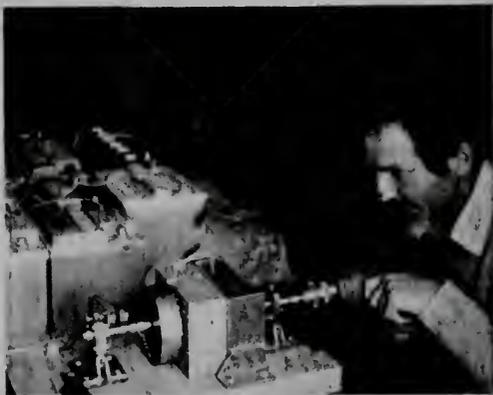
Stefan Marinov



LE TENACI RICERCHE DI UNO SCIENZIATO BULGARO

# «Con la mia macchina il moto è perpetuo»

*Stefan Marinov ha cinquantatré anni, i giornali di mezza Europa lo hanno definito «dissidente dissidente» e «uomo di tempra e resistenza rare» a tal punto che pur di farsi ascoltare dal direttore della rivista «Nature» ha minacciato di darsi fuoco*



Stefan Marinov al lavoro

Il dissidente bulgaro, contestatore delle teorie di Einstein, Stefan Marinov ha oggi cinquantatré anni. I giornali francesi lo hanno descritto come un uomo «di tempra e resistenza rare, di quelli che non cedono né di fronte alle minacce né alle violenze».

In Belgio hanno coniato, per descrivere il suo atteggiamento politico, la definizione «dissidente dissidente».

Pur dichiarandosi comunista, infatti, si oppone radicalmente al regime a «socialismo reale» e per questa sua posizione è stato anche perseguitato nonché rinchiuso in manicomio. Nel contempo denuncia l'accordo sostanziale che — sostiene — lega gli Usa e l'Urss nella spartizione del mondo accusando così gli Stati Uniti di demagogia nel trattare i gravi problemi dei diritti dell'uomo.

Ma se da un punto di vista prettamente politico quella fello studioso è una figura scomoda», sul fronte scientifi-

co è addirittura rivoluzionaria. Le tenaci ricerche del fisico, laureatosi nell'Ateneo di Sofia, infatti, mirano a contestare le teorie di Einstein sulla relatività e a dimostrare l'esistenza del moto perpetuo.

Proprio per rendere palese e concreta la sua scoperta ha approntato un apparecchio che, seppure imperfetto dal punto di vista tecnico, proverebbe l'esattezza della sua ipotesi. Raggiunto questo traguardo il primo obiettivo che Stefan Marinov si pone è quello di pubblicizzare la sua scoperta e, a questo scopo, si rivolge a John Maddox, direttore della rivista Nature, il quale, a dispetto della notorietà e del prestigio di cui gode lo scienziato, decide di non accogliere l'invito. E arriviamo così al recentissimo passato, Marinov, in partenza per Genova, decide di denunciare il fatto al console britannico della città che però è assente. Pur di farsi ascoltare minaccia di darsi fuoco ma gli im-

piegati del consolato, spaventati dalla decisa reazione di Marinov, decidono di sollecitare un intervento della Polizia, iniziativa questa che convincerà il fisico a rinunciare al gesto.

Qui di seguito pubblichiamo una sintetica descrizione dell'apparecchio, scritta dallo stesso Marinov.

Il «Bul-Cub», così si chiama lo sconvolgente strumento, è interamente opera dell'ingegno

dello scienziato anche se, per la sua realizzazione, Marinov ha utilizzato degli studi compiuti dal cubano in esilio a Malami, Francisco Muller.

Proprio per porre in risalto la misconosciuta ricerca che sta alla base del funzionamento dell'apparecchio, Marinov ha deciso di pubblicizzare la sua scoperta battezzandola con le iniziali delle due patrie lontane: la Bulgaria e Cuba.

Prof. Paolo Rossi

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UNIVERSITÀ DI GENOVA  
FACOLTÀ DI LETTERE E FILOSOFIA  
ISTITUTO DI FILOSOFIA  
VIA BALBI, 4  
16126 GENOVA

GENOVA, 18 August 1984

Dr. John Maddox  
NATURE  
Little Essex Street  
London

Dear Dr. Maddox!

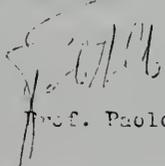
I submit the enclosed LETTER TO THE EDITOR for a publication in NATURE. If you will shorten it, I beg you to not cancel the information on Marinov's action in the British Consulate in Genoa, the presentation of his scientific conceptions and to leave, if possible, the whole third page untouched.

I shall suggest to publish in the same issue the three papers submitted by Marinov to NATURE and NATURE'S comments on this highly contradictory topic.

Then I shall know how to present Marinov in my article for the Italian weekly (this will be, I think, the weekly PANORAMA, which prints more than 500,000 copies). Without the valuable help of NATURE and of you personally, may be, I shall present Marinov in a wrong light and this in no way can be prosperous for science.

Hoping to hear from you as soon as possible,

Sincerely yours,



Prof. Paolo Rossi

GENOVA, 18 August 1984

Dr. John Maddox  
NATURE  
Little Essex Street  
London

Dear Dr. Maddox!

After the absorbing reading of two articles in the Italian journal *IL LANCRO* (of the 13th and 17th August) dedicated to the perpetual mobile which Dr. Stefan Marinov claims of having discovered, I had the curiosity to make his acquaintance. Through certain friends in Genoa I could establish a personal contact with Dr. Marinov who impressed me sincerely for the tenacity with which he puts forward his ideas. I felt as being immersed in past centuries when researchers-individualists conducted battles which, even if lost, stimulated later victorious discoveries. I said to me: and if Marinov is a catalytic element for new trends in physics? - Thus I tried to inform me as much as possible about this strange person and was deeply shocked learning that Dr. Marinov intended to commit himself to the flames in the British Consulate in Genoa in a desperate effort to constrain you to publish the three papers submitted by him to *NATURE*, namely:

- 1) on his last measurement of the Earth's absolute velocity,
- 2) on the violation of Newton's third law at the interaction of stationary currents,
- 3) on the perpetual mobile recently constructed by him.

Fortunately the call of the police by the Consulate's employees impelled Marinov to escape, as he is *persona non grata* in any country of the world and has entered Italy illegally (you certainly know from the Austrian press that only in 1983 Marinov was imprisoned twice, in Salzburg and Graz, as he has not identification and travel documents).

Hearing about all Marinov's peripetia, I decided to write a big article on him in one of the most authoritative Italian weeklies. However, many aspects of Marinov's political and scientific life seem extremely contradictory and I should like to clear those aspects with your help, learning that more than 15 years you are in a scientific contact with him.

Who is Stefan Marinov? - In those days when Marinov lived in Bulgaria and organized the International Conference on Space-Time Absoluteness (ICSTA-1977), Dr. Adrian Berry qualified him on the pages of *THE DAILY TELEGRAPH* as a very special type of a KGB-agent. *THE ECONOMIST* in its two-pages article dedicated to Marinov (*THE ECONOMIST*, 5 Febr. 1977, p. 78) put Marinov's physical ideas "on the verge between originality and crankiness". When Marinov emigrated to the West, Mrs. Vera Rich in a big article in your journal (*NATURE*, 271, 296, 1978) tried to label him as a mad man. On the other side prominent European and American physical journals published in the last 10 years more than 40 scientific papers of

Marinov, which are referred by many scientists-absolutists, but, strangely enough, by no single relativist. A further strange fact: 15 days after the appearance of Marinov's book *THE THORNY WAY OF TRUTH* (East-West Publ., Graz, 1982) your journal (*NATURE*, 300, 566, 1982) gave a review from which it is clear that *NATURE* not only does not consider him as a strange or mad man but as a dangerous rival of Einstein.

Where Marinov is in disagreement with present-day physical theories? - He asserts that the principle of relativity is not true. His first experimental support to this assertion was done in 1973 (*CZECH. J. PHYS.*, 924, 965, 1974); the last experimental verification done in Graz this year is presented in the first of the papers submitted to *NATURE*. Marinov asserts that the principle of equivalence (in the sense that an experimental distinction between gravitational and kinematic accelerations cannot be done) is not true and presented the relevant experimental verification in his first book *EPPUR SI MUOVE* (C.B.D.S., Bruxelles, 1977) and in his encyclopaedic five-volume work *CLASSICAL PHYSICS* (East-West Publ., Graz, 1981). In the second of the papers submitted to *NATURE* Marinov asserts that the law of angular momentum conservation is not true, as an axle on ball-bearings along which constant current flows rotates, a fact observed by Milroy (*J. APPL. MATH.*, 34, 525, 1967), representing thus a dc motor with a single rotor and without a stator. In the third of the papers submitted to *NATURE* Marinov presents the theory and the description of a perpetual mobile, constructed recently by him, affirming thus that the energy conservation law is not true. In the second of the papers submitted to *NATURE* Marinov shows that with the help of Pappas "floating bridge" experiment (*PROCEEDINGS OF ICSTA-1982*, Genoa, 8-11 July 1982, East-West Publ., Graz, 1982, p. 123) one can measure the "energy velocity" of the current conducting electrons in a copper wire, obtaining a value near to light velocity; Marinov showed thus that it is not the mysterious "propagation of interaction" which transfers energy and momentum in a wire but the electrons themselves. In *CLASSICAL PHYSICS* Marinov shows that the so-called "kinetic" energy of the particles is nothing else than their gravitational energy with the mass of the whole universe, so that it is senseless to speak about "gravitational" and "inertial" masses, as the mass is only gravitational. In *CLASSICAL PHYSICS* Marinov shows that the Liénard-Wiechert potentials are pure absolute notions and gives simple, clear, exact and free of internal contradictions calculation of the potential, radiation and radiation reaction fields of an accelerated charge. Finally, in the third of the papers submitted to *NATURE* Marinov shows that the electromagnetic interactions depend on the absolute velocities of the particles, but not on their relative velocities, as the theory of relativity asserts, and exactly this aspect of the electromagnetic interactions permitted him to construct his perpetual mobile. Marinov shows further in this third paper that the "field" ("force-lines") conceptions of Faraday-Maxwell, while the true ones are the "potential" ("point-to-point" interaction) conceptions of Gauss-Weber. Thus Marinov asserts that almost the

whole basis of today's classical physics is rotten.

You certainly know well that Bulgaria is this Eastern country which has the scope to destabilize Western world (international terror, political assassinations, traffic of arms and drugs). Is not Marinov indeed a special KGB-agent, inserted into the "Bulgarian connection" with the aim to destabilize Western science? Being the most prominent Bulgarian dissident in the West, Marinov organized the first public demonstration on the Venceslao place in the last 10 years after the Prague spring. Although being beaten and expelled from the country, he visited Czechoslovakia again a year later to meet the CHARTA-77 speaker Dr. J. Hajek. He visited twice Bulgaria; he visited the Soviet Union to meet Acad. D. Sakharov. Moreover, all his travels are announced in the Western press, including your journal (NATURE, 272, 200, 1978). As a top of all, at any occasion Marinov makes public declarations that he is a communist (for such declarations he was expelled from the States in 1978).

Thus I see the following five alternatives for Marinov:

1. A charlatan.
2. A mad man (according to the opinion of a known French psychiatrist, any dissident who, leaving a psychiatric clinic in one of the Soviet-block countries, declares to be a communist must be considered as an incurable paranoid).
3. A KGB-agent.
4. A honest scientist who makes errors which until now have not been revealed.
5. A genius.

This letter was shown to the Director of the Physical Institute of the Genoa University, Prof. A. Borsellino, who knows Marinov well (THE THORNY WAY OF TRUTH, pp. 4 and 38). Prof. Borsellino added writtenly the following opinion:

I read the letter and suggest the following alternative 4/b:  
"A honest scientist who makes errors and is refusing the arguments of the other scientists."

For which of those alternatives will vote you? If you share the opinion of Prof. Borsellino, can you point to at least one reference where Marinov's theory and experiments have been valuated negatively? I read (POURQUOI PAS?, 15 March 1979, p. 49) that Marinov offered considerable sums to anybody (including Prof. Bergmann, GEN. REL. GRAV., 12, 57, 1980) who will dare to criticize him in the press. For a negative review on his CLASSICAL PHYSICS Marinov offered to NATURE \$ 10,000.

May be Marinov is erring far away from the right trends in physics, but I think it is our duty to give space also to the proponents of "un-orthodox ideas". Science has nothing to lose but can VERY MUCH WIN, as "the truth resists better to errors than to the confusion" (Bacon).

Paolo Bossi  
Professor in the history of science  
University of Genoa

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

25 August 1984

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

Dear Dr. Maddox,

I send you a copy of my today's letter to the Ambassador of Her Majesty in Vienna, so that you can become informed about the development of my action aiming to constrain you to publish my three submitted papers.

I was shocked to hear in the Graz police that you have presented as a reason for my self-immolation a request for the sum robbed 7 years ago from me by Mrs. Vera Rich. Why you did this? Now this aspect of my relations with NATURE will come in the newspapers and this will do a big harm to the good name of NATURE and will be disastrous for Mrs. Rich, who is a good woman, fighting as every one of us for her daily bread. In my book THE THORNY WAY OF TRUTH I declared that I grant this sum to Mrs. Rich, so that she can buy her a new type-writer. Thus this problem is CLOSED. I think, your efforts to mispresent the true reasons of my ultimatum are not only vain but DISASTROUS also for you. Dr. Maddox, we do not live in Bulgaria or in the Soviet Union, where the men who have the power can turn every fact as they will. But the most enigmatic aspect of your actions is that you turn the facts not at all in a prosperous way for you. Why? Why? Why? - I cannot find an answer.

Dr. Maddox, is it no time to put a full stop to the whole theater? How can you imagine to save the carrier of a couple of pitiable Einstein's epigones when I have invented a perpetuum mobile which works exactly because of the absolute aspects of the electromagnetic interactions? Are those carriers so important?

The pendulum of the Magician X in Genoa has shown that you will print my papers. The soon, the better. Do not await to the 6th September when I shall give the press-conference in Vienna. Give your consent before and send me the proofs of the articles as soon as possible. We wish that Reagan and Tchernienko come to a compromise and to mutual understanding and we with you cannot come to a compromise! Unbelievable!

Hoping to receive your phone call with the consent soon (so that I and my press-manager do not lose time and money for organizing the press-conference for the 6th September),

Sincerely yours,



Stefan Marinov

Copy of this letter is sent to His Excellency the Ambassador of Her Majesty in Vienna.  
Enclosed is also my letter to the Nobel Committee for Physics in Stockholm of the 27.8.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

- 288 -

To His Excellency  
The Ambassador of Great Britain  
Vienna

Tel. 03132/2609

25 August 1984

Your Excellency,

Yesterday I was called by the Graz police (Sicherheitspolizei, Dr. Haberl and Herr Anhofer) and I was more than one hour interrogated. The reason was your letter (one did not tell me to whom addressed) concerning my ultimatum to the Editor of the scientific magazine "Nature", Dr. John Maddox, and the threat that I shall commit myself to the flames in front of the English Embassy in Vienna or in front of the British General Consulate in Genoa, if Dr. Maddox will not publish my papers on the invented by me *perpetuum mobile*.

My action in the British Consulate in Genoa was executed on the 8 August. However, as after a half-an-hour discussion with the employees of the Consulate they searched for the intervention of the Italian police, I was impelled to escape, as I have entered Italy illegally and I should have to be imprisoned (I was expelled from Italy in September 1980, see p. 173 of my book THE THORNY WAY OF TRUTH which is enclosed). You can read an account on my action in Genoa in the enclosed articles of the Genoa journal IL LAVORO.

Thus I must proceed to my self-immolation in front of your Embassy. I intend to carry out a one-day "warning strike" (strajk ostregawczy, jak mówią polacy) on the 6 September during which I shall give a press-conference for the Austrian journalists and for the foreign journalists accredited in Vienna. The press-conference will be organized by my press-manager, Mr. Thomas Stelzl. If after this warning strike Dr. Maddox will not give his consent to publish my papers, I shall immolate myself in front of Your Embassy on the 7 September at about noon.

The Graz police showed me a letter with which the Ministry of Interior (or of Foreign Affairs) explains that according to the information submitted by Dr. Maddox to you I have threatened with a self-immolation to constrain the former to pay me the £ 165 which the collaborator of NATURE, Mrs. Vera Rich, with a mean fraud robbed from me seven years ago. In this way Dr. Maddox tries to desinformate you, searching to conceal the true reasons of my ultimatum. Mrs. Rich, indeed, robbed from me the indicated sum, but after the plea of Dr. Maddox to not cause harm to the good name of NATURE with this criminal affair, I decided to not bring it to the attention of the public opinion. You can read the documents on the whole story on the following pages of THE THORNY WAY OF TRUTH: p. 154, item 2); p. 176, second paragraph; p. 181, item 1); p. 182, first paragraph; p. 187, second paragraph; and finally p. 6, third and fourth paragraphs.

I send you my recent correspondence with Dr. Maddox and strippings of articles, so that you can be informed about the whole background of my ultimatum to Dr. Maddox.

I wish to hope that your high intervention will lead to the satisfaction of my ultimatum. You would certainly agree with me that if I am deeply convinced of having discovered the *perpetuum mobile*, I cannot proceed otherwise. Dr. Maddox can persuade me to withdraw my ultimatum if he can present tenable objections against my absolute space-time theory and numerous experiments presented in my books and papers. However, as during 15 years he could not present at least one such objection, the probability that now he would find some one is VERY LOW, tending to zero.

The life of a man, your Excellency, is in your hands. My deep conviction is that, with your high rank in the services of Her Majesty, you will save this life.

Sincerely yours,  
*S. Marinov*  
Stefan Marinov

Enclosures: Clippings of journals and the book THE THORNY WAY OF TRUTH, with the plea to restitute the latter after use. My correspondence with Dr. Maddox of the following dates: 29.6, 5.7, 9.7, 11.7, 16.7, 20.7, 4.8, 20.8. The letter of Dr. Maddox of the 5.7 and the letter of Prof. Rossi of the 18.8. My letter to the Nobel Committee of the 27.8.

JM/MS  
27 September 1984

Dr Stefan Marinov  
Niderschocklstr. 62  
A-8044 Graz  
Austria

Dear Dr Marinov:

Thank you for Part II of your book. I am glad to see that your three papers have now been published. Naturally it would be possible now for me to fall back on the old excuse that we shall not publish them in Nature because they have already appeared elsewhere, for which reason it is only proper that I should say the explanation is what it has always been - that I know of no independent person who agrees with you, and that I believe your papers to be wrong. Even so, I hope that you will not carry out your plan to immolate yourself.

I'm also sorry to say that we shall not on this occasion be reviewing your book, but I shall set that it is listed in our Books Received column. There would be no objection to your advertising it separately, provided that the advertising copy conformed with the standards of accuracy we set for ourselves.

Yours sincerely,



John Maddox  
Editor

THE UNIVERSITY OF ATHENS

DEPARTMENT OF PHYSICS  
~~DIVISION OF MECHANICS~~  
~~PARATHENAIKON, ATHENS 115, GREECE~~  
~~TELEPHONE 74248~~

P.T.Pappas,  
26, Markopoulioti Street,  
GR-11744 Athens,  
Greece.

Professor Paolo Rossi  
Universita di Genova,  
Faculta di Lettere e Filosofia,  
Via Balbi, 4,  
10126 Genova,

28/9/84.

Dear Professor Rossi,

I would like to answer some questions of yours from your letter to Dr Maddox as I have seen it published by Stefan Marinov in his "Thorny Way Part II".

As you may know I know Stefan Marinov about 10 years. I have lived in his house over fifteen days. I know his Bulgarian wife Hellenia. I have travelled with him and I had long personal discussions durring his difficult moments as well as numerous letters and ideas exchanged with him.

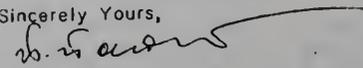
1. Stefan is in no way charlatan. He is one of the most frank and honest persons I know. This is the reason my house is entirely open to him.
2. Stefan is in no way a mad man, unless one may call a brave man so.
3. Stefan is not a KGB agent. I have considered this question long ago and I have excluded any possibility.
4. Stefan is an extreme honest scientist who makes much less errors than any other average scientist.
5. Stefan is a genius compared to the most of other scientist. I consider Stefan as one of the most gifted scientist.

I must add a sixth point:

6. Stefan's signature is that he attacks all the weak points of Physics that come to his knowledge in the most direct and brave way. He attacks all the aspects that had been a headache for physics and eventually forgotten by amnesia without being resolved. This is what people dislike about Stefan. Stefan Marinov is the Trade Mark for "Science Weakness". Stefan has a point for all his claims. He is just what he shows.

Finally, I must say as I am writing to you that really I do not know whether he is alive or not, but I beleive Stefan might immolate himself as he promised in his recent book, feeling he has completed the purpose of his existence. I pray he changes his mind.

Sincerely Yours,

  
P.T.Pappas.

E I N L A D U N G   Z U R   P R E S S E K O N F E R E N Z

Ich erlaube mir, Sie sehr herzlichst zu der Pressekonferenz, die Herr Prof. Stefan Marinov (Laboratorium für fundamentale physikalische Probleme, Sofia, Bulgarien) am kommenden Freitag, den 28. September 1984,

mit Beginn um 11.00 Uhr im Presseclub CONCORDIA, Wien

geben wird, einzuladen.

In dieser Konferenz wird Prof. Marinov der Weltpresse seine Selbstverbrennung für den 3. Oktober 1984 (Mittwoch), mittags, vor dem Gebäude der englischen Botschaft in Wien ankündigen, falls die Forderung seines Ultimatums an den Herausgeber der engl. wissenschaftlichen Zeitschrift "NATURE", Dr. John Maddox, nicht erfüllt wird. In seinem Ultimatum verlangte Marinov schon seit Monaten, daß Dr. Maddox seine abgelehnten Artikel, in denen er die Beschreibung des von ihm gebauten und entdeckten

PERPETUUM MOBILE

gibt, unverzüglich veröffentlicht.

