



SEMANTOGRAPHY SERIES No. 189

A SEMANTIC ANALYSIS OF THE SCIENTIFIC
BALLYHOO ON "NUCLEAR WEAPONS"

I intended to destroy whatever I had written on this subject in 1955. However I incorporated it later on in the Series because it might throw some light on my mind, and on my frantic endeavours for my Semantography. It also contains biographical notes I was induced to start all this when a friend of mine persuaded me that official agencies in the U.S.A. might take some action which might help my work along. At that time I was ready to grasp any straw which might help and perhaps offer some sort of relief of my tormented mind (and be it only some writing). I was in the deepest throes of depression. My wife was dangerously ill. I had great difficulties to earn enough for us, and it seemed that I had to abandon all hopes for my work. Fortunately I felt better later on, and did not get around to edit the notes and send them off to the Atomic Energy Commission. Ultimately I felt that it would be of no use. As I did not finish the notes written in 1955, I shall give a short account of the story in these two introductory pages. Unfortunately, I think that no one will believe me. But perhaps I might be vindicated in later years. Some of the semantic analysis on scientific theories contained here, I intend to use in later publication.

From all I heard, read, and saw I became firmly convinced already in 1945 and even more as the years went on, that most of the claims for the so-called atomic weapons are sheer exaggeration; even fraud. I firmly believe that Russia has no devastating nuclear weapons, and for that, America neither. Perhaps a modest explosion might be possible, but this might cause no more damage than a conventional ten ton blockbuster. I found my belief confirmed in an article from a report made for the U.S. War Department by Major P. de Seversky I printed his main findings in my Volume II p. 215 of Semantography. Seversky found no radioactive poisoning, no radioactive burns, and all the doctors in the area, also nurses and Red Cross workers confirmed it. As to the Super-heat and extensive damages to buildings he found that even in the centre of the explosion flimsy wooden structures, flagpoles, and even vine branches were not even blackened, least of all charred. Window pans were not broken, and all the fires in the paper and bamboo houses of Hiroshima were caused by ordinary incendiaries, or by up-turned stoves. This report was later vindicated in another report printed in the Sydney Morning Herald under the title "The other side of Hiroshima" meaning by "other" the fact that damage was negligible. The picture accompanying this article showed undamaged houses.

I was a prisoner of the Japanese in the segregation area of Shanghai. I realized that only a miracle could save us, and that the Japanese would only give in if they don't "lose face", the most important thing with people of the Far East. From newspaper reports which I read at war's end, I learned of the endeavours of U.S. admiral Zacharias. As a young man he was teacher in Tokyo's military academy, and he knew all the military leaders of today Japan personally. During the war he directed a number of radio talks to them, aimed at making them surrender by psychological means. He advised the U.S. Government of the possible ways by which the Japanese leaders could "save face" even when surrendering. The means was the "atomic bomb". I witnessed the broadcast of the Emperor Hirohito in the Japanese quarter of Shanghai, and I learned from its translation that the "atomic bomb" made the Japanese people believe that they did not succumb to superior soldiery qualities of the Americans, but only to the "Force of Nature" unleashed in the terrible "atomic bomb". In my opinion this was the greatest and most beneficial military hoax. It surely saved the lives of at least one million American boys, and many more millions Japanese. This my theory was fortified by a number of articles and photographs which appeared in American newspapers. No matter how hard the reporters tried, the photographs and their reports showed that actual damage was negligible and exaggerated. Of course, the scientists were up in arms against the report of de Seversky, and of anyone who suggested such a thing. But I believe that they were deceived by scientific reports which contained exaggerations and great improbabilities. For instance, late in 1943 Fermi was still unable to get a chain reaction going. When he succeeded, it was already late in the war. Germany was near defeat, and the Japanese were on the retreat in the Pacific. An "atomic bomb" was not more needed, except for psychological purposes.

I learned also that the first atomic bomb was not the result of experiments, but of calculations about "critical size" and other things. I am no scientific fool. I know that you have to get some sort of experiment first in order to devise a mathematical formula, not the other way round. You have to get first a small explosion in order to be able to make a bigger bomb. From all the reports from Los Alamos the scientists were only furiously calculating. I believe that the military manager of the "Manhattan" project Major Groves was hard pressed by his superiors for the "atomic bomb", and so he did what I have seen engineers doing who were hard pressed "to produce results", and be it only for the visiting president or for other psychological reasons. They faked, at least partially, I believe therefore that Major Groves took the pounds of plutoniums from the scientists, mixed it with a good dose of conventional dynamite or TNT, added something else (see below) to get the super flash, and told Professor Oppenheimer to press the button. And lo - it worked. From the photographs of Los Alamos I have seen that the damage was negligible. And so off to Hiroshima. Why was it necessary to take the biggest bomber to deliver a bomb supposed to be only a billiard ball in size? This was the question which Major de Seversky asked too. Well, what the bomber contained was a ten ton blockbuster, bound together with thousands of incendiaries. The bomb was made to explode above the city. The blast flattened the paper houses. The incendiaries did the rest. But what made the flash "brighter than a thousand suns?" I found the answer which was later vindicated at Bikini. I was greatly intrigued about a super flash bomb developed by Kodak during the war. Ignited at a height of 35,000 feet at night, it illuminated the countryside and made it possible to take a picture as if at daylight. What happened at Bikini? After the proper atomic bombs were set off with all people turned away to avoid the "blinding flash", suddenly, according to a report another atomic bomb exploded with all people looking on. The reporters belaboured the commanding admiral for an explanation. Oh, he said, that was only a Kodak flash bomb. The reporters didn't ask why he needs a Kodak bomb at Bikini, but for me this was the answer to my theory. Yes, a super duper Kodak flash bomb was included in the bomb which fell over Hiroshima. And this flash bomb also produced the mushroom cloud.

I remembered my experiments with flash powder (magnesium and an oxygen compound). The instantaneous heat is well over 5000 degrees Fahrenheit, creating a terrific up-draft. Anyone who ever saw a photographer of olden times set off flash powder openly, will remember the billowing white cloud which hit the ceiling. I studied later explosions in the Nevada desert. I was intrigued about the use of small rockets sent off in a line vertically, and creating vertical vapour streaks. If these streaks were not torn up by horizontal winds, then the bomb was set off - and produced a mushroom. This is why they always waited for the right "wind conditions" as they said. Sir Penney in Australia did not take this precaution. The results were no mushroom clouds. From an article in the Sydney Herald I read of the experiences of a British ordnance officer who said that any explosion would create a mushroom cloud, provided there is no wind. But what about the radiation with Geiger counters clicking madly. Why, mix some pounds of U 235 or Plutonium with the TNT and the Kodak bomb and you will get radiation all over the world. I thought that I would even mix some sulfuric acid anhydride which would cause skin irritation to people for miles around. As if to prove my thoughts, the Japanese fishermen got just this. They all recovered, except one who died some years afterwards. But the Japanese doctors did not allow American doctors to examine him nor make an autopsy. The "atomic bomb" was still too good a "psychological weapon."

But what about the damage? Sometimes I think that some of the organisers of those tests in America are imbeciles. Right in the centre of the explosion they place a nicely furnished house with a family of fashion dummies sitting around a table. And what happened? Was the house consumed by the superheat, the dummies burned to cinder? Not at all. They were only knocked off and were found laying peacefully on the ground. When I told all this and more to a friend of mine, he suggested that I should tell this to the Atomic Energy Commission. They will do anything to prevent this damaging evidence become known. They will gladly help my Semantography along, just to keep me contented. My friend said that the American military men are most interested to make the world believe that Russia is even more advanced in the making of these terrible weapons. And Russia too has the greatest interest to make the world believe that what the American military brass say is true. The military brass in both countries thus get the huge sums which they need for their military budget.

And so, I set down and started to write. I found that the best way for me to concentrate was to write directly onto the wax stencil. I started to type away on whatever came into my mind. Most of it is surely unnecessary, and can be said in a few sentences. But it was necessary to say it first, no matter how far fetching. I intend to use the contents of the following pages in later publications. And for this reason, I submit to the researcher who may study the following pages, and ask him to read all this benevolently and understand my frame of my mind in 1955.

C.K.Bliss (1960)

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RUSSIA HAS NEITHER THE ATOMIC BOMB

Semantography Series NOR THE HYDROGEN BOMB
NO. 189

A scientific analysis of the evidence
in the form of a letter to
The Chairman of the United States Atomic Energy Commission
by C.K. Bliss, B.Sc.

Industrial Research Chemist, Expert in Scientific and
Industrial Patent Intelligence, Author of Semantography.