Prof. Marinov wird Ihnen die Grundbegriffe seiner absoluten Raum-Zeit Theorie (die die Relativitätstheorie von Einstein widerlegt!) erklären, sowie die Theorie und Konstruktion seines elektromagnetischen PERPETUUM MOBILE..

Außerdem erlauben wir uns auch das neue Buch von Prof. Marinov: "The Thorny Way of Truth (Part II)" zu präsentieren.

Marinov hat die wahrscheinlich größte Erfindung seit Menschengedenken gemacht und möchte sie auch gerne der Menschheit zur ihrem Wohle zur Verfügung stellen.

Hochachtungsvoll

Thomas Stelzl

Presse - Manager von Stefan Marinov



## Erfinder will sich selbst verbrennen

Wieder will jemand ein Perpetuum mobile erfunden haben: Allerdings ist die revolutionäre Neuheit, die sogar Einsteins Relativitätstheorie widerlegen soll, weder gebaut noch durchgetestet. Die Besonderheit: Der Erfinder, Professor Stefan Marinov, ein Exilbulgare, veranstaltete sogar eine Pressekonferenz!

Vor interessiertem Publikum – etliche Herren von der Staatspolizei schrieben eifrig mit – kündigte der Professor, der in Bulgarien etliche Jahre in psychiatrischer Behandlung war, an, er werde sich verbrennen, wenn nicht das englische Wissenschaftsmagazin „Nature“ seine Theorien verbreitet. Theorien, die zwar von führenden Wissenschaftlern gelesen, dann aber verworfen wurden. Denn das Perpetuum mobile ist physikalisch unmöglich.

NATURE VOL 311 4 OCTOBER 1984

## NEWS

399

Marinov

## Further threat of immolation

BRITISH diplomatic missions in Genoa (Italy) and Vienna (Austria) have been under siege in the past few weeks by Dr Stefan Marinov, the Bulgarian physicist now living in the West, with threats of self-immolation. Dr Marinov is protesting at the refusal of the Editor of *Nature* to publish three long scientific articles, one of which is a restatement of Marinov's theory of absolute space-time, another of which announces the design of a *perpetuum mobile*.

Dr Marinov first embarked on self-immolation in Genoa on 8 August, outside the British Consulate, but by his own account was held in conversation for half an hour by staff from the consulate and was compelled to flee when the staff sought the assistance of the police, knowing that he was present illegally in Italy (having been denied entry in 1980).

At a press conference held in Austria last week, Dr Marinov again announced his plan for self-immolation, this time outside the British Embassy in Vienna. On the telephone earlier this week, he said that he would take this step at 10 a.m. local time on 2 October but, on being informed of the appearance of this piece, said "Now I don't know whether to immolate myself tomorrow".

Dr Marinov's claims that Einstein's theory of special relativity is misplaced were first made in 1974 (*Czechoslovak J.*

*Phys.* B24, 965; 1974), on the basis of an experiment carried out in Bulgaria that purported to show that the velocity of light is direction-dependent. Marinov has since claimed to have repeated the experiment. The paper describing that investigation, "New measurement of the Earth's absolute velocity with the help of the coupled shutters experiment", says that the experiment was carried out in his girlfriend's apartment, that the rotating shutters, functioning as a siren, disturbed the neighbours and that "after a couple of altercations, my girl-friend threw away from her apartment not only my apparatus but also me".

The two other papers submitted for publication are called "On the action and interaction of stationary currents" and "Coup de grace to special relativity and to something else". All three papers have now been published by Marinov in his book *The Thorny Way to Truth* (Part II).

Marinov's complaint against *Nature* is primarily that publication of these three papers has been refused, but also that "milliards of dollars" are being lost each day the world remains ignorant of his perpetual motion machine. Other matters in dispute are *Nature's* refusal to publish an appeal to the late Yuri Andropov at the end of last year and, earlier, a manifesto called the "Ten Jena Commandments".

John Maddox

# nature

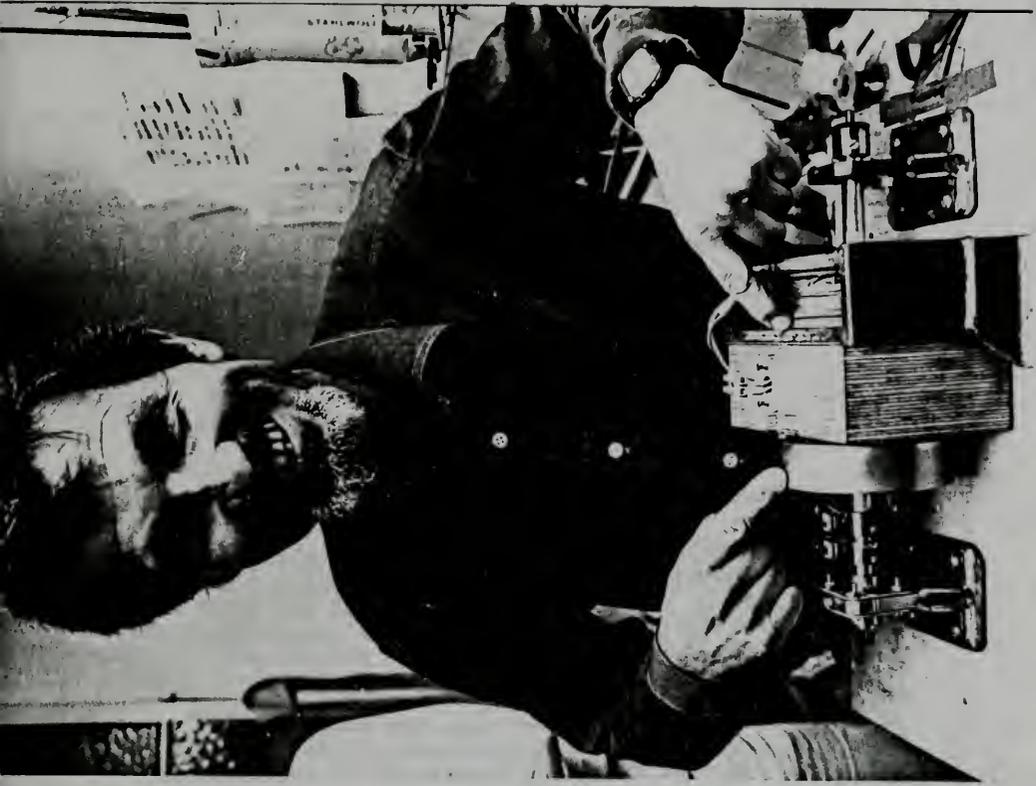
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Editor: John Maddox



Neue  
**Kronen**  
 Zeitung  
 UNABHÄNGIG

Donnerstag, 11. Oktober 1984

Seite 13

## Erfinder verbrennt sich nun doch nicht

Stefan Marinov, bulgarischer Dissident und Wahl-Grazer, wird sich nun doch nicht selbst verbrennen. Wie berichtet, hatte der Physiker und Erfinder die internationale Wissenschaftszeitschrift „Nature“ mit der Drohung, auf diese Art Selbstmord zu begehen, unter Druck gesetzt. Marinov, der sich seit Jahrzehnten mit physikalischen Grundtheorien beschäftigt und eine Art persönlichen Krieg mit dem „Nature“-Herausgeber John Maddox führt, hat nun erreicht, daß seine Artikel in dessen Zeitschrift gedruckt werden. Warum das dem Bulgaren, der sogar Einsteins Relativitätstheorie widerlegt haben will, so wichtig ist, erklärt sich daraus, daß Marinov heuer das „Perpetuum mobile“ entdeckt haben will. Eine Erfindung also, die nach derzeit geltenden physikalischen Gesetzen ein Ding der Unmöglichkeit ist, weil damit praktisch Energie aus dem Nichts erzeugt wird. Warum die Sache dennoch funktioniert, wird Marinov heute um 15 Uhr im Grazer „Institut für Experimentalphysik der technischen Uni“ den an seiner Erfindung interessierten Professoren klarzulegen versuchen.



FABRIK WEIZ

ELIN-UNION AG, Eingasse 3, A 8160 Weiz

Herrn  
Stefan Marinov



Niederschöcklstraße 62  
8044 Graz

Ihr Zeichen

Ihre Nachricht vom

Unser Zeichen  
M/Ko/Ru

Bearbeiter / (0 3172) 25 11 - 0\* Nebenstelle  
D.-I. Koglek / 285

Betreff

Datum Weiz, 1984-10-11

Sehr geehrter Herr Marinov !

Sie haben in Ihrem Brief vom 1984.10.08 eine Finanzierungs-  
garantie von S 30.000,- angeboten. Ich muß daher meine tele-  
fonische Aussage wiederholen, daß die ELIN auf Grund des  
Angebotes vom April 1984 nur bereit war, bei einer Finanzie-  
rungsgarantie von S 82.000,- ein Gerät ausschließlich nach  
Ihren Angaben zu fertigen.

In den letzten Tagen ist aber nach dem Studium Ihrer Broschüre  
"The Bitter Thorny Way of Truth" und nach Besuch Ihrer Presse-  
konferenz vom 1984.09.28 von unserem Direktionsbereich  
Forschung und Entwicklung entschieden worden, von unserem  
oben erwähnten Angebot zurückzutreten.

Wir hoffen, daß es Ihnen möglich sein wird, in einem der  
vielen gut eingerichteten Fertigungsstätten in Graz Ihr Gerät  
zu dem Ihnen vorstellbaren Preis fertigen zu lassen und ver-  
bleiben

Du.: Wien DEF/  
Hr. Dir. Birkner

Mit vorzüglicher Hochachtung

**ELIN-UNION**  
ANTIENGESELLSCHAFT FÜR  
ELEKTRISCHE INDUSTRIE  
WERK WEIZ  
*[Handwritten signature]*

Editorial note. Before beginning his press-conference, Marinov asked who is any of  
the presented persons. The journalists gave the names of their jour-  
nals or press-agencies. About 10 persons said that they are PRIVATE PERSONS. Nobody  
said of coming from ELIN, Ministry of Science, or Ministry of Interior.

JM/MS  
2 November 1984

Dr Stefan Marinov  
Niederschlockstr. 62  
A-8044 Graz  
Austria

Dear Dr Marinov:

We should be able to send you proofs of your advertisement in a few days. Meanwhile, there is one practical matter you should attend to. The two photographs you wish to include will not reproduce satisfactorily from the materials you have sent. Do you have the originals? They would of course be returned to you.

Yours sincerely,



John Maddox  
Editor

Editorial note. On the 1 October 1984 Marinov visited the English Embassy in Vienna to announce his self-immolation for the 2nd October at 10 AM, if Dr. Maddox will not accept his ultimatum. The Secretary of the Embassy, Mr. Dunlop, and another person who did not present himself said the Embassy is in a steady contact with Dr. Maddox and begs Mr. Marinov to phone on the spot to Dr. Maddox and to try for a last time to arrive to a compromise settlement of the conflict. Marinov phoned from a cabine in front of the Embassy. Dr. Maddox agreed to publish a note on the whole story (he did this - see p. 292) and to give one page of NATURE where Marinov can write what he wishes, paying the page as advertisement. Marinov accepted the offered compromise and renounced his self-immolation. Dr. Maddox said to Marinov that the interview which the BBC took after his press-conference has been broadcast.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

12 February 1985

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

Your Ref. M-02041 JM/MS

Dear Dr. Maddox,

Thank you very much for the speedy examination of my paper communicated by your letter of the 6 February. You rejected the paper without presenting motivations as you (or your referee) are unable to present such (during 10 years no single referee has presented at least one tenable objection against my theory and experiments, as both parts of THE THORNY WAY OF TRUTH (TWT) show it clearly).

I need a motivated rejection which is to be reproduced in the IIIrd volume of TWT. People are annoyed to read rejections of the kind of your last one and they will not buy more my books (one pays \$ 25 for a book of me because the referees' opinions reproduced there make one laugh more than usual humoristic literature). I must keep the high humorous level of my books, otherwise I cannot continue with my scientific research (you know pretty well that I am financing my scientific work by selling my books). You must help me, Dr. Maddox.

Thus I submit again my paper (having added two new paragraphs and a new figure) and I beg you (or your referee) to put crosses in the enclosed questionnaire (see a similar questionnaire in TWT-I, p. 235 for instruction how to put the crosses).

Of course, if the paper will be accepted, there is no need to fill the questionnaire.

QUESTIONS

1. Is there induction when rotating the wire in fig. 2?
2. Is there induction when rotating the loop in fig. 2?
3. Is there induction when rotating loop and wire in fig. 2?
4. If 1) and 3) are answered positively, are both these inductions equal?
5. Is there induction when moving the wire in fig. 1?
6. Is there induction when moving the loop in fig. 1?
7. Is there induction when moving loop and wire in fig. 1?
8. If 7) is answered positively, which is the velocity relevant for the induction for this case: the absolute laboratory veloc.?
9. Is the paper to be published?

Yes	No	Don't know
✓		
	✓	
✓		
✓		
✓		
✓	✓	
		✓ Relative velocity
		✓

My suggested answers are: 1), 3), 4), 5), 7), 8), 9) - Yes. 2), 6) - No. I am highly curious to see your (or yours referee) answers. If answers will be not given, this will show the TOTAL BANCURPCY OF RELATIVIVITY.

Dear Dr. Maddox, with this paper I am aiming only to 1% to show the bancruptcy of relativity. My 99% aim is to show to the scientific community THE DIFFERENCE BETWEEN MOTIONAL AND MOTIONAL-TRANSFORMER INDUCTIONS, because only after understanding this difference one can understand the functioning of my perpetua mobilia. I explain all with such a simple language as having to speak to children. I beg you: do not make the fool that you do not understand what I am saying.

During my last phone conversation with Mr. Lowe he promised to send me the last proofs of my paid advertisement on the 25 January. Until today the proofs have not come. I began with my advertisement in October after our settlement that I shall not immolate myself if you would write a note and give me a page for a paid advertisement. You wrote the note but the advertisement is still not published. Has NATURE changed his mind? I am expecting your answer to ALL QUESTIONS in this letter.

Editorial note. The above mentioned paper is reproduced on p. 329. The above answers were sent by Dr. Maddox with his 8-March-letter (p. 301). See Marinov's comments to those answers on p. 304.

Sincerely yours,  
*J. Marinov*  
Stefan Marinov

FJ Muller  
8470 SW 33rd.Terr.  
Miami, FL 33155

Dr. Marinov and Pappas

16 February 1985 (post date added  
by Marinov)

Dear Stefan and Pappas:

This is not an answer to the latests queries of Marinov's letter of Jan.31, especially page 4 about the motor effect for wires outside the gap, but only an indication of a systematic approach to finally, (hopefully!), clear out the "misteries" here. I am glad Marinov reminded me of Cullwick's book which, indeed, I had studied before but, apparently, I jumped over the section about induction and motor effects in machines with slotted armatures. Yesterday I got his two books, "Fundamentals of Electromagnetism" (1949), and "Electromagnetism and relativity" (1959). I will review them since I have them till May 10, from the University Library.

Please refer to Fig. 1 in this letter which is the same as Fig.C on page 62 of TWT-II except that curved gaps have been opened in the upper steel plates to allow for complete rotation of the circuit RIEC. As usual we will consider rotations about axis CI. By introducing a sliding contact at R it will be possible to consider motions of CER (the external branch) independently of IR (internal radius). If the circuit RICE is made of thin wire no sliding contact is needed at all, I simply hold R firmly with one hand and slightly distort CE back and forth, or IR back and forth. More elegantly I have also used a small mercury pool at R as illustrated in the insert. In this way RI can oscillate back and forth independently of CER and viceversa. Of course, only slight oscillations are needed. This will lead to oscillating induced voltages of the form illustrated in the photos of pg.189 of TWT-II. The reasoning for partitioning the circuit in two parts, RI and CER is obvious. RI plays the traditional role of Faraday's disk, (immersed in the magnet's gap field) and CER plays the role of the external ("passive") connecting wires that slide over the disk's "rim"(R). The "novelty" of this arrangement, as you well know by now, is the confinement of the returning magnetic field by means of the steel plates fgh and f'g'h'. In this way CER lies in an essentially B=0 region. If the curved gaps are carefully designed it is possible that they cover exactly a 90° angle of the entire circumference as shown in Fig.2 which is a top view of Fig. 1. Thus, when the rectangular loop RICE makes a complete revolution its branch ER lies, alternatively, in the B=0 region during  $\frac{1}{4}$  of the turn, and in the gap region during the next  $\frac{1}{4}$  of the turn, where the (return) flux is very intense. The RI branch, on the other hand, always traverses a B=constant region in the equatorial gap inside the cylindrical magnet M. Finally, the ferromagnetic parts can be also rotated about CI. In this arrangement it seems that the upper half of the cylindrical magnet (M') shows a mechanical impossibility since it would have to "float" in the air so that RICE could rotate continuously around it. This is true for a complete rotation, but for small oscillations there is no problem. M' can rest on top of M by inserting some pieces of rubber at places not interfering with RI oscillations in the gap. We can consider, therefore, FOUR elements capable of rotation (oscillation), independently from each other:

- 1) The internal radius, RI
- 2) The external connector, CER
- 3) The central magnets, MM'
- 4) The external "yoke", fghf'g'h'

Rotation of CI itself is irrelevant; and relative rotation between M and M' is also irrelevant, (but for commercial applications it might be convenient to rotate M but not M'). A last feature which is very important for any industrial application of this machine is, of course, the absolute need of increasing the magnitude of the induced emf's by using not one but many loops in series as Marinov has done in the bul-cub generator. This will pose additional possibilities and problems: you can either "lump" all the loops in a concentrated spot, or you can distribute them homogeneously around the entire circumference (Stefan, notice the m). And when you do so you can either keep the winding in the same direction or you can reverse it every time you go from one quadrant to the other. (In this way the "cancelling" effect that Marinov has noted when all loops are connected in the "unefective" bul-cub machine, disappears, and it becomes effective. I am disclosing this little "trick" of my patent application; I don't know why Marinov didn't exploit this trick before.)

Now, I wholeheartedly recommend that we forget about commercial applications and simply try to understand what happens by starting with the simplest case possible: a single loop rotating about CI. I can give this result to you since I have measured the induced emf in RICE with a strip chart recorder after amplification of about 500 times, it looks exactly as depicted in the plot of Fig. 3. (Remember, this is when RICE makes a complete turn and all magnetic parts rest in the Lab). As you can see, the negatively induced emf is identical to the positive one. Since RI is always "cutting" a homogeneous flux inside the equatorial gap this means that the induction along ER when it comes inside the radial gaps, (position E'R' in Fig. 1), must be TWICE as negative as the RI constant induction is positive. In other words, the "flux" swept by E'R' is twice the flux swept by RI during 1/4 revolution. This can be very easily understood in terms of the engineer's language: if you imagine that 100 magnetic lines emerge through the equatorial gap in MM', this will correspond to 25 lines per quadrant. On the other hand, when the lines reach the top and "bend" horizontally, 50 will go to fgh and 50 to f'g'h'. Hence, while RI is "cutting" only 25 lines yielding a +emf, E'R' will be "cutting" 50 lines yielding a (-emf) of double magnitude. The combined result will be a (-emf) of single magnitude. Hence, the + - alternation in Fig. 3. This alternation is what made Paul say in Nov. 3 that in reality this is not a DC generator, much less a "brushless" one.

Well, this is a problem of names. We know that during a 1/4 cycle, say when ER is at B=0, we have a strict DC induction. The next 1/4 cycle is also DC, but of opposite sign. How shall we call this generator? An "alternating DC generator? A square wave generator? I don't know. But the interesting thing is that the whole loop can rotate, without need of relative motion between RI (the "disk") and CER, (the "passive" wires) Hence, the need of a sliding contact at R is eliminated. And what is even more surprising: an identical square wave voltage as that of Fig. 3 is obtained when you leave RICE at rest AND ROTATE FGH(FGH)' BACKWARDS. This I have never reported before because this is the essence of my patent application and we should keep this rather confidential. But the effect of rotating fgh(fgh)' can be DEDUCED from the fact that when rotating the whole system, no net emf occurs, (indicating that the counterrotation of fgh(fgh)' does, indeed, produce a counter emf). Hence, not only we have eliminated the sliding contact at R but since the whole circuit can remain fixed to the Lab we eliminate all sliding contacts and slip rings that otherwise would be necessary to connect RICE with the consumer in the Lab and in the city. Only the ferromagnetic pieces have to rotate, (not even MM' has to rotate. Hence the mechanical problem mentioned before, disappears.)

From a topological point of view it is very interesting to consider what we have done. By confining the external (return) flux of Faraday's original inductor, to a narrow path (fghfgh)', we have, in effect, avoided, at least during 2 quarters of the revolution, the cancelling effect of that return flux upon branch ER. Nothing precludes the possibility of still confining that return flux into a narrower swept angle, (this might be valuable for certain servomechanisms where incomplete rotations are used). But here we are falling again into the "temptation" of industrial applications. Let's go back to theory and to understanding.

A complete and exhaustive program to understand the present device must investigate:

- 1) The problem of emf localization when any one of the FOUR elements mentioned before, RI, CER, MM' and fgh(fgh)' rotates (or oscillates) relatively to each other
- 2) The problem of motor (torque) localization (if any) that might accompany the previous emf's when present.

Both, FOR RIC and for RICE

Now, between 4 elements there are 16 possible combinations of motion ( $\omega$ ) or rest (0), relative to the Lab. These are the 8 cases that I already presented in TABLE I of pg. 59 in TWT-II, (in which cases fgh(fgh)' was always at rest), and, 8 more cases in which fgh(fgh)' is moving. I have prepared for you all these cases in the enclosed TABLE II. The results for the emf's of the first 8 cases are those of TABLE I. Concerning the other 8 cases I give you only the last one: when all four elements rotate, nothing happens, (emf=0). Some of the other cases I have tried experimentally but it will be very convenient if without doing any experiment we try to deduce the outcome. I have provided also a column to report the site of emf localization and another for "theory" if possible, to calculate its intensity.