PART I. THE AUTHOR AND HIS SCIENTIFIC BACKGROUND

C.K. Bliss was for a number of years assistant and later chief of the patent department of a large European firm, manufacturing electronic equipment. He conducted successfully extensive patent litigations against rival world combines. An important part of his activities consisted in the examination of scientific and industrial evidence laid down in court submissions, expertises, scientific treatises and patent specifications.

This experience, coupled with a sound knowledge of pure and applied chemistry and physics, enabled him successfully to find out how much truth and how much falsehood, how much well-meant belief and ill-meant make-belief, and even how much hoax and humbug there is in scientific statements issued to confound the opposing parties, the judges, the experts and the public.

He had a vital interest in the atomic bomb (so to speak). It saved his life. He was in China. In the Japanese war in the Pacific, the Japanese forced him to live under surveillance and restriction in their midst. He read their papers printed in English, he spoke with many of them and he learned something of the thinking of Japanese minds. He knew that only a miracle could save his life, that only a miracle could bring a large nation with a well-trained and well-rested army of over 5 million soldiers to a bloodless surrender. He realized that nothing less than a miraculous "atomic bomb" could perform this miracle. Without knowing of what has happened in Hiroshima and Nagasaki (apart from just another bombing raid) he witnessed this miracle. On that fateful day he stood in the street and all around him Japanese men and women bowed deep down when from all the loudspeakers of radioships the halting voice of the Emperor Hirohito came, telling them to surrender so that the Japanese nation may live on and not be destroyed by the forces of nature. Soon afterwards the Americans came and with them newspapers, magazines and books with stories, scientific statements and photographic evidence of the atomic bomb. Bliss, the chemist devoured every information he could get on the atomic bomb.

C.K. Bliss is a chemist not only by profession, but also by passion. His father manufactured electric cells. Already as a toddler, crawling around in father's workshop, he played and experimented with electric cells, marvelling endlessly about the transformation of chemical energy into electrical energy and then into motion and even brilliant light. Even before he learned to read he heard about the new mysterious energy contained in the newly discovered Radium. He was fascinated by the scientific tales of the day which said that the energy contained in 1 gram Radium could drive a large ocean liner around the world. His favourite author was Jules Verne. Now his dreams have come true and the "Nautilus" submarine of the United States Atomic Energy Commission might soon embark on a world cruise.

But fifty years ago, all this was a dream only to the boy Bliss, who experimented endlessly with chemicals, turned the home into a fuming, exploding inferno to the loving consternation of his mother and to the pride of his father who saw him being first in his class in chemistry and physics. The chemistry career was a "natural" for Bliss. Unfortunately, after receiving his degree, he entered industry and was soon engulfed in routine production and routine research work. But he followed with immense interest every new development in the smashing of the atom and kept abreast about all scientific advances. Since the atomic bomb was dropped he has intensified his studies of every information obtainable.

He did not take all the reports at their "face value". He examined them on the basis of the training which he received in industrial intelligence. Being an accomplished photographer, he examined the photographic evidence presented in American magazines and journals with the critical eye of the scientific investigator. Soon he came to a most startling conclusion. In the fall of 1946 he confided to a befriended professor of Sydney University. But this man, being not a chemist, was unable to realize the correctness of Bliss's hypothesis and did not believe him.

As the years passed by, more and more reports came in which fortified Bliss's conviction. He kept however silent. He felt that the United States can act as a guardian of peace and that she should have all the aces of warfare, including psychological warfare, in her hands against the forces of Communism which are out to conquer the world, of course, as they say, in the name of peace, that is the peace of the commissar, the prison, the concentration camp and the firing squad. Bliss had some harrowing experiences at the hands of totalitarian powers. He knew that Russia must be contained at all costs.

Then President Truman announced that Russia had exploded her first atomic bomb. Bliss did not believe a word of Truman's announcement for the following reasons, explained in his letter. He was therefore not surprised when Truman after his retirement said in public that he did not believe what he said some years ago. But then the scientists announced that they have radioactive evidence that the Russians must have exploded atomic bombs. At last, the Russians, who kept mum at the first announcements of Truman, admitted that they have the atomic bomb and, not letting the Americans outdo Russian achievements, they said they have the hydrogen bomb too. From previous lurid "explanations" by the scientists and reporters, the American nation knew what that means.

An unholy fear has settled in the minds of the countless millions of people in the free countries of the world. Russia can at any day, at any minute obliterate large cities, killing off millions of people in one single blast. Psychologists may be able to assess the colossal destructive power which this fear must have on the minds of the American nation. In addition, billions of the taxpayers money are being spent on defences, on going underground, on shelters which are radiation proof etc, etc. Never in the history of mankind have vast nations felt so much near the hangman's noose, a hangman ruthless enough to spring the trap at any minute. Already the proportion of mental cases in the United States is enormous, a state of affairs created mostly by all the fears which modern living conditions even in peace time brings. But now, the aspect for the future is frightening. Hysteria reigns not only in the minds of the helpless citizens, but also in the minds of responsible citizens who advocate a preventive war to prevent war. Scientists tell us solemnly that Russia is catching up fast and that all our defences are wholly inadequate. A reign of terrorising fear has gripped American minds because their experts have told them that "Russia has the atomic and the hydrogen bomb."

Bliss thinks that now is the time to stand up and speak. If the slightest doubt could be cast in the minds of mankind that "Russia has neither the atomic bomb nor the hydrogen bomb" the beneficial effects would be enormous, not only in terms of peace of mind free for the progress of peacetime society, but also in terms of savings of colossal expenditures, now crippling the efforts of whole nations. But Bliss's analysis of the evidence is so startling that he would have the greatest difficulty to be heard, least of all to be believed. Moreover, who is Bliss? Very few people have heard of him.

The trouble with Bliss is, that he is not a Professor of This and That, not a Director of Whatnot, in short not a man with an official title, entitled to make an official announcement to which people will lend a believing ear. In short, Bliss is a Nobody. But is he?

Already at the university Bliss proved that he is a born teacher, that he has an uncanny knack of presenting the essentials of any matter to learners in a simple convincing way. He paid his way through the university by tutoring his fellow students in a most successful way. At times he lectured to whole paying classes in a course.

He sent his pupils off to examination after "ten easy lessons" only. But here already he proved that his methods are not the orthodox methods of the teaching profession. In mineralogy, for instance, he wrote a set of verses each one containing the essentials of a mineral. He made his pupils memorizing these verses, thus enabling them to stuff into their mind data which are wholly memorizing stuff. These verses were sold in a brochure to fellow students. Professors were shocked at that desecration of science. The professor of Mineralogy admonished Bliss for his misdeed and especially for the humour he infused in some of his verses. Bliss still treasures a yellowed copy as proof of his poetical mineralogical vein. But he realized then, that he would feel very uncomfortable as a university "employee" serving under professors, deans and presidents. When he received his degree, a vacancy was

announced for a teacher of chemistry at a Technical College. Armed with his excellent record of examinations, Bliss applied at a preliminary visit to the Dean. But the impression of his future boss was so forbidding that Bliss abandoned the idea of serving within the teaching hierarchy. He went into industry.

Here again his peculiar state of mind forced him into peculiar work. He did not like to be bossed and commanded, but he equally did not like to boss and command others. He soon became a solitary worker, most critical of existing theories and practices, and of course critical of the theories and practices of the workers next to him. This did not bring him favours, especially when his criticism was correct. In a research laboratory of the General Electric Co. in Europe, working with one co-worker, his chief only, his successful critic brought him to the verge of death. Working at an electric furnace which his chief had constructed and in which a highly explosive gas mixture was heated to over 4000 degrees Fahrenheit, he grew tired of the poor results and the elaborate complexities of the furnace. He constructed his own furnace. The chief was so enraged that he forgot all previous cautious steps in preheating which he applied in hourlong preparations at his own machine. In mad anger he threw the switch to the full blast of 500 Amperes. This would have caused a fatal explosion in his own furnace. Bliss, in terror, made a move to duck under the table. But it wasn't necessary. The furnace lit up in brilliant light - and withstood the sudden blast. It worked. "For Goodness sake," gasped Bliss, "why did you do this?" "Ah," said the chief in even greater anger, "if your furnace is no good, it should better go to pieces right away." He realized of course that he and Bliss would then have been blown to smithereens. This thought made him not feel better towards Bliss, later even more so when Bliss constructions and ideas produced results.

And so Bliss became the solitary research worker, the trouble shooter of troubles which others have attacked in vain. The "lost causes" were given to him and he set to work furiously and did not rest until he had solved them. The director knew how to make Bliss happy. Give him a problem, and he will forget to eat and to sleep and most important of all, he will forget to ask for a rise when he had solved it, the result being enough reward for him.