This, then should

give us all the answers.

Yours, Francisco

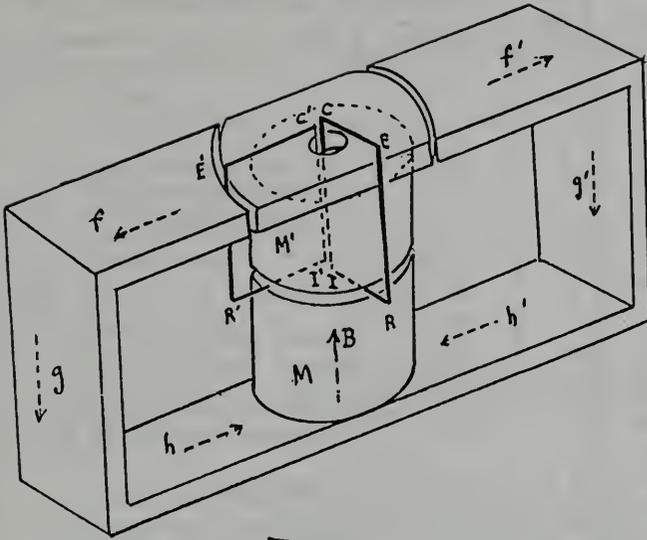


FIG. 1

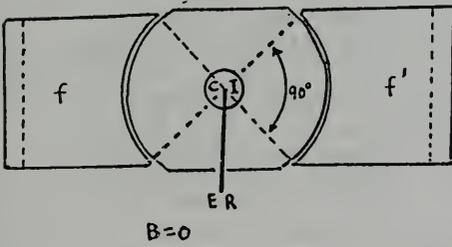


Fig. 2

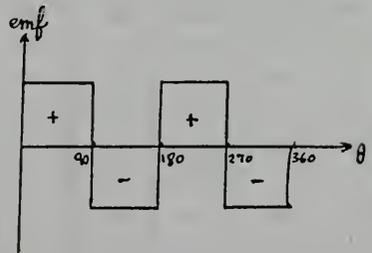
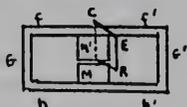


FIG. 3

CASE NUMBER	MOTION OF:				NET emf	Located at: (one or two places)	THEORY	
	fg	fh'	MM'	RI			CER	CAUSE:
1	o	o	o	o	o			
2	o	o	o	w	o	ER	Motional induction at B = 0	
3	o	o	w	o	+	RI	Motional induction	
4	o	w	o	o	o	RI	Transformer induction at $\partial A/\partial t = 0$	
5	o	o	w	w	+	ER RI	Motional induction at B = 0 Motional induction	
6	o	w	o	w	o	ER RI	Motional induction at B = 0 Transformer induction at $\partial A/\partial t = 0$	
7	o	w	w	o	+	RI	Motional induction	
8	o	w	w	w	+	ER RI	Motional induction at B = 0 Motional induction	
9	w	o	o	o	+	ER	Transformer induction	
10	w	o	o	w	+	ER	Transformer induction	
11	w	o	w	o	o	ER RI	Transformer induction Motional induction (opposite)	
12	w	w	o	o	+	ER	Transformer induction	
13	w	o	w	w	o	ER RI	Transformer induction Motional induction (opposite)	
14	w	w	o	w	+	ER	Transformer induction	
15	w	w	w	o	o	ER RI	Transformer induction Motional induction (opposite)	
16	w	w	w	w	o	ER RI	Transformer induction Motional induction (opposite)	



Editorial note. The answers for the cases 9-16, as well as the location of the induction for the cases 1-8 and the character of the induction for all cases, are given by Marinov and sent with his letter of the 25 February 1985 to Müller and Pappas.

JM/MS  
8 March 1985

Dr Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Austria

Dear Dr Marinov:

I am replying now to your letters of 12 and 25 February. As and when I come in the pile of correspondence on my desk to other letters from you, I shall deal with the points you raise there.

I have completed your questionnaire myself. Please do understand that there are no circumstances in which I could ask one of our small army of dedicated but unpaid referees to take on this task, because your manuscript begins (deliberately I'm sure) with the inflammatory statement of your theory of absolute space-time.

In reply to the second letter, I am sorry to have to say that there is no way in which I can agree to publish your advertisement without payment or at a reduced charge - your constant corrections have already put us to considerable cost.

I have not read your manuscripts yet and so I have no way of knowing whether we are likely to publish them. But, if we were to publish any of them, I could not agree to promise that your advertisement and your manuscript(s) would appear in the same issue. I am sure, Dr Marinov, you appreciate the importance of ensuring that the editorial and advertising departments of a journal like this should not be in collusion.

Yours sincerely,



John Maddox  
Editor

Editorial note. In the above letter Dr. Maddox does not mention Marinov's letter of the 20 February. It must be, however, noted that the fourth proofs of his advertisement (see pp. 312 and 313) arrived to Marinov by an express letter on the 25 February, i.e., exactly five days after the writing of his letter of 20 February. With this letter Dr. Maddox answered the questionnaire in Marinov's letter of the 12 February and these answers are reproduced on p. 296.

Francisco Muller  
8470 SW 33 terr.  
Miami, FL. 33155

March 9th, 1985.

Dear Stefan, Paul and Pappas:

Please find enclosed copies of a few pages from Santilli's book denouncing the "vested, academic-financial-ethnic interests" of Einstein's followers in the USA.

I received answers to the 16 rotational induction experiments ("table II), from Paul and Stefan. Both had all qualitative results in perfect agreement with experimentally observed emf's. Briefly these were:

9	10	11	12	13	14	15	16
+	+	0	+	0	+	0	0
1	2	3	4	5	6	7	8
0	0	+	0	+	0	+	+

As you can see the 9-16 series give exactly the opposite results as the 1-9 series. All the four + cases of the 1-9 series occur only when  $RI(\omega)$ , meaning RI oscillates. All the 4 emf's of series 9-16 occur also when  $RI(\omega)$  but without  $fgh'(\omega)$  simultaneously occurring, regardless of what MM' or CER do. Paul noticed immediately that motions of MM' and CER are irrelevant. So as soon as  $fgh(\omega)$  occurs simultaneously with  $RI(\omega)$ , a net zero emf results, (cases 11, 13, 15 and 16). We can conclude, then, that when the return ferromagnetic path  $fghf'g'h'$  exists, induction of an emf requires relative rotation between RI and said non-symmetrical path  $fghf'g'h'$ . When both corotate the net induction is killed: the  $v \times B$  effect in RI is cancelled by the  $dA/dt$  due to  $fgh...$

In this sense it seems that I have defeated my own purpose of demonstrating that induction is possible without relative motion between field source and a conductor, even in a closed circuit. But I have not. We have simply progressed in our knowledge of case 8, (where the emf occurred in spite of no relative motion between RI and MM'). The progress has been in drawing a sharp distinction between rotating symmetrical fields like MM' (which is irrelevant) and rotating asymmetrical ones, ( $fghf'g'h'$ ). All this sounds reasonable and is just a summary of previous convictions in which, I think, we all agree.

The discrepancies start when we dare to pinpoint the causes at work and the location of their effects. For Wesley the effects are located "only across RI for all cases". For Marinov, they are located along RI when RI moves but along ER when  $fgh$  rotates. For me, I have serious questions about both alternatives.

1) If all effects are along RI, as Paul thinks, we ask: how can  $fgh(\omega)$  produce a  $dA/dt$  effect at the site of RI? Does RI "feel" a changing A when  $fgh$  rotates? To answer this question Paul should produce a complete mapping of the A lines. I suggest something like Fig. 1 at the level of the gap where RI is, (seen from the top). I do not see how the rotation of  $fgh$  can affect the gradients at RI. Or maybe Paul thinks that  $f-f'$  could distort the lines of A at RI, (perhaps something like Fig.2). Then  $ff'(\omega)$  would make this pattern to rotate and, hence, RI would feel a  $dA/dt$ . But remembering  $B = \text{rot } A$ , I don't see how  $f$  and  $f'$  could distort the field intensities inside the cylinder MM'. Here is where a more detailed mathematical analysis is needed.

2) On the other hand, Marinov's answer that  $dA/dt$  affects ER relies on a pattern more or less like that of Fig. 3. I already objected to Marinov's view that any induction of  $fgh(\omega)$  upon ER should also occur when ER rotates alone, (Case 2). But this case does not produce an emf. In other words, I thought that the  $dA/dt$  effect, which can be expressed also as  $(v \cdot \nabla) A$ , was basically relativistically, ( $v$  being the relative velocity between ER and  $fghf'g'h'$ ). But Marinov demonstrates in letter of Jan.31st/85 that  $v$  IS NOT the relative velocity, since it comes from  $dr/dt$ , where  $r$  is the distance from the source of A to "a given SPACE POINT", (not to the wire ER). As Wesley wrote to me in letter of Aug.22/84, "the field language destroys the basic relative viewpoint of Weber". According to this, Wesley should also admit Marinov's location of the emf at ER. On the other hand, when Marinov defines the A potential in eq.(7) of page 85 of TWT-II he says that in  $A = q_1 v_1 / cr_1$ , the distance  $r_1$  is to be taken from the  $q_1$  of the i-th particle (source of A) to "the particle with charge  $q$ ", (which, to me, is the "test" charge, that is, an electron in the wire ER). I don't see how, with this definition, A can escape the relativistic interpretation I give to it. In short, I see an inconsistency in Marinov's definition of A and its use via the operator  $(v \cdot \nabla)$ , and between Wesley's "unilateral" field viewpoint, and his RI location of the emf. I need clarifications.

I am going to explore, experimentally, two details which I had observed years ago. As I also mentioned to Marinov already, I had some indication that the location of emf in case 9 is in RI, using the capacitive branch described in TWT-II page 63.

The other finding, related to crucial motor reactions, was done in April of 1979. When I passed a current through RICE, (indeed, through 10 such loops in series), I noticed that, if the loops are made "solid" to MM' and both fixed to the Lab, there is an unquestionable TORQUE over the frame fgh'g'h'. So wherever the seat of emf is, RI or CER, this generator cannot be a "perpetuum generator". I mean, the generated current will oppose, indeed, the further rotation of the frame because of the said motor reaction. So you DO have to pay energy to generate the emf. Unfortunately I did not make experiments where RI could move independently of CER, or both independently of MM! So again, the "partitioning" of the emf's and torque effects, between RI and CER, are under speculation. I give you the global results as I performed them in 1979.

I will stop here since the mail closes for the weekend in about one hour and I have still to buy envelopes and make the drawings, and I wish this letter to reach Marinov before he travels to the USA to see Newman and the N-generators.

Yours, as always,

*Franz Müller*  
F. Müller

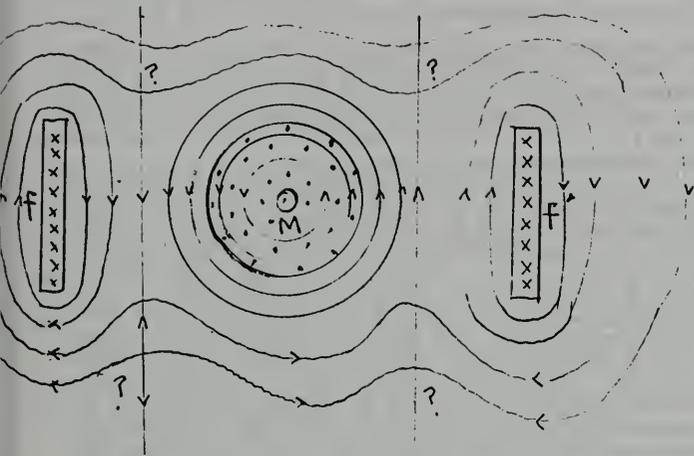


FIG. 1

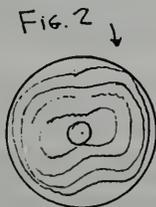


FIG. 2

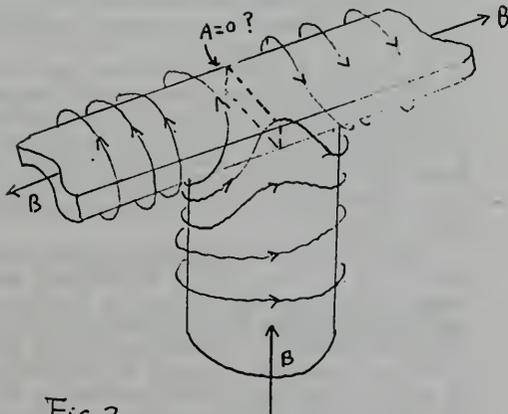


FIG. 3

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

15 March 1985

Dear Dr. Maddox,

Thank you very much for your letter of the 8 March which I received before posting my letter to you of the 13 March, and I reply your letter on the spot.

Your answers to my questionnaire are so bad, that soon you will repent of having given them. Let me say first that I was glad to see that you answered questions 1-7 rightly. I must, however, note that question 6 must be answered negatively (i.e., that when moving the loop in fig. 1 there is no induction in the wire) only if the wire is at rest in absolute space. If the wire moves (together with the laboratory) in absolute space, there is induction depending on the absolute velocity of the wire (the motion of the loop is immaterial). But this is only a subtlety. Now let us come to your blunt logical errors.

You affirm that there is induction (the golden foils at the ends of the wire go aside!) when moving the wire (object A) with a constant translational velocity in the laboratory keeping the loop (object B) at rest, while when moving the loop (object B) keeping the wire (object A) at rest, there is no induction. If you will publish this totally anti-relativistic statement in the press, the relativists have to stone you. Have you not heard that according to the principle of relativity all physical effects taking place in two bodies depend only on their relative velocity one to another?

However, if the relativists will stone you, I shall open widely my arms to embrace you, seeing that even the editor of Nature has entered our camp (the camp of the absolutists). Your positive answer to question 7 is again definitely anti-relativistic: Objects A and B move together with the same constant translational velocity (in the laboratory), and there is induction, while if both objects are at rest in the laboratory, there is no induction. Have you never open a book on special relativity to see that the inertial velocity of an isolated material system has no effect on the phenomena appearing in that system? Thus before the cock-crowing you denied your teacher (Jesus Stein) twice. You denied the teacher a third time giving a negative answer to the question 8, and affirming that the phenomena in the isolated system will depend on its velocity to the laboratory. This answer, however, is neither relativistic, nor absolutist, such an answer can give only a child who has never read a book on physics, because the effect is unique, while the number of the laboratories (of the "observers") may be an infinitely large quantity. Put the loop and the wire on a ship and mount the ship for a sail on Thames from Kingston to Richmond. Suppose that the ship is sailing with N knots. Push now the system on the deck with the same velocity to the stern. You will say: For such a velocity the golden foils must go aside to  $\alpha$  degrees. Well, but suppose that Vera Rich is on the shore and looks at your experiment. For her the ship moves but the loop with the wire are at rest and she will affirm: There is no induction, the golden foils must remain closed. You will shout from the board "There is induction", V. R. will shout from the shore "No, there is no induction." And if the other collaborators of NATURE will pass near on different ships sailing with different velocities some from Kingston to Richmond, other from Richmond to Kingston, can you imagine what a Babylonian shouting will take place. Thus you have either to revise the system of your answers, or to answer also question 8 by "yes". Then you have to publish the paper. However, if you will be afraid that after the appearance of this paper the relativists will stone you, write me openly about your fears and in the name of your personal security and of our friendship I shall withdraw it.

You write that the numerous proofs of my advertisement have put you to considerable cost. This is not my guilt. You delayed the composition over months and in those months I discovered new things. On the other side the last corrections are due only to the bad composition of the formulas. After four proofs the formulas are so bad as in the first proofs. I am ready to pay for the changes of the text introduced by me, but I have no responsibility that NATURE composes formulas so badly as if the composition is done in Zimbabwe. I shall send you £ 440 (the sum paid for my first advertisement in 1981). If your page charges have changed, please inform me about the new charges. The sum will be sent after obtaining the fifth proofs with well composed formulas.

Sincerely yours: *A. Marinov* Stefan Marinov

Bruce E. DePalma, 1055 Channel Drive, Santa Barbara, California

18 March 1985

93108, USA

Dear Dr. Marinov,

I received your letter this afternoon. In recent days I have been receiving considerable publicity which has resulted in hundreds of letters. I think you and I have different approaches. I am basically a teacher and a researcher. I have studied the histories of the innovators and I am trying to carefully pick a path that will lead to the successful introduction of new ideas into physics. The ideas of free energy and antigravity which I have developed are bringing together the finest young minds on the planet here in Santa Barbara.

I try to be less dogmatic than you are because I believe my ideas about physics are my ideas, not the ideas.

I have repeated the Godart experiment and got the result he predicted. According to your own writing you got a small effect when you rotated the turntable slowly. Of course under fast rotation any variation would be lost in the inertia of the measuring instrument.

My opinion is that you do not want the Godart experiment to work since it would dissipate the theoretical basis which you want to explain your experiment with. Do not let your prejudices create such a high threshold for your judgement else you are putting yourself in the stead of your critics. I think Godart has found something; what it just exactly is has yet to be shown. Just think, if the Godart effect were operating in the case of your coupled shutters experiment -- I agree with the referees & JILA that the precision of the experiment is beyond them if what you are really saying is true. I really believe logic can take you to an experiment, i.e. in my case the dropping of the spinning ball experiment; but when you find free energy (i.e. the ball drops faster and collides harder), then you must have the mental elasticity to accept the new (unprecedented) result. After that it might take years to find out what is really happening, in the Godart experiment for example.

Become more realistic, Dr. Marinov. The reason Relativity is wrong is equivalence is wrong. (the geometrical interpretation of space is incorrect) The inertial mass which we find when we accelerate an object is not a property of the object in itself anymore than the gravitational weight. Both of these properties are coming from fields(?) existing in the space around the object. The inertial mass is a conferred property ---- from which energy can be extracted.

Perhaps the energy in a perpetuum mobile is created from nothing, i.e. God. But you would not except this interpretation?

You are worse than your referees in the informations you want from me. I am thinking perhaps you have thought about Dr. Maddox so much you are beginning to think like him?

Don't you want to believe I have discovered the inertial field of space? Don't be like the fish swimming in the water who need to be convinced the water is there.

I would be happy to have some conversations with you, in person. In terms of the things you are asking, I am more a Galileo type person. I say: if you drop rocks off of the LToP, then, all will be seen to fall with the same rate of acceleration. Now DePalma says the rotating objects will drop faster. Do you need more information than that?

The rotating N machine has no drag. I have measured this personally in two models I have constructed. The one running at a measured current of 7000 amperes at 1.5 volts. A second machine with mercury electrodes developed .5 volt at 10,000 r.p.m. A direct short circuit produces no voltage drop or increase in drive motor current (less than 1 ma. resolution in 4 amperes).

If there is no magnetic field and there is no inertial field then; there is no way I can talk to you. As far as rotation of magnetic field or not, you sound like Einstein: "the problem has no point".

Perhaps someone has come up with a new experiment (not in the books), whose interpretation may be construed along the lines of lines of force which can be rotated.

I think you are a very brilliant man who would profit from the exact examination given to his ideas by the teaching of them to someone else.

I am not especially looking for the Nobel Prize, I have different aims in this society. I want to stop nuclear war. I want to invalidate and discredit the handwashing procurers who prostitute themselves and walk in the halls of truth. What I have in mind is more powerful than the atomic bomb.

I think it should be interesting when we have a conversation. I wonder does your communism exclude a God? I think God is a necessary experience for all men of science for so many reasons I cannot elaborate here.

I also think you are underestimating the other physicists. In a world ruled by greed, no one is going to tell you what they are doing. The perpetuum mobile idea as you and I invented it is correct and will run. This I demonstrated in 1980. This I am saying to you not to make you unhappy that I am not telling you everything, but I satisfied myself and I have enough self-control and perception of things to stay content.

I am not interested in d.c. machines anymore. I can make N machines with direct a.c. output which greatly simplifies power conversion. But also I am not going to talk on a line which has many hearers.

Basically I am happy with what I am doing. You are smart enough to attack the physicists because they are a bunch of mental defectives who are going to murder all of us if we let them. Hope to see you.

*Bruce DePalma*

Editorial note. Godart's experiment was repeated by Marinov in Sofia and the account is presented on p. 171 of EPPUR SI MUOVE and on p. 264 of Vol. III of CLASSICAL PHYSICS. Marinov's measurement gave a null effect. In 1977 Marinov met Godart in Brussels and showed him his results. Godart agreed that, may be, his experiment was not very accurately done.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
5 April 1985

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF

Dear Dr. Maddox,

I sent the corrected fourth proofs of my advertisement on the 25 February to Mr. George Lowe and to Mr. Andy Sutherland. Until today I have not received the fifth proofs. I am afraid that you are unwilling to print this advertisement. What is the matter? NATURE asks me to prepay the advertisement in a traditional capitalist manner but NATURE does the job in a traditional SOCIALIST manner being unable to compose during SIX MONTHS this advertisement. If our relations are relations between capitalists, please, be so kind to fulfil your obligations. Correct the badly composed formulas as soon as possible and send me the proofs by an express letter.

To block you the way for a possible escape (rejection of the advertisement), I sent you today the page charge for two pages (860 English pounds). See enclosed the payment document. However, you have to print the advertisement after my approval of the fifth proofs. And as soon as possible (NATURE is in London, not in Moscow).

I know pretty well that the relativists around NATURE are terribly afraid of any my printed word as they cannot raise a single word of objection against my theory and experiments. But money has an enormous power in our godblessed Western world. Говаривал же небезызвестный Владимир Ильич /слегка картавя/: "Господа р-релятивисты нам сами пр-родадут ту вер-ревоночку, на котор-рой мы их и повесим."

I wish to hope that you will finally understand that I have discovered important things in physics and you will open the pages of NATURE for my articles.

I should like to remember you that with my letter of the 18 March I begged you to send back to me my article THE "MAMUL" PERPETUUM MOBILE, without making photocopies of it, and I am looking forward for your parcel.

Sincerely yours,

*S. Marinov*

Stefan Marinov

£ 860,--

Herr  
Dr. Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz

Verwendungszweck (dem Begünstigten mitzuteilen)

Übzahlung für eine  
Annonce in der Zeitschrift  
"Nature"

Begünstigter  
Macmillan Accounts and Administration  
ltd,  
4 Little Essex Street  
London WC2R 3 LF

auf sein Konto bei  
Nat. Westminster Bank Ltd.  
BIZ 60-02-43  
Kto Nr. 47301753

Sie beauftragen uns, an den genannten Begünstigten diese Überweisung durchzuführen, wofür Sie uns den in nachstehender Abrechnung angeführten Endbetrag erlegen.



CREDITANSTALT

Die Überweisung wird brieflich/fugpostisch/drahtlich durchgeführt

050485 0884C3220 DEVVER

Ordnung Datum

Hochachtungsvoll  
Creditanstalt-Bankverein

	Betrag
A 2.689,--	S 23.125,40
+ Kommission	S 87,60
+ Überweisungsspesen	S 20,--
	S 9999999992323,00
Kassa-Einzahlung	S 23.233,--

# Pferdeknecht erfand in Graz Wundermaschine

Stefan Marinov lächelt. „Da reden die Leute soviel über Zwentendorf und Hainburg . . . Ich habe alle Probleme gelöst!“ Und erleichtert präsentiert der bulgarische Extremphysiker und Wahl-Grazer sein neuestes Werk. Auf dem Papier besteht Stefan Marinovs „Perpetuum mobile“ ja schon lange, aber erst jetzt ist der Durchbruch da. Jetzt wird sich die Welt verändern. Meint Marinov.

„Perpetuum mobile is discovered“ – das Perpetuum mobile ist erfunden. Unter diesem Titel soll demnächst in der Wissenschaftsfachzeitschrift „Nature“ ein Artikel

den gebürtigen Bulgaren, der in Weinitzen bei Graz als Pferdeknecht arbeitet, um leben zu können, davon abbringen, einst in die Geschichte einzugehen.

VON WERNER HUEMER

erscheinen. Autor: Stefan Marinov, der Mann, der seit mehr als einem Jahr mit gesunder Besessenheit an jenem Wunderwerk bastelt, das die Menschheit sucht, seit es sie gibt – an einer Maschine, die Energie aus dem Nichts erzeugt, die sich ewig dreht, wenn sie einmal in Gang gebracht ist. Nichts und niemand kann

„Es gibt keinen Wissenschaftler auf der Welt“, sagt Marinov, der acht Sprachen spricht und im Eigenverlag haufenweise Bücher produziert, „der etwas gegen meine Theorien sagen kann. Es gibt aber auch keinen, der mich unterstützen will. Deshalb muß ich mit den primitivsten Mitteln allein arbeiten!“ Die wichtigste Arbeit ist nun getan. Das „Perpetuum mobile“ wird demnächst groß präsentiert.

## Steirerkrone

Graz, Lendplatz 31, Telefon 91 55 22-0

Neue  
Kronen  
Zeitung  
UNABHÄNGIG

Samstag, 6. April 1985 / Nr. 8932, S 6,-



Foto: Henbert Weber

◀ Jetzt hat er's: Stefan Marinov mit dem wichtigsten Teil seines „Perpetuum mobile“, einem neu entwickelten Motor. Und nun wird Öffentlichkeitsarbeit geleistet: Marinov schreibt sein letztes Buch „Der dornige Weg zur Wahrheit“ um und präsentiert seine Wundermaschine demnächst bei einer Pressekonferenz der Öffentlichkeit.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
24 April 1985

Dr. John Maddox  
NATURE  
4 Little Essex Street  
London WC2R 3LF  
England

Dear Dr. Maddox,

On the 5th April I sent you the page charge for my advertisement "The Perpetuum Mobile is Discovered". Until today I have not received the fifth (and I hope, final) proofs of the adv.

I see that you are unwilling to print this adv. If this is the case, I BEG YOU TO SEND IMMEDIATELY THE MONEY BACK TO ME.

Between the alternatives: a) execution of experiments or b) publication of the advertisement, I chose the second one and invested my whole money in it. Now I have neither experiments, nor published adv.

In the case that you will reject my submitted papers, please, inform me as soon as possible. In the case of rejection, please, do not send the manuscripts to the J. PHYS., as one ("A very simple electromagnetic experiment for measurement of the Earth's absolute velocity") will be slightly revised, while the other will be included in bigger papers. If you will accept the papers, I shall send you only the revised version of the above mentioned paper.

Looking forward for your decision,

Sincerely yours,



Stefan Marinov

Editorial note. Until the 26 April 1985 the fifth proofs of Marinov's advertisement have not reached Graz. On the following two pages the fourth proofs are reproduced (they arrived in Graz on the 25 February). In his letter of the 15 March Marinov wrote to Dr. Maddox: "You write (see p. 301) that the numerous proofs of my advertisement have put you to considerable cost. This is not my guilt. You delayed the composition over months and in those months I discovered new things. On the other side, the last corrections are due only to the bad composition of the formulas. After four proofs the formulas are so bad as in the first proofs. I am ready to pay for the changes of the text introduced by me, but I have no responsibility that NATURE composes formulas so badly as if the composition is done in Zimbabwe." The reader can see the quality of the composition of the formulas AFTER FOUR PROOFS on the following two pages. Here is an example for the quality of the composition of the formulas in the third proofs:

Einstein and his epigones think that if a piece of wire and a magnet move together, then induction phenomena cannot appear. Now I shall show that this is not true. In such a case we have for the magnetic potential  $\vec{A}$  in the wire  $d\vec{A}/dt = \vec{v} \times \vec{g} + \parallel \partial$   
 $(\vec{v} \text{ grad}) \vec{A} = 0$ , where  $(\vec{v} \times \vec{g}) dt$  is the change of  $\vec{A}$  at the  $\parallel \partial$   
laboratory space point crossed by the wire at the moment considered and, as  $\vec{v}$  is the velocity of the wire,  $(\vec{v} \text{ grad}) \vec{A} dt$  is the change of  $\vec{A}$  due to the motion of the wire. Taking rotation from the last equation, one obtains  $\text{rot} \vec{E}_{\text{motional}} = -\text{rot} \vec{E}_{\text{inductive}}$ , where I denoted  $\vec{E}_{\text{motional}} = \vec{v} \times \vec{B}$  and  $\vec{E}_{\text{inductive}} = -\vec{R}/A$ , calling  $\vec{E}_{\text{motional}}$  the motional  $\times \parallel \partial$   
inductive electric intensity and  $\vec{E}_{\text{inductive}}$  the transformer inductive

One can ask oneself why after four proofs the formulas are so badly composed, why during seven months the advertisement is still not published, why 20 days after having received the prepaid sum NATURE keeps silent. If England will fulfil its treaty obligation with the Soviet Union in the same manner as NATURE fulfils its treaty obligation with Marinov, the editor does not see a way to evade the WW III.

Note to the third edition. In the third edition is reproduced the published text of Marinov's advertisement on pp. 312 and 313. The fourth proofs can be seen only on pp. 310 and 311 of the sec. ed.

Tagesspost **3**

Donnerstag, 13. Juni 1985



Technova-Messe

Ein Perpetuum mobile erfunden zu haben, behauptet der Bulgare Stefan Marinov. Dabei handelt es sich um einen Elektromotor für Gleichstrom ohne Schleifkontakte. Der hochintelligente, jedoch ohne jegliche finanzielle Unterstützung arbeitende „Erfinder“ lockt unzählige Jungtechniker zu seinem Stand. Vielleicht entsteht doch noch eine verwertbare Sache.

# Stefan Marinov wins friends

*The suggestion that there are systematic departures from the strict requirements of special relativity has been persistently put forward by Dr Stefan Marinov. There is a case for repeating his experiment.*

STEFAN Marinov is a remarkable iconoclast who is convinced that Einstein's special theory of relativity is mistaken. Bulgarian by origin, Marinov has been, for all practical purposes, exiled from his homeland, but it is by no means clear whether his opinions on relativity or on the proper conduct of the Soviet leadership are chiefly responsible.

From his new home in neutral Austria, Marinov has been at loggerheads with several scientific journals, *Nature* among them, because of their refusal to publish any but a small part of his work, which now also includes a purported demonstration of a *perpetuum mobile*.

Marinov's frustrations with the journals have recently seemed to get the better of his judgement. Last year, angered by *Nature's* refusal to publish a group of manuscripts, Marinov was for a time threatening to immolate himself in the square outside the British consulate at Genoa. Later, he threatened to do the same outside the British embassy in Vienna, but fortunately settled for a press conference instead. Those who have had dealings with Dr Marinov can have been left in little doubt that he is passionately convinced of the correctness of his position on special relativity. Quite apart from his apparent willingness to take his own life, it is clear that his waking hours are almost all spent in correspondence, much of it unfortunately fruitless, about this theory and about his purported demonstration, by means of what he calls the "coupled-shutters experiment", that the velocity of light is not, as Einstein's theory supposes that it would be, equal in all directions (isotropic) in all frames of reference.

Now, it seems, Marinov has won some influential friends. The issue of *Physical Review Letters* for 8 July (55, 143; 1985) contains an article by A. K. Maciel and J. Tiomno from the Brazilian National Science and Technology Research Council at Rio de Janeiro which at least puts Marinov's objections to special relativity in a context in which they can be grappled with. Moreover, what Maciel and Tiomno say is certain to have an important bearing on the classification of all possible experimental tests of special relativity.

Plainly, when there is such a mountain of experimental evidence that the general features of special relativity are borne out in practice, it would be foolish in the extreme to assert that special relativity is just plain wrong, thereby implying that the

time has come to return to newtonian mechanics; after all, objects do not travel faster than light in any circumstances observable, while time dilation (as defined by Lorentz) is a fact of life and can be measured, for example, by the difference between the average lifetime of an unstable particle in motion and at rest. So if there are violations of special relativity, they are at most weak violations, departures from what is not strict orthodoxy and not flat contradictions of it.

But what weak violations of special relativity are neither trivial nor absurd? Borrowing from some work due to H. B. Ives in the 1930s, Maciel and Tiomno argue that it is prudent to disallow violations for electromagnetism, for independent particles in uniform motion and the other more elementary phenomena used as illustrations of special relativity, now even in the elementary textbooks. But what about the possibility that the behaviour of rigid bodies is not accurately accounted for by the Einstein-Lorentz transformations of coordinates, and that a rigid body remains rigid — the separation of fixed points remains constant — however it is moving?

The formal realization of this state of affairs seems not particularly elusive, although it is not possible to modify special relativity in any meaningful way without reintroducing the newtonian concept of absolute time and space, or the idea that there may be some preferred frame of reference such as that of the microwave background. Explicitly, if  $x, y$  and  $z$  are cartesian coordinates in that absolute frame of reference, and  $t$  is the time, and if primed quantities are the same coordinates in a system moving at velocity  $v$  along the  $x$ -axis, the transformed coordinates are exactly those of special relativity except for  $t'$ , which is given (according to the formalism of Maciel and Tiomno) by  $t = \gamma t'$ , where  $\gamma = (1 - v^2/c^2)^{-1/2}$  and not the conventional Lorentz transformation in which  $\gamma v/c^2$  is added to  $t'$ .

The calculations are not in themselves particularly difficult. It emerges simply enough that rigid rotating bodies remain rigid in the new system, and in the particular sense that the apparent angular velocity of all fixed points is a constant (if the angular velocity of the whole object is constant). The velocity of light is isotropic in the absolute system against whose coordinates the rotation of the rigid object is defined, while both time dilation and

the Lorentz-Fitzgerald contraction (of lengths in the direction of relative motion) persist. What is sacrificed is the isotropy of the velocity of light in the rotating system.

The interest of what Maciel and Tiomno have done is that they can sort the several published tests of special relativity by the likelihood that they will yield a stringent test of the weakly violated form of special relativity defined by their transformation. The classical test of special relativity first carried out by Michelson and Morley and since repeated several times does not meet the test. The version of the experiment due to Joos (published in 1930) in which a Michelson interferometer was rotated on its turntable once every ten minutes or so, classically one of the better verifications of the isotropy of the velocity of light (among two orthogonal directions), will not suffice, although a more rapidly rotating turntable might meet the need. The simulation of the Michelson-Morley experiment in which two hydrogen masers are used as the source of radiation moving in orthogonal directions offers more hope of providing a stringent test of the modified transformation equations. And so, Maciel and Tiomno say, does Marinov's rotating-shutters experiment.

The principle of that is simple enough, a kind of Fizeau measurement of the velocity of light except that the objective is to make a direct comparison of the velocity of light in two opposite directions. Two disks with identical perforations are mounted parallel to each other at opposite ends of an axle and light from a laser is directed (by means of a beam-splitter) through the perforations of the disks in each direction. Marinov claims that his results, most recently obtained with home-made equipment at Graz, demonstrate that the velocity of light is not the same in all directions. He even claims to have been able to detect the velocity and direction of the Earth's movement through absolute space and time.

None of this proves that there is anything wrong with special relativity. It is merely a pointer to the kinds of tests that would be necessary to demonstrate a particular (and "weak") violation thereof. Maciel and Tiomno merely say of the Marinov experiment (as of the others on their list) that it "should be repeated even if to prove it wrong". It will be interesting to see how many correspondents write in to claim that that has been done already.

John Maddox

# The PERPETUUM MOBILE is discovered

Stefan Marinov

## THE THORNY WAY OF TRUTH

### Part II

Documents on the invention of the perpetuum mobile, on the centurial blindness of mankind, and on its frantic perseverance in it

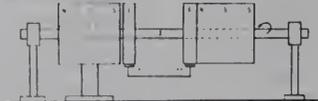


With the aim of making clear the essence of the *perpetuum mobile* I have invented, I now describe it (fig. 1). The copper disk (1) is solid to the axle (3), the magnet (2) is stationary. When the axle is rotated, an electric current is induced in disk (1), and a potential appears between the axle (one of the electrodes) and the brush sliding on the disk's rim (the other electrode); thus it represents the so-called Faraday unipolar D. C. generator.

If electric potential is applied to those electrodes, the disk (1) rotates. Thus it also represents the so-called Barlow wheel. The copper disk (4) is solidly connected to the magnet (5) and the axle, and also represents a Faraday generator and a Barlow wheel. The crucial difference, however, between disks (1) and (4) is that, when working as generators, disk (1), called uncemented, has a *braking effect* but disk (4), called cemented, has *not*. Hence disk (4) produces electric energy for which no mechanical energy has to be paid. This is an experimental fact (see my book), but the scientific community covers it with silence and no physicist of the "establishment" dares to discuss it and to reject it in the press, backing up the rejection by experimental data.

I cannot give an unappealable explanation for this *strange* phenomenon and I sustain it *exclusively* on experimental evidence, paying also a 100% credit to the reports of the constructors of the N-machines (see below).

Theoretically motivated is my second, called "trick-track", *perpetuum mobile* (fig. 2): Two concentric metal cylinders building a condenser with a big capacity can be connected either through the wire A'C (when they are charged by the battery) or through the wire A'BAC (when they are discharged). Due to the impulse caused by the unbalanced Biot-Savart forces of interaction (see beneath!), the whole system comes into a



THE THORNY WAY OF TRUTH II



Stefan Marinov

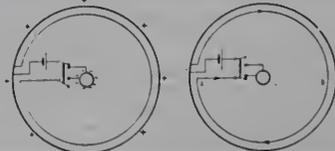
The first part of the collection of documents THE THORNY WAY OF TRUTH presented the light of Stefan Marinov for the restoration of the absolute space-time concepts. The present second part gives the documented story on the invention of the first perpetuum mobile in the world and includes besides three Marinov's scientific papers also one of the Cuban physicist Francisco Muller (Miami, USA). As the documents show, the reaction of the "scientific community" to the most important discovery in the history of mankind was exactly the same as it was to Hainino's historic experiments for revealing the absolute character of motion and to his absolute space-time theory (exposed in the encyclopaedic work CLASSICAL PHYSICS and in his first book EPPUR SI MUOVE). The functioning of the perpetuum mobile is possible just because of the absolute character of the electromagnetic interactions, of their local (point-to-point) character, as perceived by the German Gauss-Weber school, in a definite rebuttal of the field (closed lines) character, as perceived by the Saxon Faraday Maxwell school, and because of the violation of the simple (mechanical) Newton's third law at the interaction of electric currents.

Price: \$ 25

clockwise rotation for which no energy has to be paid. If a generator driven by the system can cover the Ohmic and friction losses, the apparatus is a perpetuum mobile. The positive outcome of this experiment kills two other big birds: 1) It gives the first *direct* rejection of Ampere's formula for the interaction of current elements. 2) It shows that Maxwell's displacement current is a pure speculative notion without any physical substance.

Einstein and his epigones think that if a piece of wire and a magnet *move together*, then induction phenomena cannot appear. Now I shall show that this is not true. In such a case we have for the magnetic potential  $A$  in the wire  $dA/dt = \partial A/\partial t + (v \cdot \text{grad})A = 0$ , where  $(\partial A/\partial t)dt$  is the change of  $A$  at the laboratory space point crossed by the wire at the moment considered and, as  $v$  is the velocity of the wire,  $(v \cdot \text{grad})Adt$  is the change of  $A$  due to the motion of the wire. Taking rotation from the last equation, one obtains  $\text{rot} E_{\text{mot}} = -\text{rot} E_{\text{tr}}$ , where I denoted  $E_{\text{mot}} = v \times \text{rot} A$  and  $E_{\text{tr}} = -\partial A/\partial t$ , calling  $E_{\text{mot}}$  the motional inductive electric intensity and  $E_{\text{tr}}$  the transformer inductive electric intensity. On the grounds of Stokes' theorem one concludes that along *closed* wires the induced motional and transformer electric potential differences are always equal and opposite and thus no induction current can flow. However,  $E_{\text{mot}}$  may be different from  $-E_{\text{tr}}$ , and along *non closed* wires induced electric potential differences can appear. Exactly this is the case of a copper disk (a radial wire) rotating with a cylindrical magnet. In this case  $E_{\text{tr}} = 0$ , as  $A$  has circular symmetry, but  $E_{\text{mot}} \neq 0$  and putting sliding contacts Faraday generated electric current in 1831. A childish simple explanation but THE WHOLE WORLD IS BLIND.

According to me, Einstein's dogma that the velocity of light is



isotropic in any inertial frame has caused to mankind only one millionth part of the damage which has caused his dogma that the physical phenomena depend on the relative velocities of the particles but not on their absolute velocities. It is true that the experimental rebuttal of the first dogma was done first in 1973 by my deviative "coupled mirrors" experiment (*Czech. J. Phys.*, B24, 965; 1974), but the experimental rebuttal of the second dogma was done by Faraday in 1831 with his cemented disk. The power of nonsensical theoretical dogmas trumpeted by millions of duped teachers is so terrible that if one asks 1000 physicists and electroengineers whether disk 4 and magnet 5 can work as a generator and as a motor, 999 of them will answer negatively.

In the documentary part of my book, I give information on the N-machines of Bruce de Palma (California), Kieninger (Texas), and so on, as well as on Newman's (Louisiana) "impossible motor" (as labelled by *Science*, 223, 571; 1984). The N-machines represent Faraday disks cemented to their magnets. Newman keeps his machine secret, but from the information published in the press and from the letters of a friend of mine who visited him, I come to the conclusion that his apparatus may be a Faraday disk. However, none of these gentlemen has coupled a Faraday disk with a Barlow disk, and for this reason none of them could observe creation of energy out of nothing as I have done with my first apparatus shown in the photograph above.

In the paper *On the action and interaction of stationary currents*, I show that the Biot-Savart forces acting on part of a current loop may be reactionless and consequently violate Newton's third law. So they can set a solid body in rectilinear motion (as is the case with Amper's "floating bridge") or in rotation (as is the case with a Barlow disk solidly connected to its magnet). Indeed, in the second case the Biot-Savart forces originated by the elements of the "circular current" (imagine the magnet as a circular current) are applied perpendicularly to the elements of the "radial current" flowing through the disk and generate a rotational moment, while the Biot-Savart forces originated by the elements of the radial current are applied perpendicularly to the elements of the circular current and do not generate a rotational moment, as all of them point to the centre. There is the case where two persons solidly connected to a turntable push one another with forces which are not equal and oppositely directed. Of course, the turntable will begin to rotate due to the action of unbalanced "internal forces", but two persons (in difference to streaming electrons!!) always push one another with equal and oppositely directed forces. A childish simple explanation, but THE WHOLE WORLD IS BLIND, as the old books explain the rotation by the magnetic action of the wires solid to the laboratory, while the new books are written as this experiment does not exist at all.

In the paper *Coup de grace to relativity and to something else* I show that the fundamental Lorentz equation has the well-known form (called by me *absolute*) only in absolute space, but in the inertially moving laboratory it has another form (called by me *relative*). In *Classical Physics* I show that for this reason the elementary particles in a circular accelerator move with different velocities along the different segments of their trajectories (the laboratory velocity of the particles is  $v = (v^2/c^2) \cos(\nu, V)$ , where  $v$  is their absolute velocity and  $V = 300$  km/sec is the laboratory absolute velocity).