So Bliss, working of his own, became a likeable fellow to his superiors who appreciated him as a tireless, successful and low paid worker, to the inferiors in the factory whom he never attempted to boss, and even to his own colleagues - for two reasons. Though he was very critical of them, he was even more critical of himself. In fact, as a result of heredity and environment, he was victim of an inferiority complex. All the work done, he considered as negligible, as not important. He longed to do something greater, something by which mankind would benefit. But he was a poor guy and his pay was low. He simply had not the arrogance and temerity to press for more and more pay. He realized that he would not easily fit in other industrial set-ups. He was afraid of losing his livelihood. Hence his timidity which somehow mollified the envy about his successes and the anger about his critique.

Fortunate for Bliss, a quality inherited from his father, made him lead a happy life. He is a born jester. Seeing the weaknesses of men and their ideas and even more his own weaknesses, he told devastating jokes which made people forget the critique and laugh heartily. Bliss appearing in any department was not let go until he had brought the house down in a roar of laughter. So he was liked. Moreover, his real ambition was on a higher plane. He had success in music and art. But more than anything he liked mountaineering and travel. All the year round he planned new short and long exploits of this nature.

In the late twentyeth, when radio conquered the world and his firm made a roaring trade in electronic equipment, rival world combines struck. They launched a wave of court cases against his firm alleging patent infringements of many patents. They produced testimonies from experts according to which a number of radio valves manufactured by the firm show that they infringe a variety of patents, owned by world rivals. The court granted interim injunctions. The situation looked very bleak. It looked like closing down, paying of damages, bankruptcy and ruin. In despair, the director remembered Bliss.

The foregoing background notes are necessary in order to understand the following development in Bliss mental attitude. In his letter to the Chairman of the United States Energy Commission he will endeavour to prove a theory which will be in contradiction to the prevailing theories of scientists about the atomic and hydrogen bomb. He will not be believed, of course. But he thinks that a knowledge of his past experiences with official and organised science and especially a knowledge of his latest achievement will, at least, bring a measure of credulity to the reader. Perhaps, Bliss hopes, the reader will be brought to think that, may be, Bliss is right and so many official statements are wrong. Perhaps indeed, Russia may not have the atomic bomb. Perhaps all our fears are without foundation.

Bliss was, as did most young men of his age, a believer in science. The great achievements of the scientific age impressed him. He believed in the truth of mathematics, chemistry, physics, etc. and the professors of these sciences appeared to him like demigods, who dispensed wisdom and could do no wrong. This, his belief, was rudely shattered.

The science of electronics deals with molecules, atoms, electrons, ions, etc. These are words for entities no man has ever seen. The patent specifications which Bliss began to study were full of them. The attackers alleged that all which they had described in their patents happen in the radio valves which Bliss helped to manufacture and which he now had to defend. The attackers had hired professors who described in long expertises the experiments which they performed with the infringing valves and according to which the electrons in Bliss's firm's valves did this and that. Are these inferences right? If so, the firm had better bow to the inevitable. Bliss began to examine every word in the statements, every step in the conducted experiments. He searched the latest scientific journals for data. He calculated the professor's calculations all over and found faults, and discrepancies, and misstatements on every page. The director went with Bliss's finding to another professor, and sure enough, he was ready to write a counter expertise, was ready to conduct counter experiments, was ready to disprove the expertise of the first professor - for a handsome fee. And this is exactly what happened, not in one case, but in a number of them. Something happened in Bliss's mind. The pedestals of the men of science broke down, the demigods were dethroned. What remained were a bunch of squabbling men who bickered with each other in the courtrooms. Science became a farce. The truthful statements turned out to be lies.

Now that Bliss is going to prove the same state of affairs in the field of destructive electronics, now that he is going to attack the statements of nuclear physicists, he feels that he will not be believed. For the average man and woman, even those with college education, the scientists are still demigods who dispense utter truth and wisdom. Few people had the experience which Bliss has. It was necessary to go back in Bliss's life in order to show what made him doubt and disbelieve the scientists. The reader might however come to similar conclusions if he only remembers great courtcases where professors and doctors of medicine were asked to give evidence. It is a common fact that medical evidence often differs harshly, that both parties produce great men of medical science who testify to the exact opposite. It is now necessary to realize that in the field of nuclear physics the state of affairs is similar. From this, we might begin to hope that the statements of scientists and professors, according to which Russia has the atomic bomb, are simply not true.

Bliss's love of science had suffered a severe shock, but he still dreamed of doing some work by which he would come into the ranks of the great men of science who are remembered by mankind. But his life began to run out, until at the age of 45 he saw at last a chance to do something which no man has ever done. He sat to work and for the last 12 years he kept at it with utmost determination. He succeeded. But he made another shocking discovery.

300 years ago, the great mathematician Leibnitz (1646-1716) speculated about a simple "Algebra of Thought" which simple people, even children could apply to their thinking and their problems. Leibnitz dreamed of simple symbols which should stand for words and thoughts and which should be operated according to simple mathematical rules. In addition, these symbols would have the same meaning in all languages, just as $1 + 2 = 3$ is understood by people of all tongues. A letter, a book, a newspaper, a scientific treatise written in this Leibnitzian "Symbolis Universalis" could be read in all languages of the world. This speculation was considered by scientists as a mere "philosophical speculation" impossible to realize. Now after 300 years, Professor Oliver L. Reiser of the University of Pittsburgh expounded Bliss work before the American Association for the Advancement of Science and said "Bliss heroic work...he realized the ambition of the great mathematician Leibnitz." Bertrand Russell, Julian Huxley and other eminent scholars have spoken in the highest terms of Bliss's work, yet Bliss could not find any active support, any official recognition by any university. He applied to great foundations for a publication grant, and was refused. He wrote to editors of scientific journals and was turned down - until the incredible mystery was solved by the frank admission of some men of science. Bliss is an outsider. He is not a salaried scholar. No matter how great his achievement, he is not in the game. It was the same with other men who pioneered great ideas, but were outside the science profession. They had to die first in bitterness and oblivion, before their work was accepted and taught. Bliss, of course, won't give in to such a fate. The Boston Monitor wrote of "Bliss's gift for penetrating analysis". Now Bliss applies this gift to mankind's most burning problem: the fear of destruction by the so-called atomic and hydrogen bomb. He should be heard.

End of Part I

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This page therefore is page 7~~

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RUSSIA HAS NEITHER THE ATOMIC BOMB

NOR THE HYDROGEN BOMB

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The Chairman of the United States Atomic Energy Commission

by C.K. Bliss, B.Sc.

Industrial Research Chemist, Expert in Scientific and
Industrial Patent Intelligence, Author of Semantography

PART II. THE LETTER TO THE CHAIRMAN OF THE A. E. C.

To the Chairman
of the Atomic Energy Commission
of the United States of America
Washington D.C.

Sydney, 4th November 1955

Sir,

Four days ago, the Sydney Morning Herald featured an article from America:
FURORE IN U.S. OVER BOOK ON ORIGIN OF "HELL BOMB" written by James R. Shepley
and Clay Blair (David McKay Company, New York).

According to the article, the book contains wild accusations against American scientists and government officials for the most deplorable fact that
"Russia took the atomic lead away from the U.S.A." As this is of the utmost gravity and indeed endangers the life and future of every citizen in the United States, the article does not spare with words cited from the book such as

"Conspiracy among some U.S. Scientists"

"High Treachery"

"The serried ranks of these wicked (or at least half-witted and ^{scientists} ill-advised)"

"Foolish men who toyed with the safety of their nation," etc.

The mass fear and mass hysteria and general confusion and witchhunt now existing in the United States has thus been increased to new heights. It did not stop at the doors of the White House. Yesterday President Eisenhower sent a new note to the U.S.S.R. inviting them again to peaceful co-operation on atomic energy. As previous invitations had no result, the worst must be feared and anticipated, because "Russia took the atomic lead away from the U.S.A."

What I have to say can serve as the perfect antidote against the book, the fear, the hysteria, the colossal expenditures in anticipation of an atomic attack by the U.S.S.R., because I can prove that "Russia has neither the atomic nor the hydrogen bomb." What's more, my proofs can be checked right in the United States.

However, they are very startling and I won't be believed. Moreover, I am sure that thousands of letters must pour in daily into your offices, full of well-meant advises and ideas. I felt it therefore necessary to enlarge in the first part on my scientific background. I regret that I also feel it necessary to enlarge now on my personal interest in the matter. My motives may be doubted. Professor A.G. Mitchell, as chairman of my first lecture at the University of Sydney said in his closing address:

"We have been charmed and fascinated...but I think we have also strongly felt in Mr. Bliss a sincere devotion to an earnest purpose."

However, the same Professor Mitchell as chairman of the Sydney University Extension Board turned down my application to be included into the panel of lecturers which may be invited by outside bodies, social clubs, etc. He explained to me personally that my ideas and my work are too novel yet, that there is no set of knowledge yet available about it, etc. In short, I am pioneering a new idea and therefore have to suffer the fate of most pioneers of new ideas.

All my approaches to other universities ended similarly. Being an outsider I cannot get any active help from scientific foundations to which I applied for a publication grant. Neither would private publishers accept my work, simply because it has no chance to become a textbook during my life time and therefore it is a bad risk. All this in spite of the fact that Bertrand Russell wrote "Any men who will spend the money necessary to get this work printed will be performing an important service to mankind." Other professors have spoken in similar terms and have privately recommended my work to scientific bodies and foundations. But the officials refused, and they were quite frank about the reason. Their job is to give publication grants to university staff, not to outsiders. And they won't endanger their own job and livelihood by doing otherwise.

A number of American and British professors approached the various Directors-Generals of Unesco, recommending the furtherance of my work, but the result was the same. Editors of scientific journals would not take my articles, because their contributors have impressive official university titles. My degree is simply not enough. And so on, and so on, a heartbreaking trying in vain.

It might look that I am out for a job and a livelihood. The contrary is the truth. I am now 57 years of age, and have no monetary ambitions. Moreover I am an industrial man and have always been able to make a comfortable living, now and in the past. I have my own business and am doing well. But most of my time is spent on just making a living, where I should continue on my work. What I want is a publication grant and an official channel to scientific journals and bodies. Being an outsider with an outsider idea it is denied to me.

That my work is of a pioneering character, that it will be used by future generations and taught by future generations of teachers, this has been recognized by a number of men whose job it is to preserve pioneering works for future generations. They are the librarians. The Library of Congress, Harvard Library and others have given a standing order to Australia's foremost book company to buy my books and all my past, present and even future writings in any form. Most of it, including the books, are typewritten and mimeographed, because I have not the money for costly type-set printing.

When I started 12 years ago on this pioneering work, I thought that the scientific achievement will automatically bring recognition and active help. Now I experience that the contrary is true. The pioneer is left to his fate - to die in bitterness, to receive recognition only after his death. "Bliss's heroic work" said Professor Oliver L. Reiser (Pittsburgh) in a lecture to the American Association for the Advancement of Science (Philadelphia 1951). But it had no effect. Official bodies remained silent and uninterested.

When doing research work on the history of inventions I found invariably the same picture. The pioneer was driven into debt, despair and death. Now I realized that the same fate is meted out in the field of science. Whatever work is done now in universities, a hundred years ago, the pioneers of now accepted theories had to suffer the same fate. As all this is at the basis of my approach to you, let me tell you only two instances (I have collected hundreds of such tragic cases).

Who pioneered the idea of atomic energy? Was he a member of a university? He was not. Was he a qualified teacher of chemistry or physics? He was not. He wasn't even a qualified chemist or physicist. He was a bloody amateur in these sciences. And here again, as in many other instances, we find that the semantic significance of the meaning amateur has been perverted by the professionals. In Latin an amator is a lover, a man who does something not for money, not to make a living, but simply for the love of it. Pioneers of new ideas were invariably amateurs, who had no interest to cling to the orthodox ideas by which orthodox teachers made a living. To the orthodox scientist the atom meant something indivisible, because this is the meaning in Greek. Only an amateur could, one hundred years ago, harbour the horrible thought that, may be, the atoms are not atoms. and the elements are not elements. It was heresy. Ridicule and worse could follow such a pronouncement.

The amateur who pioneered the idea of atomic energy was struck by the fact that the atomic weights of the elements are almost whole multiple numbers of the atomic weight of Hydrogen. If Hydrogen is taken as 1, then Carbon has the atomic weight of 12, Nitrogen of 14, Oxygen of 16, with very little decimals in-between. He speculated therefore that perhaps the heavier elements are built up of bricks of what constitutes Hydrogen. It was heresy. Indeed, he was so much afraid of making this pronouncement that he published his thesis under an assumed name. His real name was William Prout of London. He is the man whose idea made the others try to break up the atoms. He lead them on the trail. The pioneer is not forgotten, but not forgiven, probably because he never was a duly qualified scientist. A recent proposal to change the term proton into prouton, in order to honour the pioneer, was turned down.

One other instance which came to my knowledge only yesterday when the postman brought me the November issue of The Readers Digest. It contains a condensed biography of a great American John James Audubon, the man who painted "The Birds of America." This is what he got for his pioneering work:

"So men threw John James Audubon into bankruptcy, they saw him into jail, they laughed at him for a fool, and they sold the copper plates of "The Birds of America" for old junk. But now he has been canonized as a national saint. In New Orleans where he and his family almost starved to death, there is a fine statue of him. Today his monumental collection of lithographs is worth \$ 5000 or more a set. In the world's most important museums and libraries, ninety of the existing sets are preserved as irreplaceable treasures of ornithology..."

But why had he to suffer so much? All over the United States there were hundreds of schools, universities and museums, in which stuffed birds were collected and where professors and teachers and zoologists and taxidermists and attendants made a living. Was there not one small place available for Audubon, no small salary as an attendant, which would enable him to go on painting birds? Why had he to print his own work with his own money and go into bankruptcy and jail for this? Was it because he had no testified qualifications as a teacher of zoology?

We believe that this is the scientific age, that new ideas in science are recognized, but I can cite a number of instances where creative men who are still alive do not get any help, because their ideas are unorthodox, unfamiliar and contrary to the accepted ideas by which thousands and thousands of researchers make a comfortable living without getting anywhere in their researches. In my case, I believe that the importance of my work for mankind (as testified by Julian Huxley, Bertrand Russell and others) entitles me to demand a place of work in a scientific institution. Only in my mind is the idea well ordered. I should not devote most of my time to just making a living. Time and again I have said to university officials 'Give me the job of a cleaner, but allow me to use the official channels of publication which are only open to university staff!'

A great American Professor of a great American University was much impressed with my work. He asked me to write articles, but he could not place them in American scientific journals. He recommended a publication grant to an American Foundation, but I did not get anything. He wrote to me some time ago:

"I have canvassed the position here at.....and at.....and the nature of the institutional set-up in both institutions is such that there just isn't any possibility in the immediately foreseeable future. This may be irrational and indeed I would agree that there is much in the institutional code of most institutions of higher learning that is irrational. However, I am afraid this is the factual position."

John James Audubon might have got a similar letter when he applied for active help. In my case, the two institutions, the names of which I have withheld in the above quotations, are some of the richest universities of the United States of America. They have of course my mimeographed books in their libraries. But some of their staff has treated me with contempt. My letters remained unanswered. Material on my work which I sent to a number of them was not even acknowledged. Why? "It's irrational" wrote my personal friend. What does this mean? Am I refused even the meanest courtesy of an acknowledgement because of irrational factors, because I am not a salaried scholar, not a testified teacher, not in the possession of a degree of an American university, or is it because I might be a Negro or a Jew? What does "irrational" mean and what has irrationality to do with achievements in science? This is the exasperating and excruciating background of my letter to you. You, and anyone else who will read this, got to

I am not an atheist. I believe that the creative evolution which we observe in the working of atoms and molecules, of cells and communities of cells, of organs and communities of organisms, is a striving to higher and higher order and can only be due to a purposive force in the universe, not by chaotic chance, but by creative efforts to reach higher harmony of co-operation. We men are at the highest point of evolution on this planet, we have been given a mind by that universal force in order to overcome our difficulties, in order to reach higher perfection, remove disorder and injustice and create harmony. I believe that my mind has become the vessel of a great idea for mankind, and great scholars believe too that my work will be used by future generations. Now I believe that my mind has been made to recognize the injustices which have been meted out and are still meted out to creative men by the mediocre who sit in the temples of learning. And I believe that my destiny is to make mankind realize the injustice which is meted out to mankind's best sons. This is what I wrote to that great professor in America:

"If a man commits a hideous crime he is given a fair trial, a judge, a counsel for the defence, and even a lay jury. He can appeal to a higher court. But if a man commits the crime of evolving a new and unorthodox idea, he has no court where his doings can be tried and judged, no counsel for the defence, no lay jury. He is condemned without a hearing, without a trial. He has to go the bitter road into oblivion and desperation. But what could he have done in his field if he could have got a little encouragement, a little help?