In the same paper I give a new systematization of the D.C. machines. I call the Faraday and Barlow disks *half polar* (instead of unipolar) machines, because the radial rotating wires cover

only the half of the cylindrical pole and this pole has an irreversible character (see fig. 3): 1) The pole drives the radial current wires ab but cannot be driven by them. 2) When the wires ab rotate current is induced in them, but when the pole rotates current is not induced. (These effects are in a drastic contradiction with the relativistic concepts). I call the invented by me "bul-cub" generators and motors (fig. 3) *one-and-a-half polar* machines. In fig. 3 an *uneffective* bul-cub machine is shown which can neither rotate nor generate current. I made it *effective* by making short-circuitage of the windings either between points p and q (p' and q') or between points p and p' (q and q'). The bul-cub machines are the first in the world without collectors and commutation and (in difference to the half polar machines) can have an arbitrary number of windings. These D.C. machines will substitute the collector machines now in use because of many their advantages. I patented them and the licence is free for sale. My *perpetua mobilia* will not be patented and I grant them to humanity.

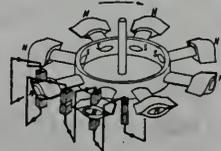
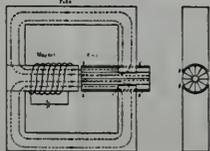
I invented also the machines shown in fig. 4, which I call *unipolar*. In difference to the bipolar machines, the sliding contacts of the former are not used for commutation but for "saltation" and D.C. flows always in their windings. All motors and generators known to humanity are *electromagnetic* machines, where a current wire interacts with a magnet. I established that the "ball-bearing" motor is the unique *electric* machine, as its torque is due to the "current-jet" effect, discovered by me, which consists in the following: the current conducting electrons transmit momentum to the wire when changing the direction of their velocity and set the wire in motion without losing energy. Coupling a "ball-bearing" motor, which has no back E.M.F., with a cemented Faraday disk, I constructed the perpetuum mobile CUREC (CURRENT-jet Effect + Cemented Faraday disk). As in my "coupled N-machine", here again the generated tension at a certain rate of rotation was lower than the driving tension which has to maintain this rate, and thus the "circle of eternal rotation" could not be closed. To close this "circle" I need only some \$5,000 to ameliorate the parameters of the machine.

In the paper *New measurement of the Earth's absolute velocity with the help of the coupled shutters experiment*, I give the account on the repetition of my Brussels (1979) experiment (*Spec. Sci. Techn.*, 3, 57; 1980) in February 1984, when I registered the Earth's absolute velocity of 360 km/sec with equatorial coordinates of the apex  $\delta = -24^\circ$ ,  $\alpha = 12.5^h$  (see the set-up in the photograph below).

Those are the three papers rejected by *Nature* (311, 399; 1984). The ultimatum to the late Andropov with which I intended to liberate my Russian colleague Dr. Orlov (for whose release I have fought for since 1978) was not executed (self-immolation in front of the Soviet Embassy in Paris on the 16 January, 1984) as I failed to publish this ultimatum and stir the public opinion, although I tried to print it even as an advertisement. The "Ten Jena Commandments" which, following the example of Martin Luther, I hammered on the doors of the Jena University during the GR9 Conference, are published in the first volume of my *Classical Physics* and a photograph of the artistically executed poster is reproduced in *Nature* (293, p. xxix; 27 Sept. 1981).

Orders for all my books: *Eppur si muove*, \$25.00; *Classical Physics*, \$125.00; *Proceedings of ICSTA*, \$25.00; *The thorny way of truth* Part I, \$25.00, and Part II, \$25.00, can be sent to:

STEFAN MARINOV  
Niederschöcklstr. 62, A-8044 Graz, Austria.



## ON REVIENT TOUJOURS A SES PREMIERS AMOURS†

The concept of an "aether" has been associated historically with two important aspects: (1) that it represents a special kind of matter which is capable of transmitting light, and in general, electromagnetic waves, and (2) that it defines an absolute reference frame of space which is at rest with respect to the center of mass of the universe. The discovery of the corpuscular character of light, and in general of radiant energy, led to the abandonment of the first aspect. The inability of early experimenters to measure the absolute velocities of bodies led to the abandonment of the second aspect.

However, the recent discovery of the anisotropy of the cosmic background radiation and my measurements of the one-way velocity of light with respect to an earthbound laboratory led to the revival of the second aspect. If this "resurrection" is still not accepted by a broad sector of the physics community, the reason lies in the fact that there is an immense intellectual inertia which must be overcome, this community now having, not hundreds and thousands of representatives, as in past centuries, but millions.

Dr. LaViolette presents in the following three papers a very interesting attempt for the revival of the first aspect by bringing in new ideas from the fields of general system theory, nonequilibrium thermodynamics, and chemical kinetics. I am a narrow (and it would not be exaggerating to say "vulgar") empiricist, and I accept physical models and theories only if they are able to explain observable physical phenomena. By means of simple and clear experiments, I do not see a way of demonstrating evidence for the existence of the aether as a physical entity in the form of certain "subphysical units" which, as Dr. LaViolette states, are inherently "unobservable". At the present time, I think, the "aether" concept has almost the same character as the notion of "God". Searching for an aether at the foundation of all physical phenomena is like searching for evidence of a God at the basis of the universe. No single repeatable experiment has ever been performed which undoubtedly demonstrates the existence of either of them. The theologians have solved the problem in the following manner: Namely, one need not search for objective proof of God's existence, one need only believe in God. Unfortunately, in physics this second alternative cannot be accepted. If the aether does exist, one must be able to somehow demonstrate its existence. Dr. LaViolette's articles, which now come to the judgement of the scientific community, are a very interesting contribution along this line, and give some ideas of ways in which at least indirect experiments of this type can be contemplated.

The subquantum kinetic methodology which Dr. LaViolette proposes leads to the important prediction that matter and energy are not necessarily conserved and that it is precisely because of such nonconservation that matter and energy in the universe have come into being. As an empiricist, I should like to make reference to certain experiments, for which I do not find an answer in the frame of conventional physics, based on the laws of the conservation of energy, momentum, and angular momentum. My recent electromagnetic experiments have demonstrated clearly and without any doubt that the laws of energy and angular momentum conservation are not absolutely valid. Creation of energy out of "nothing" was observed not only by me, but by all who have constructed the so-called "N-machines", which consist of rotating Faraday disks cemented to their magnets. "Energy", "mass" or "matter" are three synonyms for the same physical quantity, and our experiments have shown that this physical quantity can be created not only on a cosmological scale, but on any spot of our Earth. One must find some explanation for this energy which, according to conventional conceptions, appears to come out of nothing and which makes possible the construction of a perpetuum mobile, the possibility of which contemporary physics definitely denies. Maybe this is another example of Dr. LaViolette's "unobservable subquantum entities" making themselves observable! Although in these papers he does not explore the energetics of electrical conductors and magnets in motion, it is quite possible that, with further development, the reactive aether model which Dr. LaViolette proposes also could provide a fertile framework for understanding such nonconservative phenomena.

It is, I think, needless to state that I thoroughly share Dr. LaViolette's non-Doppler interpretation of the cosmological redshift phenomenon, his denial of the "big bang" hypothesis, and his Euclidean approach to cosmology.

STEFAN MARINOV  
*Laboratory for Fundamental Physical Problems,  
Sofia (Bulgaria), Graz (Austria)*



# europhysics letters

29/1/86

Ref: G124

T.W.B. Kibble  
Co-editor, Europhysics Letters  
Blackett Laboratory  
Imperial College  
Prince Consort Road  
London SW7 2BZ  
U.K.

Dear Dr Marinov

Your manuscript entitled

*On the absolute aspects of the ...*

has been considered by two referees. I enclose their reports for your information. I regret that in the light of these reports your paper cannot be accepted for publication.

Yours sincerely,

T.W.B. Kibble

## First Referee's Report

"The author mentions an experiment that, he claims, would verify a prediction of a theory of his own, and that would invalidate relativistic electromagnetic theory. On page 3 the author states that he has not done this experiment and that he will not do it! This attitude seems to me so outrageous that his contribution is not to be taken seriously."

## Second Referee's Report

"There is no urgency; Marinov is paddling his own canoe and no one else is interested. Giving him the benefit of the doubt, the best that can be said is that he has proposed an electrical experiment which will discriminate clearly between his ridiculous absolute-space theory and special relativity. This experiment is not particularly difficult (compared with the usual standards in this field) but on p.3. Marinov tells us that he has not done it "and I shall not do it, as one can become sure that the results will be as predicted by me (and thus contradicting the theory of relativity)" (by considering another rotating, version).

Need I say more? "

JM/MS  
6 February 1986

Dr Stefan Marinov  
Niederschöcklstr. 62  
A-8044  
Graz  
Austria

Dear Dr Marinov:

I am writing to Graz because you explained on the telephone yesterday that you were leaving Australia today.

I am writing so that there should be no misunderstanding. I am prepared to publish in Nature an article by you not exceeding by a single comma four pages of Nature. This would not take the form of a scientific paper but, rather, a would be a personal account by you of (a) the circumstances in which you came to leave Bulgaria; (b) the reasons why you undertook at Sofia the tests of Einstein's relativity; (c) an account of how you have been led to your present investigation of perpetual motion; (d) an account as you see it of your difficulties in persuading the rest of the world to take your ideas seriously.

Of necessity, such an article must be written de novo, making it quite clear to the readers of Nature that you are not writing a formal scientific article but a kind of description of your scientific work.

With all good wishes,  
Yours sincerely,



John Maddox  
Editor

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ЕЖЕНЕДЕЛЬНАЯ ГАЗЕТА  
WEEKLY NEWSPAPER

Год издания XXXVI СИДНЕЙ Пятница, 7 февраля 1986 г. №6 (1830) 7. 2. 1986 SYDNEY Year of publication XXXVI

Стр. 8 ЕДИНЕНИЕ 7. 2. 1986 №6 (1830)

## Вокруг да около «вечного двигателя»

Я искал в Сиднее газету, которая пожелала бы осветить читанную публику о странном отношении д-ра Маддока, редактора влиятельного научного журнала «Nature» («Природа») к моим статьям, в которых я описывал и даю схемы и фотографии нескольких электромагнитных машин, сконструированных мною, которые совершенно ясно показывают, что возможно построить «перпетуум мобиле». Журналисты, которых мне рекомендовали, приходили ужинать, смотрели на привезенную машину, жевали языком, пили и слез, хвалили блонда и вылинули, но статью не пропустили в печать, хотя я и дал рабочий и частный телефоны д-ра Маддока, чтобы они его спросили, соответствует ли действительности представленная мною информация.

И тут мне повсюду является познакомиться с Ю. К. Амосовым, который, выслушав с интересом мой рассказ, любезно предоставил мне страничку газеты «Единение». Благодаря сердечно Ю. К. Амосову и отмечая, что в деле освобождения России (да, пожалуй, и во всяком другом деле) на виглов и на саков нечего надеяться (мысль, которую Ю. К. полностью разделяет), я сообщил коротко, в чем дело.

Хочу, во-первых уточнить, что я вообще-то не русский, а спотроченный болгарин, но мой дедушка, князь Высшее Пиротехническое Учлиение в Санкт-Петербурге и ариевские в Софии, распался: «Как поеду, как поеду в чудный город Пятигорск...» К тому же известно, что все в России говорят: «Болгарии — наш младший брат», хотя слова «младший» или «более малочисленный» больше подходят, ибо «младший» и «старший» — по счету возраста, а это там в старшинстве — это у Кирилла и Мефодия справлялись мушкетеры.

Я — болгарский диссидент, по профессии — физик. Сидел в Софии и в тюрьме, и в «психушке» (не отстает младший брат!) Почти что десять лет на Западе (Брюссель, Вашингтон, Генуя). Четыре года уже живу в Граце, Австрия. В Сиднее в гостях.

Я могу утверждать, что мне первому пришлось измерить яркость света в одном направлении и, сопоставив ее со скоростью света в обратном

направлении, установить абсолютную скорость вращения и движения Земли. Согласно теории Эйнштейна, такой «абсолютной скорости» нет и быть не может. Мой первый эксперимент был проделан еще в Софии, по мировой физической кхурму все еще не может освободиться от научности релятивизма и удостоиться в мой абсолютной простративно-временной теории. Я исполнил даже академик Сахарова на улице Кирова в Москве, чтобы убедить его стать на мою сторону. Его ответ был: «Не могу высказаться. Вопрос сложный. Не даю — ни нет». Журнал «Nature» («Природа»), Лондон, однако, в январе 1978 года в полном порядке, мне поощрительной писулы, что доктор Сахаров будто бы говорил кому-то, что я — сумасшедший, и что он только не одобряет того, что болгарское КГБ лечило меня против моей воли, в газете «Дейан Телеграф» писала еще тогда, когда я жил в Болгарии и организовал первую независимую научную конференцию за железным занавесом, что я — «специальный агент КГБ» по науке (просто — не шучу!). В разговоре мой д-р А. Сахаров отмахнулся от такого заявления и «Nature»: «Вы знаете, как у нас говорят «сумасшедшие» в общедомном языке...». Ведь это имеет совсем иной смысл!

Но в 1985 г. вышло несколько статей в самых уважаемых научных (физических) журналах, где авторы утверждают, что, возможно, я могу оказаться прав. Даже сам д-р Маддок в большой статье в «Лэйбур» в июле 1985 г. под заголовком Stefan Mladov's «Perpetuum Mobile» заявляет, что он готов принять положительные результаты моих экспериментов, и что в теории Эйнштейна нужно будет внести коррективы. «Дейан Телеграф» пока что не обмолвился ни словом по этому поводу.

А теперь — в вечном двигателе. Исходя из абсолютных воззрений и соответствующих формул моей теории, я построил несколько аппаратов, которые дают энергетический выигрив. Один из них так прост, что каждый может собрать его в течение часа. И насадите на металлический вал два шарикиоподшникника, пропустите постоянный (или переменный) ток приби, в 100 ампер через один из шарикиоподшникников, через вал и через другой шарикиоподшникник. Если вы двинете начальный толчок влево, то вал будет крутиться влево, если двинете толчок вправо, то вал будет крутиться вправо. На зысле не

существует другого мотора, который крутится при одном и том же направлении тока в обеих стороны. Но самое странное то, что у шарикиоподшникникового мотора нет обратной электромагнитной силы, т.е. вся электрическая энергия уходит только на нагревание и вся механическая энергия получается из ничего.

В 1984 г. я послал д-ру Маддоку три моих статьи, в которых описаны некоторые машины с энергетическим выигривом. После многомесячной переписки и долгих телефонных разговоров он отказался их печатать. Тогда я предъявил ультиматум: если «Nature» не печатает моих статей, я устрою самосожжение перед зданием британского посольства в Вене.

За несколько дней до назначенного срока и созвал пресс-конференцию в венском пресс-клубе «Конкордия» и репортёр Би-Би-Си взял у меня интервью, которое было передано в эфир. Английское посольство выталось уговорить нас пойти на компромисс, и мы договорились в телефонном разговоре с д-ром Маддоком 2-го октября 1984 г., что он печатает информацию обо всей истории с моим ультиматумом и даст мне одну страничку в «Nature», за которую я заплачу, как за объявление. Информация за подписью д-ра Маддока вышла 4-го октября, а

мое объявление было опубликовано 26-го сентября 1985 г., причем мои 860 английских фунтов были уплачены заранее. Наверное, в истории англо-саксонских стран нет другого подобного случая, когда объявление печатается через год после его оплаты и уплаты положенных денег.

Однако, в последнее время мои отношения с д-ром Маддоком чрезвычайно улучшились. Он первым сообщил мне по телефону, что в «Физикал Резью Леттерс» вышла статья, поддерживающая меня. И вот в начале ноября 1985 г., по дороге в Америку, я посетил д-ра Маддока в Лондоне и привез ему один из моих аппаратов для демонстрации. После долгого разговора и данного мной срока для дальнейших размышлений и консультации, он сказал мне: «Я не читаю все пять материалов, которые вы подали в «Nature». Один из этих материалов — мое письмо Горбачеву, в котором я писал: «Если мои коллеги — Сахаров и Орлов не будут отпущены на свободу перед рождественскими праздниками, я объявлю, что не признаю странам советского блока использовать мои аппараты как источник энергии».

Однако эти материалы и по сей день не появились в печати. На мои письма и телеграммы не приходит никакого ответа. В Америке в постель некоторых моих дипломатических. От одной группы и получив

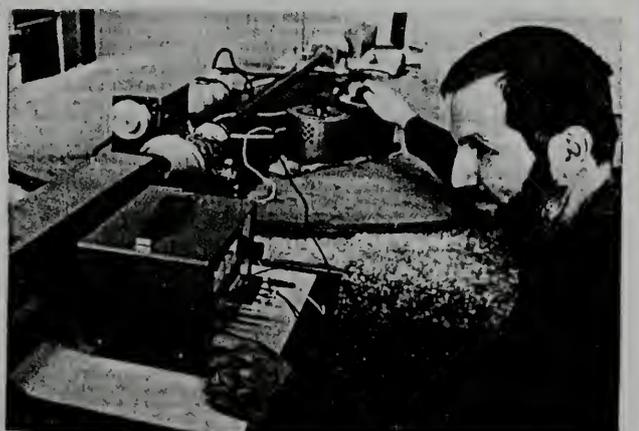
крупную дотацию на конструкцию машины с замкнутой циклом (т.е. «перпетуум мобиле»). От этих людей я узнал, что департамент Каспера Байнберга (министерство оборонных исследований по «перпетуум мобиле». Мой коллега Адам Тромбли (Сан-Франциско), с которым я разговаривал в Сант-Барбара по телефону, получил от упомянутого департамента уведомление, что если он будет обсуждать эти проблемы с посторонними людьми, то будет осужден по закону о разглашении государственной тайны.

В заключение следует отметить, что когда из Америки после моего посещения д-ра Маддока я звонил ему, сто супруга сказала мне, что он улетел в Вашингтон.

Думаю, что читающая публика в Сиднее заинтересована всем этим, тем более, что я боюсь, как бы чего не вышло, ибо возможно, что после Вашингтона д-р Маддок поедет еще в Москву.

Стефан МАРИНОВ

Editorial note. A couple of days after the publication of this paper Dr. Maddox, indeed, went to Moscow. This is, however, a pure accidental coincidence.



Стефан Маринов измеряет абсолютную скорость Земли

JH/NS  
20 March 1986

Hans Leander  
Proceedings of ILEE  
345 East 47th Street  
New York, NY 10017

cc: Dr Stefan Marinov

Dear Dr Leander:

It was good to talk to you on the telephone the other day. I am writing now merely to confirm that at no stage have I undertaken to publish any of Dr Marinov's scientific papers nor have I, as you reported on the telephone, withdrawn such an undertaking.

What I have agreed with Dr Marinov is that he may publish in Nature a four-page article of a largely biographical character that would be of interest to our readers but whose nature would not lead our readers to suppose that his claims satisfy the many criticisms of Dr Marinov's work that the scientific community will raise.

I am sending a copy of this letter to Dr Marinov.

Yours sincerely,

John Maddox  
Editor

Marinov's note. The attitude of Dr. Maddox to my papers is very strange. During my visit of the editorial office of NATURE on the 12 November 1985 I had a long and very nice conversation with Dr. Maddox. He said me: "Phone me this evening at home. The whole day I shall dedicate to your papers and on the phone I shall tell you my decision." The papers which I have submitted to NATURE at that time were the following: "The perpetuum mobile ADAM" (see p. 324), "The 'current jet' effect" (the essential part of this paper is printed in the paper on p. 82), "The anisotropy of light velocity" (the essential part of this paper is printed in TWT-III, p. 146), "Another kind of perpetuum mobile is discovered" (see p. 322), "Letter of Marinov to Gorbachev" (see p. 337). Dr. Maddox said at the evening on the phone: "I shall publish all your five materials. Send to me a short biographical sketch (I did this in the morning from the Weathrow airport - S.M.) and you will receive the final proofs by an express letter on your temporary address in Tucson, Arizona." As no letter from Dr. Maddox came, I phoned him from Tucson. His answer was: "I could not prepare the proofs, I shall send them on your temporary address in Sydney. When you will arrive there, the proofs will await for you!" As again no letter came, I sent a letter, a second letter, a telegram, a second telegram, a third telegram, as I could not "catch" Dr. Maddox on the phone and spoke only with his secretary, wife and daughter. Finally he phoned me on the 5 February 1986 (see p. 316) and said that he will publish only four pages of me, and that I have to write this article de novo. Returning to Austria, I sent such an article on the 4 March (see a revised version TWT-III). In a phone conversation in March Dr. Maddox said to me that the article needs some corrections and he will send the paper back, so that I personally, under his suggestions, introduce these corrections. However until today (the 21 June) he does not send me the article for corrections, although every week I speak with him or with his secretary once or twice, paying for the calls the money which I need for my every day bread. His promises are of the kind: "The paper will be sent tomorrow." Or: "The paper will be sent today." Or: "The paper will be sent today before two O.O." When I visited Dr. Maddox, I was impressed by his goodness, intelligence, kindness and fine English education. He is an amazingly charming man. Why then he acts in such a "strange" manner? This was, is and will remain an enigma for me.

Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
29 March 1986

Dr. T.W.B. Kibble  
Europhysics Letters  
Blackett Laboratory  
Imperial College  
Prince Consort Road  
London SW7 2BZ

Dear Dr. Kibble,

Thank you very much for your letter of the 29 January 1986, Ref. G 124, which I read after returning from my world-around-trip (USA, Australia, and many European countries).

I disagree with both referees' reports on my paper ON THE ABSOLUTE ASPECTS... Here are my comments:

Both referees suggest a rejection of the paper on the ground that I have neither done the proposed experiment neither I intend to do it. That is MY AFFAIR which experiments have I to carry out and which not. I do experiments only in the case WHEN I DO NOT KNOW THE RESULT WHICH THE EXPERIMENT WILL DEMONSTRATE. I have other things to do; there are people who do and redo obvious experiments. I finance ALL MY EXPERIMENTAL ACTIVITY by my own money, and I have to think and rethink pretty well before throwing money in doing an experiment. Since 10 years that I am in the West I have not received a single cent for my experimental, theoretical, publication (10 books) and organization (ICSTA) activity. In such terrible living conditions (I have not citizenship or asylum and live as a vagabond), paying ANY BOLT by my own money, I did so many EXCELLENT experiments which have shown the invalidity of three fundamental physical principles: of relativity, equivalence, and conservation of energy. All this is WELL KNOWN to my fellows in the scientific community. And when I read the following words in yours referee's report:

...the author states that he has not done this experiment and that he will not do it! This attitude seems to me so outrageous that his contribution is not to be taken seriously,

I remain deeply offended.

I resubmit my paper in a slightly changed variation. In the beginning of 1985 this paper was submitted to NATURE and rejected. I enclose my letter to Dr. Maddox of the 12.II.85, the letter of Dr. Maddox to me of the 8.III.85 with which he has answered the questionnaire given in my 12.II.85-letter and which is reproduced in that letter, and my letter to Dr. Maddox of the 15.III.85 in which I comment his answers. I beg you, Dr. Kibble, to suggest to both your referees to answer my questionnaire. I shall accept a rejection of the paper only in the case if at least one of the referees gives at least one answer different of those suggested by me. If the questionnaire will be not answered and the paper will be rejected, I present you, dear Dr. Kibble, the expression of my DEEPEST INDIGNATION.

I wish to hope that finally my papers will again begin to be accepted in the physical journals.

Sincerely yours,



Stefan Marinov

In the case that some of the referees will give answers different of those proposed by me, I beg you to send the answers to me and TO DISCLOSE the name of the referee. Science is NOT a detective story.

The paper is resubmitted in two copies.

**IEEE**

**PROCEEDINGS OF THE IEEE**

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.  
345 EAST 47TH STREET, NEW YORK, N.Y. 10017-2394, U.S.A. TELEX 237936

DIRECT NUMBER (212) 705-7906

April 14, 1986

Dr. Stefan Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Austria

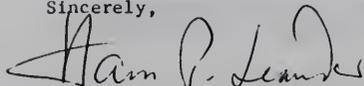
Papers: "The Perpetuum Mobile ADAM", and "The 'Current Jet' Effect"  
by Stefan Marinov

Dear Dr. Marinov:

I am writing to you in regard to the above-mentioned papers that you recently submitted to the PROCEEDINGS OF THE IEEE for consideration. As the first step in the review process, we sent copies of the manuscripts to a member of the PROCEEDINGS Editorial Board for initial review. Rather than assigning people competent to conduct a detailed technical review, the Board Member has concluded that the papers are not appropriate for the PROCEEDINGS OF THE IEEE.

We appreciate your courtesy in having given the PROCEEDINGS the opportunity to consider the papers.

Sincerely,



Hans P. Leander  
Technical Editor

**NUOVO CIMENTO**

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Austria

May 19, 1986

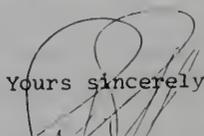
Dear Doctor Marinov,

as we have stated many times in the past, we are not interested in your articles.

Therefore, under separate cover, we are returning your papers submitted with your letter of May 12, 1986.

Best regards.

Yours sincerely

  
Paolino Papali  
Publication Secretary

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY



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23rd April 1986

Dr. S. Marinov  
Niederschöcklstr. 62  
A-8044 Graz  
Austria

Dear Dr. Marinov,

Ref: G 124 "On the Absolute Effects .."

The additional material you sent has been examined by both referees. Neither sees any reason to change his earlier evaluation.

Accordingly I cannot accept your paper for publication.

Yours sincerely,

A handwritten signature in cursive script, reading "T.W.B. Kibble", with a horizontal line underneath.

T.W.B. Kibble

cc. Mrs. Bouldin

Marinov's note. After having addressed many questionnaires to my critics and referees and obtained their answers, I discovered the following LAW: Those people who answer my questionnaire have not understood that they are wrong and honestly defend their wrong standpoint. Those people who do not answer the questionnaire have understood that they are wrong and dishonestly refuse to confess their failure. And unwillingly the words of a protagonist in a Shakespeare's drama come to my mind (I forget the name of the protagonist and the title of the drama):

To be stupid and honest,  
or to be clever and dishonest? -  
Is there a honest man to choose  
the second of these alternatives,  
is there a clever man to choose the first?

ANOTHER KIND OF PERPETUUM  
MOBILE IS DISCOVERED  
from Stefan Marinov

Finally J. Newman has published his book **THE ENERGY MACHINE OF JOSEPH NEWMAN** (Editor Evan Soule, New Orleans, LA, 1984, in sale since August 1985) and the world can learn what he has invented. Newman has constructed several machines, one of which has a coil weighing 2 tons and a rotating permanent magnet weighing 300 kg. I shall describe the smaller machine shown in the photograph. The coil weighs 66 kg and represents a simple cylindrical solenoid with an Ohmic resistance of 50,000 Ohm. The permanent magnet weighs 6 kg and can rotate about an axle passing through its middle point. The commutator is solid to the magnet and two brushes leading to the battery as well as two brushes leading to the coil slide on it. For half a revolution the current in the coil flows in one direction and for the other half in the other direction, so that a continuous rotation of the magnet is realized. During half a revolution the commutator interrupts the contact between battery and coil 30 times, so that for  $10 \times 6^\circ = 60^\circ$  the battery is connected to the coil, for  $10 \times 6^\circ = 60^\circ$  battery and coil are disconnected at open coil, and for  $10 \times 6^\circ = 60^\circ$  battery and coil are disconnected at shorted coil. In difference to the motors in common use, a very feeble current flows in Newman's coil, and the electric power consumed is very low. If a 300 V battery is connected up, then at rest of the magnet a current of 6 mA flows (consumed power 1.8 W). At the operational speed of 136 r.p.m. the resistance of the coil increases to 230,000 Ohm and the current streaming from the battery is 1.3 mA (consumed power 0.4 W). Although the feeding current is very feeble, because of the large number of the windings, the magnetic field of the coil is enough strong, and the driving torque acting on the permanent magnet is sufficient to drive it and to overwhelm the friction. In the conventional machines a magnet interacts with a current wire put in a narrow magnet's slot and the motor and generator effects are reciprocal. In Newman's machine there is an interaction between two magnets, the one of which is an electromagnet, so that a pole-changing can be done; as this machine has efficiency higher than 100%, the motor and generator effects are not reciprocal. It seems even that there is not "backward" but "forward" induced tension, as the exhaustion of the battery is extremely slow. Newman's machine has many sensational aspects, but, I think, only the mentioned above are sufficient to suscite the curiosity of any man who is familiar with electromotors and with the consumed electric powers. In the book there are many obvious errors and contradictions, the presentation is clumsy and sometimes even irritating, the physical background of the author is very limited, but the fact is that Newman has invented something what the learned sages have not done.

The measurements performed on Newman's machine by several persons whose minds are not petrified by the "horror motus perpetui" show clearly that this machine has a very high "perpetuum mobile" effect. I wonder why since five years Neman tries to persuade the world that his machine has a greater energy output than an energy input, instead to couple his motor to a generator which will supply the current feeding the coil, and then even the idiots will see that he has invented a very strange machine.

The tension induced in the coil during the rotation of the permanent magnet is motional-transformer (my term). As I showed (**THE THORNY WAY OF TRUTH**, Part II, East-West, Graz, 1984), the motional-transformer induction in general is not reciprocal to the motional induction (which appears when the magnet is at rest and the coil rotating), although conventional electromagnetism, following Einstein's wrong trend, considers these two inductions as reciprocal. I gave the formula for the motional-transformer induction, the calculation with which poses in general big mathematical difficulties, as it is also the case with Newman's machine. Thus now the task is to reconstruct Newman's machine in well equipped laboratories and to measure all its parameters, so that a clear picture of the appearing induction phenomena can be drawn. Of course, the first thing to be done is to couple Newman's motor to a generator and to run it eternally.

Many persons in the world (predominantly in the USA) have reported of having constructed apparatus which show "perpetuum mobile" effects. I coupled several motors and generators manifesting "perpetuum mobile" effects and demonstrated creation of energy from nothing. Only because of a terrible lack of money I cannot ameliorate their parameters, so that at the operation speed the induced tension should become higher than the driving tension. Newman constructs his machines with the help of his beloved wife in a garage, other in their kitchens when their beloved wives go to sleep, I do the research in a stall where I am earning my bread as a groom. When finally the representatives of the establishment will, if not repeat, at least come to see what our machines demonstrate? After inviting some Graz professor to see my apparatus, the unique answer which I have until now heard was always the story about the famous decision taken by the Academy of Sciences in Paris before the Great French Revolution. To all those sceptical learned sages I am addressing Newman's words: "Without curiosity scepticism rapidly decays into cynism."

Stefan Marinov is Director of the Laboratory for Fundamental Physical Problems, Sofia, Bulgaria and of the Institute for Fundamental Physical Problems, Niederschöcklstraße 62, A-8044 Graz, Austria.

## Chapter 6

### DESCRIPTION OF SMALLER UNIT

#### WITH AN AFFIDAVIT BY DR. ROGER HASTINGS

The following is a smaller unit (see photograph 15-C2 below) composed of 30-gauge, insulated, copper wire weighing approximately 145 lbs. (atoms) and having a rotating magnet of 14 lbs. (atoms). This portable unit, with very little current input, clearly demonstrates an energy output which is greater than the external energy input. With 300 volts input of pressure, only 1½ milliamps of current (volume of gyroscopic particles) went into the copper coil (of atoms), which is less than ½ watt input for an energy output in excess of 10 watts.

Photograph 15-C2:

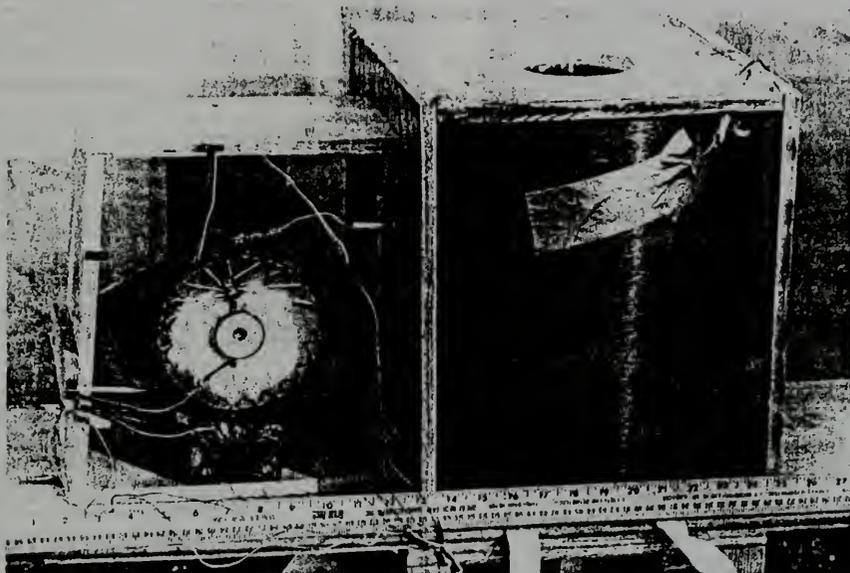


PHOTO BY MATT ANDERSON

See below copy of a test conducted by Dr. Roger Hastings utilizing the 15-C2 unit.

Editorial note. Above is reproduced p. 36 of Newman's book with the photograph of Newman's smaller machine described by Marinov on the preceding page.

Marinov's note. After visiting the US and having spoken with many persons (including two Newman's confident men) I remained highly dubious that he has invented a perpetuum mobile.

# The perpetuum mobile ADAM

Stefan Mariaov

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I give the description of my new machine ADAM and the account on the performed measurements which show clearly that the machine creates energy from nothing. The machine ADAM represents a cemented Faraday disk coupled with a König-Marinov motor. The best results are obtained when the solid metal Faraday disk is substituted by a "mercury" disk. As at the reachable rate of rotation the tension produced by the generator minus the back tension of the motor is still less than the driving tension which has to maintain the rotation, the machine could be not run eternally. To run it eternally I need only some \$ 5000.

Bruce DePalma<sup>1</sup> was the first man who observed that the mechanical braking power of the cemented Faraday disk (a copper disk solid to a cylindrical magnet which generates electric tension along its radius when the system is set in rotation by a driving torque) is less than the produced electric power. This effect, confirmed by many persons in the USA and Europe<sup>2,3</sup>, shows that in electromagnetism the energy conservation law can be violated and thus there is a possibility for constructing a *perpetuum mobile*. I coupled mechanically<sup>2,3</sup> a cemented Faraday disk to an uncemented Barlow disk (a copper disk which rotates in front of a cylindrical magnet solid to the laboratory when a driving electric tension is applied to the disk's radius) with the aim to observe creation of energy from nothing.

I shall make a short theoretical analysis supposing that the laws of conservation are valid (at the present time equations can be written only on the basis of those laws!). I shall suppose first that the magnetic field throughout the Barlow disk is originated by the magnet of the cemented Faraday disk, that the Barlow disk is placed in an immediate neighbourhood of the Faraday disk, so that at any point of both disks (whose radii,  $R_0$ , are equal) the magnetic intensity,  $B$ , is the same and uniform, and that both disks have independent rotational degrees of freedom.

At a disconnected electric circuit (the brushes sliding on the rims of both disks are connected electrically through a chopper and the disks' centers are connected electrically through the axle), we set the Faraday disk in rotation with an initial angular velocity  $\Omega_{in}$ , leaving the Barlow disk at rest. When closing the circuit, an electric current will begin to flow whose ponderomotive action will be braking for the Faraday disk and driving for the Barlow disk. After a certain time,  $T/2$ , the velocities of both disks will become equal, and with this final angular velocity  $\Omega_{fin}$  they will continue to rotate eternally, as the tensions induced in both disks will become equal and opposite, and the friction of the system is supposed equal to zero. On the ground of the energy conservation law, we can write the following equation for the energy balance  $(E_{kin})_{fin} - (E_{kin})_{in} = E_e$ , having on the left side the kinetic energy lost by the system and on the right side the electric energy converted into a Joule heat in the circuit whose Ohmic resistance is  $R$ , i.e.,

$$\frac{1}{2} J \Omega_{in}^2 - J \Omega_{fin}^2 = \int_0^{T/2} \left(\frac{1}{R}\right) (U_F - U_B)^2 dt \quad (1)$$

where  $U_F = (1/2) BR_0^2 \Omega_F$  and  $U_B = (1/2) BR_0^2 \Omega_B$  are the tensions induced in the Faraday and Barlow disks,  $\Omega_F$  and  $\Omega_B$  are their angular velocities, and  $J$  is the moment of inertia of the cemented Faraday disk (disk and magnet) which is supposed to be equal to the moment of inertia of the Barlow disk (only disk). If we make the assumption (see beneath the right way to solve the problem) that  $\Omega_F$  decreases linearly with time and  $\Omega_B$  increases linearly with time, we can write  $\Omega_B = kt$ ,  $\Omega_F = k(T-t)$ ,  $\Omega_{in} = kT$ , where  $k$  is a constant, and according to the law of angular momentum conservation we shall have  $\Omega_{in} = 2\Omega_{fin}$ , so that equation (1) will give

$$T = \frac{6 J R}{B^2 R_0^4} \quad (2)$$

and  $(1/2)(E_{kin})_{in}$  is transformed into heat, while  $(1/4)(E_{kin})_{in}$  is transferred from the Faraday disk to the Barlow disk.

It is easy to see that if the Barlow disk is solid to the laboratory, then the Faraday disk will come to rest during a time  $T$  given by formula (2), and the whole initial kinetic energy will be transformed into heat.

The energetic aspect of this experiment is exactly the same as of inelastic collision of two equal masses, the one being before the collision at rest and the other moving. The case when the Barlow disk is solid to the laboratory corresponds to an inelastic collision between a mass and a "wall". In our experiment, however, there is no interaction between the Faraday and Barlow disks. The interaction is only between the electrons flowing along the radii of both disks and the cylindrical magnet, which can be supposed also solid to the laboratory.

We can replace the Barlow disk by a cylindrical cup filled with mercury. If the friction between the molecules of the mercury will be bigger than the friction between the mercury and the walls of the cup, and if we suppose that the last friction is zero, the mercury in the cup will be set into a rotational motion in the form of a liquid disk (the ponderomotive action of current on mercury was observed first by Davy<sup>4</sup>). If the moment of inertia of the mercury will be  $J$ , all will look as above.

All above predictions can be done on the basis of the conservation laws. But the experiment shows that Nature does not obey those laws. It turns out that the electrons streaming along the radii of the Faraday disk cannot brake its rotation to the degree required by the laws of conservation, neither the electrons streaming along the radii of the Barlow disk can transmit to the disk (solid or liquid) the whole their tangential momentum acquired under the action of the magnetic field. I have confirmed experimentally only the first statement. The second statement is confirmed neither by me nor by other persons and until that time it remains only my *intentional prediction*.

To give a physical explanation of these phenomena, let us analyze first the ponderomotive action of an electric current flowing in a wire which is put in a magnetic field directed perpendicularly to the wire. The motional electric intensity

$$E = v \times B \quad (3)$$

where  $v$  is the velocity of the current conducting electrons (I showed<sup>5</sup> theoretically and experimentally that the energy velocity of the current conducting electrons in a wire is equal to light velocity), will push the unit charges perpendicularly to  $v$  and  $B$ , and on the one wall of the wire, which is parallel to the plane  $(v, B)$ , the number of the electrons will begin to increase, while on the opposite wall it will begin to decrease, until the moment when the generated potential difference will become equal to the induced tension, which is called *Hall tension*. The Hall effect is, obviously, an electromotive effect. What will, however, succeed if the wire has a motional degree of freedom in a direction perpendicular to its length? — On the current conducting electrons two forces will act: a repulsive force from the part of the exceeding electrons on the one wall and an attractive force from the part of the exceeding positive ions on the other wall. The sum of these two forces will be balanced by the magnetic force (3) which acts in the opposite direction. But on the exceeding electrons and positive ions on the walls only the Coulomb repulsive, respectively attractive, forces from the part of the current conducting electrons will act. As the exceeding electrons cannot leave the wire and the positive ions are solidly connected to the "wire", the whole wire will begin to move. It is obvious that in such a case the whole electromotive momentum acquired by the current conducting electrons under the action of the electric intensity (3) will be transformed into a ponderomotive momentum absorbed by the wire.

In the case of a Barlow disk, however, the mechanism of transformation of the electromotive momentum to ponderomotive momentum is different and can be explained only by the help of the "current jet" effect, which I recently discovered and

observed<sup>2</sup> in different experiments, the most eloquent of which is the "ball-bearing" motor<sup>2,3</sup>. In the Barlow disk the motional electric intensity (3) pushes the current conducting electrons perpendicularly to the radius, while the external driving tension pushes them along the radius. The electrons, after having acquired some tangential velocity, hit the ions of the disk (of the copper or of the mercury) and transmit to them their acquired momentum (I call this the "current jet" effect). The electrons will transmit to the disk the whole acquired tangential momentum only when they leave the disk in radial direction. Many of the electrons, however, leave the disk not in radial direction but with some tangential velocity also and they transmit the acquired momentum to the sliding contacts which are solid to the laboratory. For this reason the disk does not absorb the whole tangential momentum acquired by the electrons during their flight along the disk's radii.

Until now the problem whether the braking of the cemented and uncemented Faraday disk (as well as the driving of the cemented and uncemented Barlow disks) is the same is *not* solved by the experiment. I suppose that the effects in the cemented and uncemented disks (Faraday or Barlow) must be the same, but the last word has the experiment.

In my experiment<sup>2,3</sup> the Faraday disk was solid to the Barlow disk which had its own magnet solid to the laboratory. It seemed to me<sup>2</sup> that in my experiment energy was created from nothing but the effect was too feeble and my experimental and measuring possibilities at that time were very limited (I had no revolution counter and I measured the braking times on my wrist-watch). Now my machine is in Athens.

To obtain firm experimental results, recently I constructed the machine ADAM (Apparatus Discovered in Austria by Marinov) where the cemented Faraday disk is coupled with a König-Marinov motor<sup>2</sup> (Fig. 1). I chose the König-Marinov machine as motor, as I think that it delivers kinetic energy equivalent to the consumed electric energy (under "consumed electric energy" I understand only the product of current, back tension and time, but not the Ohmic losses which theoretically (as the friction) can be assumed equal to zero). The photograph of the machine ADAM is shown in Fig. 2.

The cemented Faraday disk, which has two permanent ring magnets, is above, the König-Marinov machine, which has an electromagnet, is beneath. I shall speculate for magnets' polarities as shown in the figure. The polarities can be reversed: of the König-Marinov motor by changing the direction of the current feeding the electromagnet, of the Faraday generator by turning over the magnets. The electromagnet with the axle of the apparatus is solid to the laboratory. The yoke of the König-Marinov machine, to which the Faraday disk is solid, can rotate on two ball-bearings which have small sizes and consequently small friction.

Let us first see how the machine works as a motor, supplying a driving tension to it as shown in Fig. 1. The current goes from the positive electrode up through the large upper mercury trough, then along the radii of the disk (which now serves as a Barlow disk), then down through the small mercury trough, and reaches the negative electrode. It is easy to see that the torque on the disk will be clockwise (if looked from above), while the torque on the yoke will be counter-clockwise. Thus the machine will rotate in this direction in which the torque is stronger.

Let us now see how the machine works as a generator, rotating it by an external torque (I used a boring machine as shown in Fig. 2). If the torque is clockwise, the Faraday disk will drive the positive charges to the positive electrode, while the König-Marinov machine will drive the positive charges to the negative electrode. Thus current will flow in this direction in which the induced tension is stronger.