If I am allowed to sink into deeper and deeper bitterness and desolation I shall have no other recourse to keep alive mentally and physically, than to devote all my energy to a book in which I am going to show that, with few exceptions, mankind's best sons are condemned without a hearing and without a trial - a virtual death sentence.

What do I ask for the inventor, the pioneer of a new idea? I ask for him the very same thing which a criminal gets; for a number of years his worries about the next meal, the next rent, the next pair of shoes are taken off his mind. He is given a cell, he is given seclusion, is given a free mind to think about what he cares to think. If he wants to write, he is given paper to write on, free of charge. Indeed, many a great work have been brought to paper in the merciful seclusion of a prison cell. The lunatics are even better off. They are housed, fed, cared for in best hospitals, set in wonderful parks. But the geniuses, the pioneers of new ideas are allowed to die in poverty. What should be instituted is a Trial for the Pioneer, a Jury for the Genius!"

In later writings I was more modest. I ask only that the writings of creative men should be preserved in 1000 libraries of the world. These writings may be in mimeographed form. Thus at least later men could draw on this fountain of ideas. I am proud that my writings are already collected by great libraries, but I think this is not enough. I should get a publication grant in order to reach mankind in general. Such publication grants are given to the mediocre who make a living by science. The outsider is out, and I am one of them.

In 1945 and 1946 Major General Dr. Brock Chisholm, later Director-General of the World Health Organisation spoke under government auspices in Washington and New York. He evolved a startling theory on "The Re-establishment of Peacetime Society". In my studies I found the anthropological and archeological proof for Chisholm's theory. I think it is a great discovery, perhaps one of the greatest which mankind needs in these times of perpetual warfare. Two great American anthropologists have agreed with my findings. Yet they could not help me to any publication in any of their journals.

A few newspapers and magazines have brought stories of my work and my life. After the lecture given by Professor Oliver L. Reiser of Pittsburgh to the American Association for the Advancement of Science in Philadelphia in which he spoke of my "heroic work", the magazines LIFE-TIME and LOOK wanted to write articles about it, but they wanted to stress the startling, unfamiliar and odd angle. From past experiences with other papers I resisted and said, 'You can do it, but only after you have quoted my own words about my work, the way I see it, the way I want to tell it to mankind.' Of course, they won't take orders or be told what to write. But I believe to be right and therefore I am striving for a publication which should be within reach of everyone and in which I can tell of my work as I want to tell about it. I realize that publishers must make money and that crime thrillers and salacious novels are a better proposition. Therefore I resort to this letter to you, hoping that it will draw the attention of the world to my work, hoping that you will take a hand in helping me to be heard. I proceed now to Part III.

End of Part II.

Semantography Series No. 189

RUSSIA HAS NEITHER THE ATOMIC BOMB
NOR THE HYDROGEN BOMB

A scientific analysis of the evidence
in the form of a letter to
The Chairman of the United States Atomic Energy Commission

by C.K. Bliss, B.Sc.

Industrial Research Chemist, Expert in Scientific and
Industrial Patent Intelligence, Author of Semantography

PART III. FACT AND FICTION ABOUT NUCLEAR WEAPONS.

To the Chairman
of the Atomic Energy Commission
of the United States of America
Washington D.C.

Sir,

Proceeding now to Part III, I understand that you are not a nuclear scientist and that your honourable job consists in directing and administering a vast program with vast expenditures concerning the development of atomic energy and atomic weapons. As I am now proceeding to analyse the scientific announcements and statements made over the years since 1945, you may have to turn to your scientists in order to hear their opinion of what I have to say. They may throw up their hands in disgust and defiance, and they may tell you that what I say is without foundation. However, my analysis should be perfectly understandable even to a non-scientist and therefore I hope that you will form your own opinion of what I have to say.

Firstly, I wish to state that what I am going to say, I said already in 1945 and 1946 to a few trusted friends, including a professor of Sydney University. What I said then about the expert's exaggerations on atomic energy has in the meantime been confirmed and more and more articles appear in the papers and journals expressing the view which I expressed already in 1945. I feel sure that my statements made in 1945 about atomic weapons will in the end too be confirmed. But it will be nothing less than a terrific "bombshell", metaphorically speaking. It will come as a shock to the peoples of this planet, but it will be a shock of utmost relief.

Allow me therefore to express my view on atomic energy, before proceeding to atomic weapons. As all human statements are words expressing thoughts of human minds, semantics is at the root of all our conceptions and misconceptions. As newspapers are written for the common men and women, as they contain the views of experts who ought to know, we can imagine the semantic confusion which takes place in the untrained minds of the voters of the world, untrained to find out what is fact and what is fiction in scientific statements. Moreover, words have many meanings in different contexts and for differently trained minds. As my work deals with semantics, allow me to show off a few of such misconceptions. It will help us to understand more the semantic confusion which has been created about atomic weapons. It will help us to assess the fictions which are posed as facts. It will help us to begin to doubt whether really the so-called atomic weapons are what they are supposed to be.

It is amazing to see how in a world in hysteria the moderate statements, the denials of the exaggerations, statements made by important men, are simply overheard. As an analogy I refer to Orson Welles' broadcast of the invasion from Mars. Though the radio announcer repeated before and in between the radio play that this is only a radio play, hysteria swept millions of listeners. The same thing has happened and is still happening with regard to atomic weapons. I haven't found anyone else who thinks similarly to me, probably because I spoke to very few people, but as I doubted almost everything about the atomic weapons right from the start, those other statements, denying the exaggerations, were revelations for me. They confirmed my view. Yet, though printed by the papers they went unnoticed. What the reader wants to read is the thrill of the kill, the sensational, the super-colossal scientific destruction. Unfortunately, the scientists themselves are to be blamed for this. Yet, I exonerate the scientists for the following reasons.

The first scientists connected with atomic weapons had to exaggerate. It was part of their job, indeed, as I am going to prove, it was the most important part of it. The other scientists who took the first statements at their "face value" (whatever is meant by this semantic ambiguity) had a vital interest in the exaggerations. They went on multiplying them. It is understandable. Scientists have to make discoveries. They are paid for just this. They all strive for immortality. They write books for this and later generations. But discoveries are difficult to make. Few geniuses need little like Faraday whose implements were described by a contemporary as a few yards of wire, some nails, magnets and some electric cells. Discoveries can, however, easily be made when a new tool is developed by which a scientist can probe into the unknown and if he can't help it, must stumble upon new things. Therefore the rush for the electron microscope, the cyclotron, etc. etc. All these elaborate and powerful machines cost much money and universities are usually poor. But if the politicians and the people can be frightened in granting huge sums for scientific research, why not frighten them? It is done for mankind, isn't it? The end justifies the means.

But the scientists who exaggerated, or used semantic confusion were honest. They simply believed what the others told them. They were innocent deceivers who were deceived themselves. I cannot blame them. I cannot blame the first scientists either. They too may have been completely unaware of what really happened. Indeed, from past experiences of incredible things which I had seen happen in industry, it is highly probable that not one scientist can be blamed of deliberate misleading or exaggerating. There are perhaps one or a few people in the whole of the United States who can verify my conclusions, and most probably, they are not scientists. They are the men who prepared the atomic charges. The others who pressed the button, might not have known what really happened, except for a huge cloud mushrooming up, a detonation, etc. etc.

It might be now appropriate to start "exploding" the first myth about the atomic bomb. As my investigations started on lines indicated by semantics, the theory of meaning, let me use semantics. In its narrower sense it means the theory of the meaning of words, but in its wider sense it means the theory of meaning in general. As an illustration let us consider an apple. When we hear the word "apple" we know what it means, similarly we believe to know what the words "atomic bomb" mean (though we might be mistaken). When we see the picture of an apple, we assume that it had (when the picture was taken) a real counterpart, a real apple (but we might be mistaken in that too).

So when we see a picture in the papers, showing a huge mushroom cloud, we surely know what it means: an atomic bomb. But now let's come to the real thing. When we see an apple on the table, we might be mistaken in assuming it to be a real apple. It might be of wax (as our grandmothers had in their perpetual fruit basket in the drawing room). But then we might be allowed to feel it, touch it, smell it, and we might come to the conclusion, 'this is a real apple'. Then we bite into it and find it to be a fraud. It's rotten inside. Every fruitseller at one time or other has fallen foul of such a fraud and every buyer of apples has fallen victim of such a fraud sometimes.

The difficulty is that we are not allowed to test whether what we believe to be an atomic bomb, is really an atomic bomb. We are only allowed to listen to words or read words, and then we are allowed to see some pictures. And the picture of a huge mushroom cloud is today assumed, according to world-wide belief to mean the picture of the real thing: an atomic bomb. Well, it isn't.

The fact is that any explosion might cause a mushroom cloud - under certain specified conditions. I have found a number of statements by experts on explosives who said this. Usually, I made a note of such statements when found in a book, or I tear out the piece of paper when I find it in a newspaper and throw it into a drawer or a box. Since 1945 I have collected drawers and boxes full of such statements, mostly denials of the statements made about the atomic bomb. From time to time I empty the drawers into the wastepaper basket. I do this when I am in a desperate mood, seeing the futility of my collecting such papers. Nobody is going to believe me anyway, I think. So, I shall not quote here dates and pages of publications, but I shall have no difficulty to re-collect such statements should I be called upon to furnish proofs - that is words uttered by experts.

Here I want to cite only one such statement, an article which appeared some years ago in the Sydney Morning Herald. It contained the real life story of an ordnance officer about some war-time experiences in Gibraltar harbour. He related the blowing up of a munition ship and made the emphatic statement that the world believes wrongly that a mushroom cloud means only an atomic bomb. It does not, and that explosion (and others he had witnessed) produced a perfect mushroom cloud. I myself was much overawed when I saw the mushroom cloud over Hiroshima pictured in the papers. But then I had witnessed other mushroom clouds of small-scale explosions, and this made me think of the special conditions under which an explosion soars up in a mushroom. These conditions seems not to be understood generally. Apparently the Russians can't produce a mushroom cloud, or don't know how to do it. Otherwise they would have swamped the world with pictures of their gigantic atomic bomb. They use pictures to show workers in Russia buying cars and television sets and other bourgeois amenities. I find such picture journals in my letter box, diligently placed by Australian believers (seeing is believing) into the letter boxes of Australian citizens. These journals are printed in Moscow, according to the imprint, and they must come into this country by the hundreds of thousands. But, as far as I know, there was no picture anywhere to supplement the Russian allegation that they too have the atomic bomb.

I believe that Dr. Penney (now Sir) the man who exploded the first atomic bomb off the coast of Western Australia was unaware of the special conditions. The cloud was a mess of a mass, but no mushroom. Years later, he exploded two more bombs in Australia. The first was a mushroom of some sort, not impressive at all. The picture of the second bomb explosion was not given to the press.

What the Russians couldn't do, and what Sir Penney failed to produce, the wizards of Hollywood did beautifully. In the film "The War of the Worlds" they produced a beautiful mushroom cloud. They knew the special conditions, and I know them too, as I am ready to produce a mushroom cloud in a small scale explosion anywhere, even in a room. We shall come to this later, when I shall explain those special conditions in connection with the pictures of the atomic bombs exploded in the Nevada desert a few years ago.

In short, the semantics of a mushroom cloud is such that it must not necessarily mean an atomic bomb. Indeed, it may also mean a fake and a fraud as the chemists of Hollywood have proved.

But now let's get some system into my deliberations. The trouble with me is that I have very little time for my life work, as much of my time is used up for just making a living. Consequently I cannot make drafts, correct them and re-write them. Usually, if I do this I alter the whole thing. I therefore type the thoughts which come into my mind directly onto the wax stencil and mimeograph them right away. These are the writings which are bought by the libraries. May others realize the difficulties under which I wrote and understand and excuse the shortcomings of my presentation and writing.

I shall therefore state now the events in subsequent order. Relating what I believe and what I disbelieve in the statements on nuclear physics I have to go back to my earliest boyhood, because since that time I have gorged up everything I could read about nuclear development. In 1896 Becquerel found accidentally that a piece of uranium ore produced rays of energy which affected a photographic plate. Shortly afterwards the Curie couple began extracting the active substance from uranium ore. As I was born in 1897, as soon as I could understand some words, I heard the sensational things about radioactive materials. Since then, and during my studenthood, and later as a professional chemist I have not failed to keep abreast of every new development.

I declare therefore that I believe wholeheartedly that an atomic pile can activate non-radioactive materials into emitting energy for a shorter and longer period. These radio-active materials are produced already in America, Great Britain and elsewhere and are a great boon in industry and especially in medicine, as doctors are at last able to follow the path of food in the human body in order to see whether it is used to build up substance or not. Up till now, the theories of the diathecians were guesswork and bad guesswork at that. Mankind will immensely profit by the availability of such radioactive trace materials. I believed in the truth of the first announcements because I knew since my boyhood that radium and its related radioactive substances can make other substances radioactive. I believe therefore that whatever I read in the papers about the production of such materials is true, and these announcements are usually very modest.

But I have discarded most of the announcements about the terrific boon of using atomic energy to produce power. I agree that an atomic pile, what they now call a reactor, can make cold water warm. But wood and coal and spirits can do this too. Since the first radioactive substances were discovered and purified it was found that they gave off heat continuously, and scientists of 50 years ago explained it to boys and adults that the energy contained in a gram of radium can drive a large oceanliner around the world, that is if we use the temperature difference between hot and cold water to drive a steam turbine which would drive a propeller shaft, which in turn would drive a ship. Or the turbine could drive an electric generator, which in turn could drive a propeller. This application is now used in the Nautilus, and I believe that the Nautilus will work eventually.

A submarine for military purposes which need no refuelling and no surfacing is surely a "good" thing from the military aspect, and in this case, it does not matter if the submarine would cost billions of dollars. Money does not matter when it comes to defence. But money matters very much when it comes to peaceful uses where the cheaper material wins if it can produce the same effect namely make cold water warm, produce steam, which in turn, etc. etc.

At that stage we may again take the semantic view of the matter. When we burn uranium we say that we use atomic energy. But when we burn wood and coal this of course means producing power not by atomic energy. Yet, we human beings, clever as we are, have not the slightest idea of what goes really on within the atoms of timber or coal when they reach a point where they desintegrate and begin to emit energy in the form of rays, which are electromagnetic waves to all intend and purpose, though we call them heat and light. As every prospector owns today a Geiger counter, and as more and more sensitive instruments are built by which one can detect uranium ore from the air, we find radioactivity in almost everything. Recently two prospectors travelling in a Sydney suburban train found their Geiger counters registering violently. But no cause could be detected. Others find radioactivity in rain, in seawater, almost everywhere. Finding rain and clouds radioactive - what could it mean? Why of course, Russia has exploded atomic bombs, and most probably on this assumption scientists have told Truman that Russia has exploded atomic bombs.

In short, we only now begin to realize that radiation is almost everywhere. I said that we do not know what happens within the atoms of coal when it desintegrate to give off energy. The nucleus (whatever that may mean as I shall explain later) may indeed be affected. Indeed, as the other group of physicists who contradict the nuclear physicists, and call themselves wave mechanics, deny the theories of atomic particles, we may very well begin to doubt the meaning of the word "thermonuclear". At present, by some silent agreement everyone assumes that this word means only one thing "the hydrogen bomb". Why not the "ordinary" atomic bomb? Is the heat generated in an atomic pile not "thermonuclear"? And is the heat generated by the burning of a match, the burning of a paper, heated up by the rays of the sun through a magnifying glass not "thermonuclear" in origin? Aren't we in semantic confusion in believing that "thermonuclear" means only the hydrogen bomb? The Atomic Energy Commission has coined that word, and had done so very guardedly. Well, it's utterly vague. It may mean indeed anything but the hydrogen bomb, and as far as I can ascertain the Atomic Energy Commission has been very careful never to say that "thermonuclear" means ^{only} the hydrogen bomb. When the Commission made its first announcement a Sydney reporter asked a professor of physics: "Thermonuclear?" What does it mean? "What else could it mean", said the professor "but the hydrogen bomb?" and his beaming smile was caught by the press photographer. Why then did not the Atomic Energy Commission say so in the first place? Why the juggling with a word, which could indeed mean anything? Indeed, any explosion by which violent transformation of matter and intense radiation

occurs, radiation of varying wave length may well be termed "thermonuclear", especially if thermal energy, which means heat, is produced.

Coming back to the production of power for peaceful uses from uranium piles I said before that I discarded the exaggerations made by scientists already in 1945. They then predicted that atomic energy for industry will be available in 10 years time. I told my friends 10 years ago what I think of this and I have been proved right now after 10 years. Atomic energy for industry is a long, long way off and when it will be possible to have it, it will be discarded for the following reasons.