Let us finally see how the machine works as a perpetuum mobile (or shows a perpetuum mobile effect, as was in my case), giving to it an initial clockwise rotation and short-circuiting its electrodes. The short-circuiting can be made in two manners: (i) by pouring mercury into the large lower trough or (ii) by the help of the band which can be seen in Fig. 2 and which encompasses the outer walls of both large troughs (I used the second method). One makes the

tension  $U_F$  produced by the Faraday generator bigger than the tension  $U_K$  produced by the König-Marinov motor by tuning the current feeding the electromagnet. The best relation between  $U_F$  and  $U_K$  at which the greatest part of the electric energy produced by the generator is transformed into kinetic energy by the motor is  $U_F = 2U_K$ . Indeed the driving torque,  $M$ , of the König-Marinov motor is proportional to the current  $I = (U_F - U_K)/R$  and to the magnetic intensity  $B_K$  produced by the electromagnet. As  $U_K \sim B_K$ , we can write  $M \sim U_K(U_F - U_K)/R$ , and imposing the condition for maximum  $dM/dU_K = 0$  at a given  $U_F$ , we find  $U_K = U_F/2$ . We have  $U_F = (1/2)B_K R \Omega^2$ , where  $B_K$  is the magnetic intensity produced by the permanent magnets in the gap between them,  $R = R_{out}^2 - R_{in}^2$ , where  $R_{out}$  and  $R_{in}$  are the outer and inner radii of the ring magnets, and  $\Omega$  is the angular velocity of rotation. Further we have  $U_K = B_K R_K h \Omega$ , where  $R_K$  is the radius of the cylindrical conductor passing through the poles' gap, whose height is  $h$ . The electrical current flows along the outer conductors downwards and along the inner conductors upwards, being braking for the Faraday disk and driving for the König-Marinov yoke. At the condition  $U_F = 2U_K$ , we obtain for the time in which the machine will come to rest, if assuming zero friction and performing calculation as above,  $T = 24R R_K^2 R_{in}^2 / J$ , where  $J$  is the moment of inertia of the rotor. This value for  $T$  (as well as the value for  $T$  in formula (2)) is obtained at the assumption that  $\Omega = 2\pi N$ , where  $N$  is the number of revolutions per second, decreases linearly with time. This assumption, however, is not true. In the equation  $2\pi N = k(T - t)$ , the coefficient  $k$  is a function of  $N$ , namely,  $k$  is big for  $N$  big and  $k$  is small for  $N$  small, as at big  $N$  the braking power is big, while at small  $N$  the braking power is small. Thus the time  $T_1$  in which the rotor comes to rest when being set in rotation with  $N_1$  r.p.s. can be found from the graph shown in Fig. 3. For any point  $N_1$  (for which  $k_1 = 2\pi N_1/T$ ) I drew the graph of the function  $N_1 = f(T)$  so that the tangent to the graph and the ordinate cut on the abscissa a segment equal to  $T$  (see beneath the value of  $T$  obtained for my experiment). For the points  $N_1$  I chose the velocities 5, 10, 15, . . . r.p.s. and then I connected the points  $(T_1, N_1)$  with a smoothed line.

By applying a tension  $U$  to the machine and measuring the flowing current  $I$ , I found its internal resistance  $R_{int} = U/I = 90 \mu\Omega$ . With the increase of the rotational velocity (driving it by the boring machine when the permanent magnets were taken away and the electromagnet was not feeded) the internal resistance remained quite the same. Taking out the rotor and making short circuit between the electrodes, I measured in the same way the external resistance  $R_{ext} = 10 \mu\Omega$ , so that  $R = R_{int} + R_{ext} = 100 \mu\Omega$ . The tension produced by the Faraday disk at 10 r.p.s. was 23 mV, i.e., at this rate of rotation, if not feeding the electromagnet, the flowing current was 230 A. The magnetic intensity  $B_K = 0.1$  T was found from the formula  $U_F = (1/2)B_K R \Omega^2$  by measuring  $U_F$  at different  $\Omega$ , and taking into account that  $R_F = 8.5$  cm. The moment of inertia  $J = 0.065$  kg m<sup>2</sup> was calculated from the geometry of the rotor and the specific gravity of the used metals. Thus I calculated  $T = 300$  s = 5 min.

I constructed two types of Faraday disks. The first (shown in Fig. 1) is the usual Faraday disk made of solid metal. I took soft iron but I think that better results (i.e., smaller electromagnetic drag) would be obtained if the metal is not magnetic, say, copper or brass. The second Faraday disk was made of mercury in the following way: In the metal disk I excavated a ring-shaped trough with  $R_{out} = 9$  cm and  $R_{in} = 3.6$  cm (the outer and inner radii of the ring magnets, with which I calculated  $R_F$  were 9.2. and 3.6 cm), whose bottom and internal cylindrical surface were covered with insulator. I filled the trough with mercury and covered it with a pertinax ring, glueing the latter to the "through". A thin insulated metal cylinder made contact of the inner part of the mercury with the cylinder holding the ball-bearings (see Fig. 1), so that the whole current passed through the mercury and no current passed through the metal "through".

I carried out the measurements presented in Table 1, setting the rotor in rotation by the help of a boring machine and registering the rate of rotation (column 1) by an optico-electronic revolution

**Table 1** Braking times of the machine ADAM for different rotational rates

Revolutions per second of the rotor $N_i$	Calculated braking times $T_i$ in seconds	Measured braking times $T_i$ in seconds								
		Open machine with metal or mercury Faraday disk			Short circuited machine with metal Faraday disk			Short circuited machine with mercury Faraday disk		
		Motor +	Motor 0	Motor -	Motor +	Motor 0	Motor -	Motor +	Motor 0	Motor -
10	570	54	53	35	50	42	20	54	51	33
20	760	71	69	46	65	51	26	72	68	42
30	880	93	90	65	87	62	35	102	89	56
40	960	115	112	86	111	74	44	128	110	62
50	1030	131	129	100	129	90	52	151	128	75
60	1080	140	138	110	139	101	60	171	135	82

counter at the moment of starting of a stop watch which was stopped at the moment when the rotor came to rest. In the second column are given the braking times of the rotor taken from Fig. 3, i.e., at the assumption that there is no mechanic friction and that the energy conservation law is valid. As the moment of inertia of the mercury disk was about one tenth part of the moment of inertia  $J$  of the whole rotor, then making the supposition that the friction between the mercury and the "trough" is zero and that the whole mechanic energy which will cover the produced electric energy will come from the kinetic energy of the mercury, we come to the conclusion that the braking times of the mercury disk will be one tenth of the times given in column 2.

In columns 3, 4, and 5 are given the braking times of the rotor with metal or mercury Faraday disks when no current flows, respectively, when the electromagnet is feeded leading to magnetic polarity as in Fig. 1, i.e., when the torque of the König-Marinov motor supports the rotation (motor +), when the electromagnet is not feeded, i.e., when the König-Marinov motor has no driving torque (motor 0), and when the electromagnet is feeded leading to magnetic polarity opposite to that shown in Fig. 1, i.e., when the torque of the König-Marinov motor brakes the rotation (motor -). In columns 6, 7, and 8 are given the braking times of the rotor with metal Faraday disk when current flows, respectively for "motor +", "motor 0" and "motor -". In columns 9, 10, and 11 are given the braking times of the rotor with mercury Faraday disk when current flows, respectively for "motor +", "motor 0" and "motor -". The deviations of the braking times from the indicated values were never more than  $\pm 1$  s. Only the braking times of the open machine with mercury Faraday disk had deviations reaching  $\pm 3$  s from those given in the table which are the times registered for the open machine with metal Faraday disk.

The braking times in columns 3, 4, and 5 must be equal. This was not so in my machine, because when the electromagnet was feeded leading to a magnetic polarity opposite to that shown in Fig. 1, it attracted the permanent magnets and the whole iron rotor and increased the friction. When the electromagnet was feeded leading to a magnetic polarity as in Fig. 1, there was only a very slight repulsion of the rotor with respect to the case when the electromagnet was not feeded, so that the figures in the columns 3 and 4 are almost the same.

It is clear that the machine creates energy from nothing. This is evident comparing the last figures in columns 3 and 6 which are almost equal. Meanwhile the short-circuited machine has produced also Joule heat for which no kinetic energy equivalent can be found. However, comparing columns 3 and 9 no doubts can remain that energy was created from nothing, as the braking times of the short-circuited machine were even bigger than the braking times of the open machine. According to the energy conservation law, the braking times of the short-circuited machine must always be less than the braking times of the open machine.

Comparing column 4 with column 10 we see that the braking of the mercury Faraday disk is practically zero. Comparing columns 4 and 7 we see that the braking of the metal Faraday disk is considerable.

When accelerating the rotor with the boring machine, the tension produced by the metal Faraday disk increased more rapidly than the tension produced by the mercury Faraday disk. This signifies that the mercury begins to rotate with a certain retardation. However, if once the rotor is set in a steady rotation, then the short-circuiting of the machine did not diminish the produced tension (I measured the potential drop over the external resistance). This signifies that the braking Biot-Savart forces acting on the mercury disk (as far they exist) are less than the dragging force coming from the part of the rotating "trough".

The parameters which must be ameliorated, so that the braking times in column 9 should become infinitely large (and thus the machine should run eternally) are the following: 1) diminution of the mechanic friction, 2) increase of the generated tension, 3) diminution of the Ohmic resistance. Another amelioration which will be (I hope) very effective is the following: The mercury from the outer trough in Fig. 1 is to be dragged by the rotating disk; the current then is to be taken from the rotating mercury by a metal ring solid to the laboratory.

Since 10 years the scientific community covers with silence my historic experiments<sup>5,6,7</sup> with which I demonstrated violations of the principles of relativity and equivalence. This time the scientific community will be unable to cover the above experiment, demonstrating a violation of the energy conservation law, either 10 months, or even 10 weeks.

1. DePalma, B. *Energy unlimited* No. 5, p. 17 (1980).
2. Marinov, S. *The Thorny Way of Truth*, Part II (East-West, Graz, 1984).
3. Marinov, S. *Nature* 317, p. xii (26 Sept. 1985).
4. Davy, H. *Phil. Trans.* p. 153 (1823).
5. Marinov, S. *Czech. J. Phys.* B24, 965 (1974).
6. Marinov, S. *Gen. Rel. Grav.* 13, 57 (1980).
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**Fig. 1** A diagram of the perpetuum mobile ADAM

**Fig. 2** The author sets the perpetuum mobile ADAM in rotation. At the right down corner of the photograph two parts of the band for the short-circuiting of the machine can be seen. At high rotational speed the upper trough was covered by a cylinder (not shown in the photograph) to avoid the sprinkling of the mercury.

**Fig. 3** A graph giving the dependence between the braking times of the rotor,  $T_i$ , and the rates of rotation,  $N_i$ , at the supposition that there is no mechanical friction and the law of energy conservation is valid.

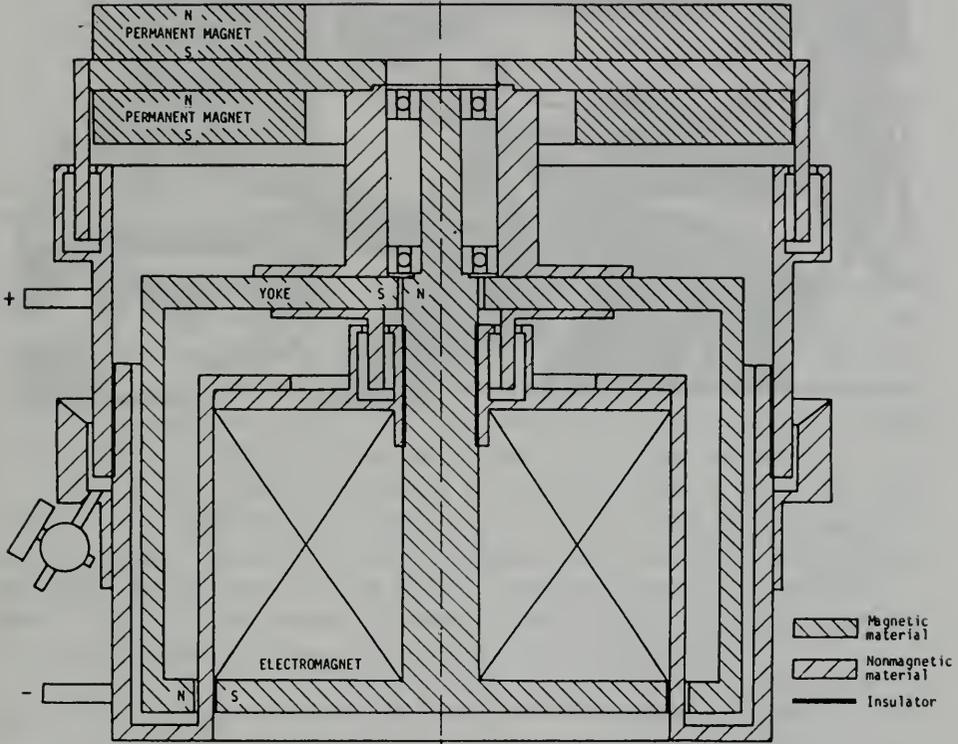


Fig. 1



Fig. 2

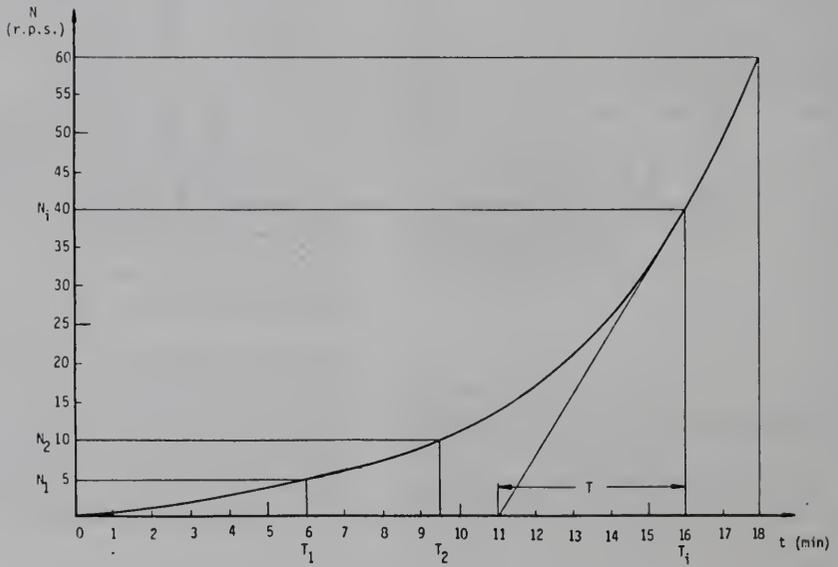


Fig. 3

ON THE ABSOLUTE ASPECTS OF THE ELECTROMAGNETIC INTERACTIONS

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Abstract. By measuring the static electric tension induced in a piece of wire put between two parallel current lines, one can verify many of my predictions about the absolute character of the electromagnetic interactions and easily measure the Earth's absolute velocity.

According to my absolute space-time theory<sup>1,2</sup>, the electromagnetic interactions depend on the absolute velocities of the particles, but not on their relative velocities, as the theory of relativity asserts. Until now absolute effects for translational motion have been observed only in my optical experiments, with the help of which I succeeded to measure the Earth's absolute velocity in a closed laboratory<sup>3-5</sup>. Electromagnetic absolute effects have been observed only for rotational motion. Such is, for example, the cemented Faraday disk (a cylindrical metal disk rotating together with a cylindrical magnet about the common symmetry axis) which generates electric tension (and, consequently, if sliding contacts are used, also electric current), although there is no relative motion between the metal disk and the magnet.

In refs. 2 and 5 I deduce the equation of motion of an electric charge when considered in a laboratory moving in absolute space, calling it the relative Newton-Lorentz equation. The well-known Lorentz equation is called by me the absolute Newton-Lorentz equation and it is true only in a laboratory which rests in absolute space. I show<sup>2</sup> that the present experimental evidence gives a categorical support to the relative Newton-Lorentz equation which has the following form

$$\frac{d}{dt} \left[ \frac{(m/q)(\vec{v} + \vec{V})}{[1 - (\vec{v} + \vec{V})^2/c^2]^{1/2}} \right] = - \text{grad}\phi \left( 1 - \frac{\vec{v} \cdot \vec{V}}{c^2} \right) - \frac{\partial \vec{A}}{\partial t} + \vec{v} \times \text{rot} \vec{A} + \vec{V} \times \text{rot} \vec{A} + (\vec{V} \cdot \text{grad}) \vec{A}, \quad (1)$$

where  $m$  and  $q$  are the mass and the electric charge of a particle moving with a velocity  $\vec{v}$  in the laboratory, while the velocity of the laboratory in absolute space is  $\vec{V}$ .  $\phi$  and  $\vec{A}$  are the electric and magnetic potentials of a system of surrounding charges measured in the laboratory space point which at the moment in consideration is crossed by the particle, thus they are the relative (or laboratory) electromagnetic potentials. The equation (1) is written within an accuracy of first order in  $V/c$ .

In the overwhelming number of cases, the last two terms on the right side of (1) cancel out, and only the relative electric potential remains associated with the laboratory's absolute velocity, while the relative magnetic potential is no more as-

sociated with it. Consequently, in these cases one can not register the laboratory's absolute velocity by observing "magnetic effects". Conventional electromagnetism calls the effects associated with  $\text{grad}\phi$  and  $\partial\vec{A}/\partial t$  electric, and those associated with  $\text{rot}\vec{A}$  magnetic. This categorization has certain logical grounds (especially when using the 4-dimensional formalism), however, according to me, there are more logical grounds to call electric the effects associated with  $\phi$ , and magnetic the effects associated with  $\vec{A}$ .

In this paper, analysing a very simple experiment (for which the last two terms in (1) do not cancel one another), I shall show how one can register the laboratory's absolute velocity by observing laboratory magnetic effects.

First, however, let me briefly note that in my theory I work with two substantially different invariances: 1) The Lorentz invariance concerns an observer at rest in absolute space who describes the motion of a particle moving first with a velocity  $\vec{v}$  with respect to absolute space, and then with another velocity  $\vec{v}'$ . 2) The Marinov invariance concerns a particle moving with a velocity  $\vec{v}$  in absolute space which is observed first by an observer at rest in absolute space and then by another observer moving with a velocity  $\vec{V}$  in absolute space. According to the theory of relativity, if  $\vec{v} - \vec{V} = \vec{v}'$ , those two cases are physically identical, but unfortunately this is not true, because in the first case the particle changes its velocity and thus its energy and momentum change, while in the second case energy and momentum of the particle remain unchanged. Consequently the Lorentz invariance involves 4-scalars, while the Marinov invariance involves 3-scalars (energy and momentum of a particle are related to absolute space, as I showed with my whole theory<sup>2</sup>).

Secondly let me note that conventional electromagnetism considers only two types of electromagnetic induction:

1) The motional electromagnetic induction which appears when a wire moves with a velocity  $\vec{v}$  in a magnetic field with a magnetic potential  $\vec{A}$ , and where the induced motional electric intensity is to be calculated according to the formula

$$\vec{E}_{\text{mot}} = \vec{v} \times \text{rot}\vec{A}. \quad (2)$$

2) The transformer electromagnetic induction which appears in a wire at rest when the currents in the wires producing the magnetic potential are not stationary, and where the induced transformer electric intensity is to be calculated according to the formula

$$\vec{E}_{\text{tr}} = - \partial\vec{A}/\partial t. \quad (3)$$

I consider a third type of electromagnetic induction which I call:

3) The motional-transformer electromagnetic induction which appears in a wire at rest when the current wires (the magnets) producing the magnetic potential move with a velocity  $\vec{v}$ , and where the induced motional-transformer electric intensity is to be calculated according to the formula

$$\vec{E}_{\text{mot-tr}} = (\vec{v} \cdot \text{grad}) \vec{A}. \quad (4)$$

Conventional electromagnetism does not make difference between the motional and motional-transformer induction, as conventional electromagnetism has embraced the wrong principle of relativity, according to which the physical effects depend only on the relative velocities of the particles, but not (as my theory asserts) on their absolute velocities. Thus conventional electromagnetism calculates the induced motional-transformer electric intensity by the help of formula (2) for the motional induction, considering the magnet at rest and the wire moving with the opposite velocity. This is a historical misunderstanding which was introduced into the electromagnetic conceptions of humanity since the times of Maxwell, and later was canonized by Lorentz, Poincare, and (in the most categorical way) by Einstein.

Formulas (2) and (3) are taken from the Newton-Lorentz equation (1). The induced motional-transformer electric intensity is to be calculated also according to formula (3), but here a direct calculation is impossible, as the magnetic potential at the reference point does not depend directly on time (as is the case for the induced transformer electric intensity), because  $\vec{A} = \sum \vec{A}_i(r_i(t))$  is a function of the distances  $r_i$  between the  $i$ -th current element of the system's wires and the point of location of the test charge, and only because these distances change due to the motion of the respective current element,  $\vec{A}$  changes, becoming thus a composite function of time. Consequently for the case of the motional transformer induction (considering for brevity the electric intensity induced by the motion of the  $i$ -th current element of the wires, but for simplicity in the writing omitting the index "i") the calculation must be performed as follows

$$\vec{E}_{\text{mot-tr}} = - \frac{\partial \vec{A}(r(t))}{\partial t} = - \left( \frac{\partial \vec{A}}{\partial r} \frac{\partial r}{\partial x} \frac{\partial x}{\partial t} + \frac{\partial \vec{A}}{\partial r} \frac{\partial r}{\partial y} \frac{\partial y}{\partial t} + \frac{\partial \vec{A}}{\partial r} \frac{\partial r}{\partial z} \frac{\partial z}{\partial t} \right) = (\vec{v} \cdot \text{grad}) \vec{A}, \quad (5)$$

where  $\vec{v} = -\partial \vec{r} / \partial t$  is the velocity of the  $i$ -th current element of the system and  $\vec{A}$  is the magnetic potential originated by this current element at the reference point. To obtain the net induced motional-transformer electric intensity, one must sum up all elementary induced intensities (5), thus receiving ( $n$  is the number of the current elements)

$$\vec{E}_{\text{mot-tr}} = \sum_{i=1}^n (\vec{v}_i \cdot \text{grad}) \vec{A}_i. \quad (6)$$

If the different current elements have different velocities, the calculation with formula (6) is difficult, however, if the electromagnet represents a rigid body moving with the translational velocity  $\vec{v}$ , formula (6) reduces to the simple formula (4).