Studying the history of science the student is amazed how certain false theories and ideas have persisted for centuries, were taught by stately professors in universities, and woe to the outsider who dared to doubt them. Even the insider in the profession who raised the first doubts, suffered the true fate of a pioneer. The layman knows nothing of the history of science, but he may know of the history of medical science. This history shows the development mentioned above, the utterly false theories professed and practised by scientists of the profession, theories which had a grain of truth and a lot of nonsense and by which millions died in pain by the administration of poisons, dragon teeth, lizard tails, burned at midnight at crossroads. Even the history of the last hundred years shows pioneers of medical science Pasteur, Semmelweis, Freud and others being laughed at, scorned as charlatans and worse, just because they disagreed with the prevailing theories of the day. Such a theory is the idea that uranium piles will do all the work for mankind. They won't.

I shall explain this in simple terms. Already scientists become very modest in their announcements about the uses of atomic energy. In fact, they discard all the sensational announcements of previous years. They say even, that if atomic energy will be available, it won't be cheaper than energy produced from coal, simply because all the cost of distribution by powerlines right up to the electric switch in every home, will remain unchanged. This should stop the politicians granting huge sums for the development of atomic energy. Fortunately, however, there is the defence angle and scientists make good use of it in order to get the money for their research. All over the world a picture is repeated which in one instance here in Sydney made headlines (as similar instances made headlines in all other papers). A professor at an after dinner speech developed a lurid picture of what would happen if an atomic bomb would be exploded in Sydney's lovely harbour. Next day the papers brought a map of Sydney harbour with Sydney, its suburbs and surrounding beauty spots and all around where circles drawn. First circle marked the area of total destruction, second circle the area of partial destruction, and so forth. Every citizen of Sydney could see at a glance what's going to happen to his home, to him and his children. And imagine that such a bomb could be slipped into Sydney harbour by any ship. It made all jittery. That professor has no trouble to get the sums allocated for his nuclear research, so he stated elsewhere that his research has nothing to do with atomic energy or the atomic bomb. Another professor, whose work is even further removed from atomic energy was able to extract hundreds of thousands of pounds from industry and governments by using a semantic trick (excuse me) in referring to his work as concerning "basic" atomic research. "Basic" may mean anything, because "basically" all research about matter is "basic" atomic research, and be it the kindling of a flame.

So, pictures and maps of cities with circles of destruction areas appear in almost every town where a newspaper is printed which can secure the statement of an expert, and in every government of every country scientists can claim money for research and get it. But meanwhile a process is going on in industry which will make the idea of atomic energy from uranium piles ridiculous, to say the least. Just as people today cannot understand how false theories have swept the scientists and laypeople of bygone times, anyone who reads the following paragraphs carefully will not understand how the obvious was not noticed, except by a few, and they are at work.

Since my boyhood I had to answer questions put to me by the teacher. As I grew older the answers changed, as old theories, who were once true, were discarded in favour of new theories, now regarded as true, for a while. This process made me doubt the truth of any scientific theory. I remember my examination in organic chemistry at the university. Everything went beautifully and the best mark for me was in the bag. This made me reckless. I closed my last answer with the cheeky remark that this is a nice explanation of what happens within the molecules, but as we have not been able to find out what really goes

on within the molecules and atoms, my explanation is most probably false.

The professor sat thunderstruck. No student has dared to give him such an answer. It was heresy. It was mutiny. Fortunate for me, I said so at the end of the examination which went off without a hitch, as I answered every question to the continuous satisfied nodding of the professor. He admonished me severely and in order to punish me, he said he will not give me the best mark, but the next best. But he was deeply shocked that someone could distrust the truth of what he lectured. Alas, most professors act similarly. Their only safeguard against cheeky students is authority. Only few scholars are ready to admit to their students that we know so little, almost nothing. Socrates was one of them.

So, since my boyhood I have been told to repeat that the radiating energy of the sun, which is electromagnetic in nature, is due to combustion. Then it was contraction. Then it was radioactivity. Ten years ago it was fission, and now it is fusion, the binding of two hydrogen atoms into one helium atom, the process which is supposed to go on in the so-called hydrogen bomb. Ten years hence there will be another theory. But be that as it may, the energy coming from the sun being "thermonuclear" in every sense of the word is colossal. The energy which hits the earth in one second only must be far greater than all the energy produced by all the power plants of the world. And since man began to think, he devised instruments to use this energy. At last, he has been successful. It is amazing to see, how this fact has been overlooked by mankind in general. Since 1945 newspapers of repute have thought it wise to add a science editor to their staff. Before, the scientific atrocities appearing in print, were enormous. But I do not remember even once having read in all the many articles on atomic energy and energy in general which appeared in the press, mention of what I am going to explain in the next paragraph.

Everyone who is a serious photographer will carry around with him an exposure meter. With it he can measure the intensity of the light and calculate the length of exposure. These meters, though only the size of a matchbox, contain an intricate electric mechanism, coils and springs, and a finger moving over a dial. It is an ampere meter, by which the strength of the electric current is measured. But where is the battery, which supplies the electric current? There is no battery, and no source of electricity. There is only a thin metal plate, less than 1 inch square. Twenty years ago, the best plate was a fine sheet of copper, coated with a film of copper oxide. I have no time to go to the library in order to find out what they are using now. But already twenty years ago, this cheap copper film had a remarkable property. When hit by light, electrons were freed within the copper-copperoxide surface, and the amount of electrons released is so great that they are able to run a motor within this matchbox. Yes, a motor, because the principle by which the coil turns around and moves the finger over the dial is the same applied in any motor, the conversion of electric energy into kinetic energy. And imagine that this motor in the matchbox will move any time when hit by light, even light emitted by the flame of a matchstick. And imagine that the production cost of that tiny sheet of copper-copperoxide is negligible. We call this effect the photoelectric effect, and that sheet of copper a photoelectric cell. The current thus released is measured in milliamperes. Stronger cells are made from films of potassium, enclosed in a glass tube, the photoelectric cell which works in every cinema projector, every television camera, and in hundreds of other modern appliances.

This photoelectric effect was known for more than 60 years, and as a boy I read of future houses with tiles made up of electric photocells. These tiles would produce the electric current, which in turn would charge storage batteries. The batteries would supply electric current for the electric appliances in the kitchen, and would produce light in the evening. And all this without powerhouses, overland powerlines, power companies, meters and inspectors and bills. The stories written in my youth mentioned selenium as the active material, because the photoelectric effect was discovered in selenium. But now we have much better materials, and all which is necessary is that extensive research be carried out to find more and more effective cells. Already a miniature motor can be driven continuously just by light. Imagine that in the near future houses and factories will have their power from atomic energy (of the sun) taken directly from the roof of their buildings or from apparatuses standing in their backyard. It will be as simple as that.

I am convinced, and shall have no difficulty to prove it, once I get the time to investigate that a number of researchers in industry and university are busy improving the present photoelectric cell. I feel sure that a host of patent applications and patents deal with only just this.

The research necessary to improve the efficiency of the photoelectric cell could be a purely routine matter. No genius like Edison is necessary, only the patience of a Edison need be there. We do not know generally that Edison has used up millions of dollars in research which brought no result. He said that success is composed of 2% imagination and 98% perspiration and lived up to it. When he found out, after innumerable experiments, that bamboo fibre is the best material for a filament in an electric lamp, expeditions were sent out, which brought back over 6000 different bamboo sorts from many parts of the world. Edison tested them diligently in many thousands of patient experiments. His written laboratory notes covered over 30,000 pages on this alone. Similarly, all what is needed to improve the efficiency of the photoelectric cell are innumerable experiments, testing the flow of electrons from many varied combinations of metals and metal compounds. I feel sure that this research is going on in industry, and surely a number of university researcher work on similar lines, realizing the useless ballyho made at present with the uranium research and realizing too that their work, being not so glamorous as that of the nuclear physicists, will nevertheless be used and recognized by the future generation and perhaps by this generation - as soon as the futility of the present uranium fad is recognized.

I spoke before of existing theories which are taken as the acme of wisdom, only to be recognized by a future generation as being utterly false and misleading. Such a theory in another field of human endeavour is for instance the use of gold as the basis of economy. A number of nations have proved beyond doubt that they can have a sound economy without having any backing in gold, but a number of other nations still cling to the gold standard. What they do will be studied by future generations with amazement. At present, gold is excavated in Australia, extracted from the ore, purified and melted, all under government surveillance. Then it is mostly shipped to the United States where it is - again under government surveillance, dug back into the earth at Fort Knox. It makes no sense at all, yet stately professors of economy will uphold the idea in elaborately expressed theories.