Now we can turn our attention to the experiment (fig. 1). Let us have a rectangular loop with breadth  $b$  and length  $d$ , where  $d \gg b$ , and wire's diameter  $b_0$ , along which a constant current  $I$  flows in the indicated direction. Let us assume that the magnetic intensity,  $B$ , generated by the horizontal wires at a point distant  $r$

from the wires is the same as of an infinitely long wire, i.e.,  $B = \mu_0 I / 2\pi r$ , where  $\mu_0$  is the magnetic constant. If in the middle of the loop a wire with length  $b - b_0$ , where  $b \gg b_0$ , is moved with a velocity  $v$  to the right, then an induced motional electric tension with the indicated polarity will appear along the wire, whose magnitude is (take into account that the horizontal current wires of the loop are two)

$$U_{\text{mot}} = \int_{b_0/2}^{b-b_0/2} 2vB dy = \frac{\mu_0 v I}{\pi} \int_{b_0/2}^{b-b_0/2} dy/y \approx \frac{\mu_0 v I}{\pi} \ln \frac{2b}{b_0}. \quad (7)$$

Let us now assume that the vertical wire is kept at rest and the rectangular loop is moved with the same velocity  $v$  to the left. Now the induction will be motional-transformer and the calculation is to be done by using formula (4). The x-component of the magnetic potential,  $A_x$ , will be a function only of  $y$ , the y-component (for  $d \gg |x|$ )

$$A_y = \frac{\mu_0 Ib}{4\pi(d/2+x)} - \frac{\mu_0 Ib}{4\pi(d/2-x)} \approx - \frac{2\mu_0 Ib x}{\pi d^2} \quad (8)$$

will be a function only of  $x$ , and the z-component,  $A_z$ , will be equal to zero. Thus the unique term of the vector gradient (4) which is different from zero gives for the induced electric intensity

$$\vec{E}_{\text{mot-tr}} = v_x \frac{\partial A_y}{\partial x} \hat{y} = \frac{2\mu_0 v Ib}{\pi d^2} \hat{y}, \quad (9)$$

and the induced motional-transformer tension will have the same polarity as shown in the figure. In formula (8) we take into account only the magnetic potential produced by the vertical wires of the rectangular loop because only their potential is directed along the y-axis. The magnetic potential is calculated proceeding from the fundamental formula for the magnetic potential,  $\vec{A} = \mu_0 q \vec{v} / 4\pi r$  produced by a charge  $q$  moving with a velocity  $\vec{v}$ , at a reference point distant  $r$ , assuming  $\sum q_i \vec{v}_i = \vec{I}b$  for all charges moving along the vertical wires of the loop.  $|x|$  is the horizontal distance between the center of the loop and the vertical wire, and we have  $v_x = -v$ . From formula (9) we find the magnitude of the induced motional-transformer tension

$$U_{\text{mot-tr}} = 2\mu_0 v I b^2 / \pi d^2 \approx 0. \quad (10)$$

Thus, for  $d \gg b$ ,  $U_{\text{mot}}$  is much bigger than  $U_{\text{mot-tr}}$  which is almost equal to zero. Thus we see that in this experiment, where only translational velocity is involved, the result is asymmetric: the motion of the wire leads to the appearance of induced electric tension, but the motion of the loop does not. The effects in this extremely simple experiment are thus in a drastic contradiction with the theory of relativity, according to which the effects which can be observed depend only on the relative velocities of the bodies but not on their absolute velocities.

Let me mention that if the tension (7) induced along the vertical wire is measured by a volt-meter, the latter must be at rest in the laboratory and it must be con-

ected by sliding contacts to the extremities of the wire. If the volt-meter will be connected solidly to our wire, then no tension can be measured as an equal and oppositely directed tension will be induced in the wires connecting the volt-meter with the wire's extremities. Consequently, when moving the loop, having wire and volt-meter at rest and registering no induced tension, the relativity can object that tensions are induced in our wire and in the volt-meter's wires, but they annihilate each other. To invalidate this relativistic view-point, the tensions (7) and (10) are to be measured electrometrically, say, attaching gold foils to the extremities of our wire, and calibrating previously their indications by known tensions. If we suppose that the velocity  $v$  is  $0.1 \text{ ms}^{-1}$  and if we choose  $b = 14.8 \text{ cm}$ ,  $b_0 = 0.2 \text{ cm}$ , i.e.  $\ln(2b/b_0) = \ln 148 = 5$ , we obtain from (7), for  $I = 100 \text{ A}$ , taking into account that  $\mu_0 = 4\pi \times 10^{-7} \text{ C}^{-2} \text{ kgm}$ , a tension  $U_{\text{mot}} = 20 \text{ } \mu\text{V}$ . Thus the measuring method with the golden foils will be practically ineffective and we can use the following reliably enough method: We send alternating current through the loop. Since the induced transformer electric tension,  $U_{\text{tr}}$ , which is due to the change of the current in the loop, will be directed perpendicularly to the wire, it will produce no tension along the latter, and the motional inductive electric tension (7) will change its value from  $+U_{\text{mot}}$  to  $-U_{\text{mot}}$  for any half period of the loop's alternating current (the same will be valid also for the tension (10)). Thus, measuring the alternating current flowing through the middle point of the wire and knowing its resistance, capacitance and inductivity, one can easily calculate the tension  $U_{\text{mot}}$  and verify relation (7). For the case of wire at rest and moving loop, the experiment will give  $U_{\text{mot-tr}} = 0$ . Current and power can be calculated similarly as on p. 157 of Ref. 5.

I have not done the experiment and I shall not do it, as one can become sure that the results will be as predicted by me (and thus contradicting the theory of relativity) if one considers the experiment shown in fig. 2 and if one makes a simple "topological" transition from fig. 2 to fig. 1. In fig. 2 we have a double circular loop with radius  $R - b/2$  of the internal circle and  $R + b/2$  of the external circle, assuming  $R \gg b$ , and a wire with length  $b - b_0$  put in right angles between the circles. According to Kennard's experiment<sup>6</sup>, if rotating the wire with a velocity  $v$ , an induced motional electric tension (7) will appear along the wire, while if rotating the double circular loop no tension will appear (take into account that the currents in the parts  $ik$  and  $lm$  of the double circular loop which are very near one to another annihilate mutually their magnetic action, as their directions are opposite).

Let us now see what will succeed if we move the wire and the double circular loop in fig. 1 together. According to Kennard's experiment, if rotating the wire and the double circular loop in fig. 2 together, again the induced tension (7) will appear along the wire (this is obvious as at rest and rotation of the double loop the produced magnetic field remains exactly the same). Making a "topological" transition to fig. 1,

we have to conclude that also here the tension (7) will be induced when moving loop and wire together. Making a comparison with the Sagnac and Marinov effects<sup>2</sup>, related to the propagation of light, we see that when moving loop and wire in fig. 2 the velocity  $v$  in formula (7) will be the linear rotational velocity, while in fig. 1  $v$  will be the absolute velocity of the system, i.e., its velocity  $V$  with respect to the center of mass of the Universe. Thus the experiment shown in fig. 1 gives a very reliable, easily realizable, and exact method (at the present time I will abstain to predict its accuracy) for the measurement of the Earth's absolute velocity. Here I shall only point to the big value of the induced tension. Putting in formula (7)  $v = V = 300 \text{ km/sec}^{4,5}$ , at the above values for  $I$ ,  $b$ , and  $b_0$ , we obtain  $U_{\text{mot}} = 60 V$ .

Let us now consider another aspect of the experiment shown in fig. 2 when loop and wire rotate together and an alternating current flows in the loop. As a result of the rotation, an alternating induction current will flow in the straight wire with length  $b$ , and it will become hot because of the produced Joule's heat. Where the energy for the heating comes from? It does not come from the electric energy associated with the loop, as the mutual inductance of wire and loop is null. So, if loop and wire are at rest, no alternating current will flow through the wire. Thus this apparatus will represent a perpetuum mobile, as energy is produced out of nothing. A confirmation of this assertion can be established experimentally in following simple way: Arrange many wires with length  $b$  closely one to another. First having loop and wires at rest, measure the heat which the system will produce in a certain time. Then set the system in rotation and measure again the heat. In the second case the heat produced will be greater. One may object that when the system is set in rotation a braking torque will appear which will slow the rotation and thus the produced heat will be a transformed mechanical energy. My (and of other authors) experiments<sup>5</sup> have shown that a cemented Faraday disk produces electrical energy more than the consumed mechanical energy, and the rotating system in fig. 2 (with many radial wires) represents, as a matter of fact, a cemented Faraday disk where the magnet changes quickly its polarity. Anyway, if a braking torque will appear, then the law of conservation of angular momentum will be violated. The last violation can be not observed at a cemented Faraday disk with constant magnet, as in this case current can flow along the radial wire only <sup>if</sup> it makes (by the help of sliding contacts) part of a closed loop.

The reader may become suspect that the alternating current in the loop makes our experiment going outside of the domain of stationary electromagnetism and introduces many complications and unclarities in its issues (as pure transformer induction, radiation effects, etc.). To disperse the fears of the reader, let us carry out the experiment <sup>by</sup> feeding the double current loop by direct current and rotating the "radial" wires about their centers in planes perpendicular to the plane of the loop. Now at rest of the system as a whole a motional electric intensity can be not induced as the velocities of the different points of the rotating "radial" wires are

parallel to the magnetic intensity,  $\vec{B}$ , produced by the loop. However, when setting the whole system in rotation, alternating motional electric intensities will be induced in the "radial" wires, as they obtain additional velocities perpendicular to  $\vec{B}$ , and they will become hot because of the Joule's heat. Where from this energy will come?

At the end I shall show that the induced motional electric tension (7) for the case of loop and wire moving with an absolute velocity  $\vec{V}$  (fig. 1) can be obtained easily from the relative Newton-Lorentz equation (1). Indeed, for this case we have  $\phi = 0$ ,  $\partial\vec{A}/\partial t = 0$ ,  $\vec{v} = 0$ , and formula (1) gives for the induced electric intensity

$$\vec{E} = \vec{V} \times \text{rot}\vec{A} + (\vec{V} \cdot \text{grad})\vec{A}. \quad (11)$$

The analysis above has shown that the second term on the right side, for  $d \gg b$ , is equal to zero, and we remain only with the first term, which will give for the induced tension the value (7), where  $v$  is to be replaced by  $V$ .

And a final remark. One writes in almost any textbook on electromagnetism that if a plane flies in the Earth's magnetic field, then between the extremities of its wings an electric tension is induced. The students are asked to calculate this tension for a given intensity of the Earth's magnetic field, velocity of the plane, and length of the wings. There is even a patent for a plane speedometer with a "rotating antenna"<sup>7</sup>, where one rotates the "wire" as one can not change the polarity of the Earth's magnetic field. The answer to this problem for a plane flying over the magnetic pole is this one given in the textbooks and the induced electric intensity is to be calculated according to formula (2) where  $v$  is the velocity of the plane. However, for a plane flying over the magnetic equator (where, as the magnetic intensity is parallel to the surface, the plane must fly with wings perpendicular to the surface), for  $v$  in formula (2) one must take the absolute rotational velocity of the plane. Thus if in such a case the plane will fly with a velocity equal and opposite the velocity of the Earth's surface, no electric tension will be induced.

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#### FIGURE CAPTIONS

Fig. 1. - The translatory experiment.

Fig. 2. - The rotational experiment.

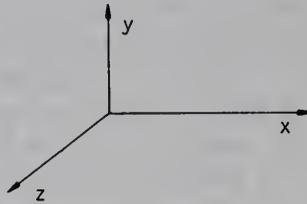
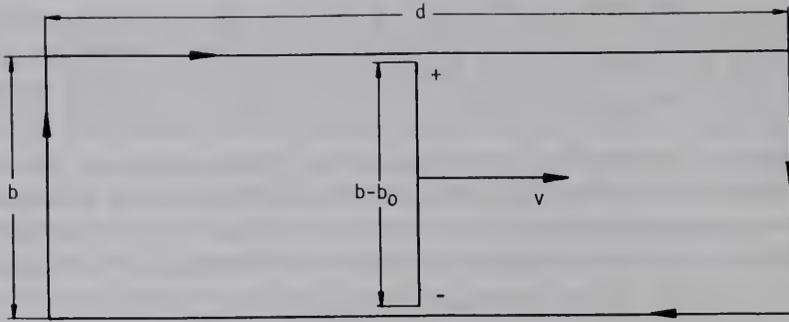


Fig. 1

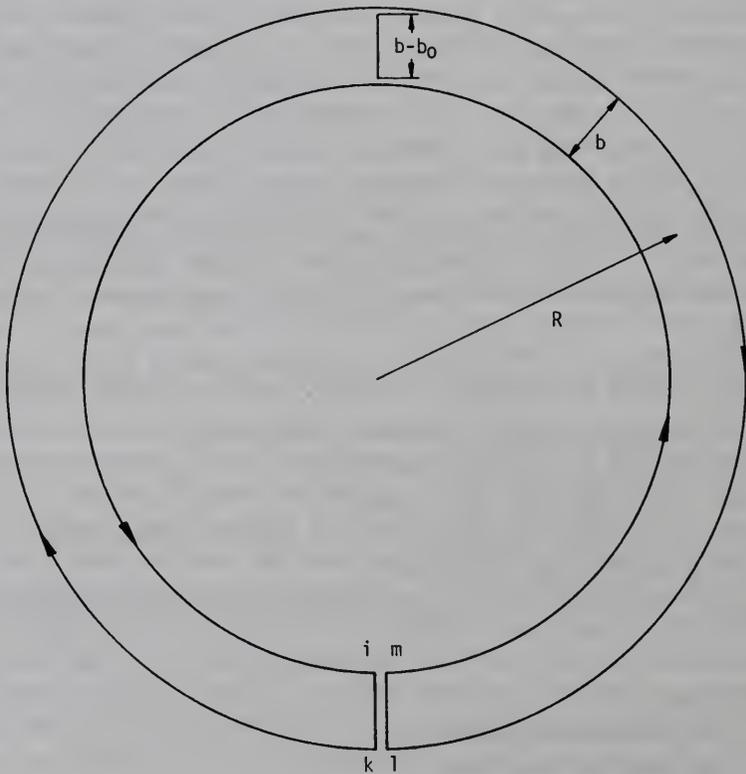


Fig. 2

### EPILOGUE TO THE FIRST EDITION

My press-manager, Mr. T. Stelzl, could not organize the press-conference for the 6th September in Vienna. Thus I postponed the date of my self-immolation. At the present time I have received no information from Dr. Maddox, or from the British Ambassador in Vienna concerning my ultimatum.

I give the book to the printer, as I wish to have it printed before the press-conference in Vienna.

7 September 1984

Stefan MARINOV

### EPILOGUE TO THE SECOND EDITION

The KGB and CIA spend millions of dollars, playing with human lives and doing thousands of dirty things in pursuing their scientific and technical espionage. Their routine spying concerns small and unimportant detail, for example, such a stupidity as how to increase the power of a H-bomb from 3.5 million tons trotil equivalent to 3.7 million tons (meanwhile every child knows perfectly well that a bomb with 3.5 million tons trotil equivalent will do the same job as one of 3.7 million tons). However when I wish to bring to their knowledge information about discoveries which are thousands times more important than the secrets for which the KGB and CIA residents pay tens and hundreds of thousands of dollars to their agents, both KGB and CIA make the fool. Is not our world, indeed, a completely idiotic one?

2 May 1985

Stefan MARINOV

### EPILOGUE TO THE THIRD EDITION

In the middle of 1985 Dr. Maddox promised to publish my letter to Gorbachev, but he did not. Obviously he tries to repeat the same story as with my letter to Andropov (see p. 6). It may sound pretty strange but Andropovs and Gorbachevs are not such hard nuts for my teeth as Dr. Maddox.\* The world will soon see this. Here is my letter to Gorbachev:

## MARINOV TO GORBACHEV

Dear comrade Gorbachev, as I announced (*Nature*, 317, p. xii, 26 Sept. 1985), I do not intend to patent the electromagnetic perpetual mobilia discovered recently by me, and I grant them to humanity. I wish, however, that this big discovery, which will drastically change the whole planetary energetic structure, would also lead to substantial changes in the world's political and moral structures. As an energetic source, the electromagnetic perpetuum mobile (P. M.) is cheap, clean, decentralized, and unlimited, i.e., all its »parameters« are diametrically opposite to those of almost all present sources of energy, first of all of the atomic one. Thus the P. M. will introduce economic and political changes simply because of its own substance. (Let me cite our teacher: »Neue Produktionsverfahren fördern immer neue Produktionsbeziehungen.«) We have, however, to do our best, so that the new »production relations« should bring humanity quicker and easier to the world communist society (Christians call it »paradise on earth«), where man will be no more a serf of Mammon. One of the important paces on this way is the quick and profound democratization and liberalization of the Soviet Union and the other countries of »real socialism«, so that the latter becomes simply »socialism«. With the present letter I beg you to make every effort within your limited possibilities (I recognize this limitation) and to give freedom to my Russian colleagues Dr. Sakharov and Dr. Orlov.

In the case that Sakharov and Orlov will not be liberated for Christmas, I declare with the present letter that I, as a discoverer of the P. M., do not permit that this source of energy should be used in the countries of real socialism. I have already declared in 1981 that I do not permit my cosmic speedometer (apparatus functioning because of the light velocity's direction dependence) to be used for military purposes. Nevertheless NASA uses this apparatus without asking for my permission. I have not the power to impose my will on NASA. In the same way I shall not have the power to impose my will on the Eastern countries if my plea be ignored. Thus my »ultimatum« has only a moral background. I think, however, that in the present world, where the physical power has reached an unlimited effectivity, the unique effective power will become the moral power. Otherwise our civilization is doomed to perish. I beg you, dear comrade Gorbachev, to do your best and to try to persuade your colleagues in the Soviet leadership that people like Sakharov and Orlov, with their high morality, are of an immense importance for the salvation of the freedom and the prosperity of world communism. With the profound hope that my plea for mercy will be satisfied,

Sincerely yours:

STEFAN MARINOV

Citizen of the world, born Bulgarian,  
Member of the Italian Socialist Party

The Russian original of the letter is published on the next page.

\* see p. 266.

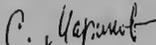
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21-го июня 1986 г.

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Кремль  
Москва

Дорогой товарищ Горбачев,

Как я оповестил (Nature, 317, стр. xii, 26 сент. 1985 г.), я не имею намерения патентировать электромагнитные вечные двигатели, открытие мною, и я дарю их человечеству. Я хотел бы, однако, чтобы это великое открытие, которое коренным образом изменило всю энергетическую структуру нашей планеты, повело бы к существенным изменениям и в структуре политической и моральной нашего мира. Как энергетический источник энергии, электромагнитный вечный двигатель дешев, чист, рассредоточен и неограничен, т.е. все его "параметры" диаметрально противоположны параметрам почти что всех известных источников энергии, прежде всего атомных. Так что вечный двигатель приведет к экономическим и политическим изменениям просто из-за своей сущности. (Позвольте процитировать нашего учителя: "Новые методы производства всегда приводят к новым производственным отношениям.") Мы должны, однако, сделать все, что в наших силах, чтобы новые "производственные отношения" привели бы человечество как можно скорее и безболезненно к мировому коммунистическому обществу (христиане называют его "раем на земле"), где человек не будет больше слугой Мамона. Один из важных шагов на этом пути, это быстрая и глубинная демократизация и либерализация Советского Союза и других стран "реального социализма", чтобы последний стал просто "социализмом". Настоящим письмом я прошу Вас сделать все усилия в рамках Ваших ограниченных возможностей (я признаю эту ограниченность) и дать свободу моим русским коллегам д-ру Сахарову и д-ру Орлову. В случае что Сахаров и Орлов не будут освобождены к Рождеству, объявляю настоящим письмом, что я, как открыватель вечного двигателя, не разрешаю использовать этот источник энергии в странах реального социализма. Я уже объявлял в 1981 г., что не разрешаю использовать для военных целей мой космический спидометр (аппарат действующий на изотропии световой скорости). Однако NASA пользуется им, не спрашивая моего разрешения. У меня нет сил принудить NASA подчиниться моей воле. Подобным образом у меня не будет сил принудить восточные страны подчиниться моему запрету, если моя просьба не будет удовлетворена. Так что у моего "ультиматума" только моральная основа. Я думаю, однако, что в настоящем мире, где физическая сила достигла неограниченной эффективности, единственно эффективной силой остается сила моральная. Иначе нашей цивилизации суждено погибнуть. Я прошу Вас, дорогой товарищ Горбачев, сделать все от Вас зависящее, чтобы убедить своих коллег в советском руководстве, что такие люди как Сахаров и Орлов, с их высокой моральностью, исключительно важны для спасения свободы и для торжества мирового коммунизма. С глубокой надеждой, что моя просьба о милости будет удовлетворена,

Искренние Ваш:

  
Стефан Маринов

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**The first part of the collection of documents THE THORNY WAY OF TRUTH presented the fight of Stefan Marinov for the restoration of the absolute space-time concepts. The present second part gives the documented story on the invention of the first perpetuum mobile in the world and includes besides three Marinov's scientific papers also one of the Cuban physicist Francisco Müller (Miami, USA). As the documents show, the reaction of the »scientific community« to the most important discovery in the history of mankind was exactly the same as it was to Marinov's historic experiments for revealing the absolute character of motion and to his absolute space-time theory (exposed in the encyclopaedic work CLASSICAL PHYSICS and in his first book EPPUR SI MUOVE). The functioning of the perpetuum mobile is possible just because of the absolute character of the electromagnetic interactions, of their local (point-to-point) character, as perceived by the German Gauss-Weber school, in a definite rebuttal of the field (closed lines) character, as perceived by the Saxon Faraday-Maxwell school, and because of the violation of the simple (mechanical) Newton's third law at the interaction of electric currents.**