A similar process goes on in the field of uranium. Under government surveillance uranium, one of the rarest elements of our earth crust, is dug out in ore, extracted, purified and hoarded. Then reactors are being build in the hope of future use for industry, and already the worry is there where to dig-in the blasted by-products, so that they may do no harm (just as in the case of gold). And all the time, atomic energy is hitting the earth gratis in colossal amounts only to be picked up by the right instruments - and apparently no scientist is there to raise his voice and make the peoples and their politicians realize the false way their money is going. Why? Ah yes, because of the defence angle, because Russia has the atomic bomb and has the hydrogen bomb too.

Well, she hasn't. Having now expressed my thoughts on atomic energy I want to conclude these paragraphs with only one semantic reflection. Is the energy which mankind is already using in the photoelectric cell atomic energy or is it not? The answer will reveal the crisis in modern physics, a crisis which is baffling every physicist, because their statements simply make no sense, but they won't admit it. The reader may be repelled by my sarcasm, or he may have understanding for it, realizing how I have been treated by stately professors because of my unfamiliar and unorthodox scientific achievement. I ask him to ask any physicist whether my following statement is indeed a picture of the state of affairs existing at present in the theories of physics.

When light hits a photoelectric cell it knocks out electrons in tremendous numbers. The electrons, knocked out from a small exposure meter cell by using only the light of a match, can drive a small motor, as explained before. Surely these electrons are knocked out of the atoms of the cell, and surely some disturbance occurs which must affect the nucleus - that is, if a nucleus really exist. Well, some physicists say it does, some others say it does not.

Light is something which comes from the sun. For two centuries we believed that light is waves only. Before, Newton said that light is matter, small corpuscles which can hit and which can push. Newton's theory was abandoned, but now we take it up again, that is we don't know any more what light really is, oscillating energy only or small particles. The atomic physicists are in contradiction to the wave physicists. In desperation some of them say it is both, particles, but at the same time no particles. It makes no sense. If you ask a physicist about it and he gives you this answer, you will say that he can't have it both ways, particles and no particles at the same time. The last refuge

of the physicists against such a question is - believe it or not - semantics. When confronted with the question "Particles or no particles?" they answer: "The question is meaningless!" And they are using this semantic trick in other baffling cases of atomic physics. I believe that Heisenberg, the great wave physicist, was the first to use this trick. Since my student time I could not stomach this "explanation". If the word "particle" has a meaning, and apparently it has, surely it is not meaningless to ask whether something is or is not a particle. But there you are. The physicists won't tell, and they won't admit either that so far, in their theories they are at the end of their "explanations".

This question is at the basis of all existing atomic theories. The nuclear physicists declare that the words electrons, protons, neutrons, etc. have a definite meaning, that they correspond to something which really exist. And the wave physicists deny the validity of these meanings and say that matter is not matter at all, but wave manifestations, and - they are slowly gaining the upper hand, as their theories and formulas can better describe the phenomena. What does this mean? (semantics again).

It means that all the words used now in innumerable articles in journals and the press, words like "nucleus", "proton", "neutron", "electron", etc. are figments of our imagination. These "animals" simply do not exist (excuse me).

Let me end these preliminary deliberations by quoting Heisenberg again, who blames language for the semantic and scientific muddle the physicists find themselves in. This is what he said:

"In this connection one should particularly remember that the human language permits the construction of sentences which do not involve any consequences and which therefore have no content at all - in spite of the fact that these sentences produce some kind of picture in our imagination."

(W. Heisenberg, THE PHYSICAL PRINCIPLES OF THE QUANTUM THEORY)

I shall now endeavour to prove that the words "atomic bomb", "hydrogen bomb", "Russia has taken away the atomic lead from the U.S.A." and similar statements made in the human language, have "no content at all", but involve great consequences for mankind. I ask the reader for patience and forbearance, and for the realization of my difficult task. It simply cannot be done without bitter sarcasm, without hitting at the semantic and scientific muddle which is the direct work of the scientists who make a living by it.

It all started with the scientists who were deprived of their living and who tried desperately to make again a living by science. In their minds the idea of an atomic bomb took shape. In relating the actual happenings I shall follow the statements of one American scientist who was instrumental in the whole work and who wrote that incredible booklet

ATOMIC ENERGY FOR MILITARY PURPOSES

The official Report on the Development of the Atomic Bomb
under the Auspices of the United States Government
1940 - 1945

written by HENRY DEWOLF SMYTH
Chairman, Department of Physics, Princeton University
Consultant, Manhattan District, U.S. Engineers.
written at the request of Maj. Gen. I.R. Groves U.S.A.

Maj. General Groves is, so I believe, perhaps the only man who knows the truth, as he was in charge of the whole project of the atomic bomb. But he won't tell.

I bought that booklet in China, shortly after the Americans came in. China has no copyright, and does not adhere to the Berne Convention. Chinese publishers secure one copy from abroad of any interesting book and make a "pirated" edition by photooffset, which sells much below the cost of the original. When I looked through this booklet I was amazed. Most intricate technological details about the theoretical and practical side of the matter, the complex methods of isotope separation and others were described with a frankness, which in the face of the high secrecy surrounding usually military matters, made me assume that Smyth must be a fool, and Groves an even greater fool to let him write so freely, even requesting him to write so. However, it was this frankness which fortified my suspicions and which made me come to the conclusion that they are not fools, but that the answer must lay elsewhere, not in what is written. However, this book is the official document and when the American Ambassador made serious protestations to the Kremlin about the spying activities

concerning "atomic energy for military purposes," Mr. Molotov pulled out that very booklet and showed it to the American Ambassador. 'It's all in there' he said, and indeed, for a chemist who wants the necessary hints of how to make uranium isotopes and how to separate them, it's all in there. This booklet has not been repudiated and other publications have appeared meanwhile on the same line. I read about Molotov's demonstration in a news report from Moscow. A few months ago (24th March 1954) a report from New York stated that a booklet has been published in England about the manufacture of U 235 and Plutonium, considered to be correct by American scientists, who declare that the very same details are top secret in the United States and anyone who makes them known, "could be sent to goal as a traitor" according to the report.

WHAT DOES THIS MEAN?

Isn't it most peculiar that highest secrets are revealed and obtainable at any book stand, and at the same time armies of security officials are hounding scientists and government officials, causing many to be suspected or dismissed some to be fired or incarcerated and a few even executed? Something must be wrong somewhere. For me, that little booklet fortified my suspicions, soon after Hiroshima.

AN ANALYSIS OF THE OFFICIAL DOCUMENT

I shall now divide my further analysis into two parts. The first will deal with the booklet and the development from 1940-1944 so faithfully described there, except for the missing part, the last few months in which the atomic bomb is supposed to have been assembled and dropped over Japan. This vital part, I shall reconstruct on the basis of later reports and observations.

THE BOOKLET BEGINS WITH EINSTEIN

As the whole uranium madness is based on Einstein's famous equation according to which mass is equal to terrific amounts of energy ($E = mc^2$), the booklet begins with this and brings a proof of it. I feel it therefore necessary to say a few words about it. For over 30 years I have lectured on the relativity theory and have eagerly waited for the proofs of Einstein's most sensational contentions, namely that space shrinks and time slows down on moving bodies. Today, half a century has passed and there is not the slightest shadow of any experimental proof available to prove this. Indeed, scientists have begun to discard these notions and even Einstein has said guardedly that may be Euclid is right after all, and the non-Euclidian curved space-time continuum may be declared non-existent. Another cosmology will go down the sink, just as in the past cosmologies of great men, Descartes for instance, have been much admired wholeheartedly believed and taught - and discarded. The trouble is that even scholars are most careful to avoid criticism or discussion on the relativity theory, lest their ignorance should become obvious. I shall therefore refer to Einstein himself, and shall try to explain the matter, as another example of what I said before, that theories of the day become the cause of fads and sensations, on which later generations look upon with wonder.

GALILEI FORMULAS AND LORENTZ FORMULAS

About 60 years ago Michelson and Morley made an experiment by measuring the speed of light in relation to moving bodies. The result was in contradiction to the Galilei formulas on mechanical velocities of moving bodies. Now, if Nature shows that the man-made formulas do not fit some newly discovered natural phenomenon, man must alter his formula to fit this phenomenon. This was done by Lorentz. But, the Galilei formulas are still valid for moving bodies which are not electrically charged, such as a stone, a planet, a star, in short, matter as we know it, matter which can be put on a scale and weighed. The Lorentz formula however was made by him to fit light and light only. But what is light? Is it matter in the ordinary sense? No! In fact we don't know what light is. On page 18 I have described the physicists' dilemma. Sometimes we believe that light is electrically charged matter, sometimes it looks as if it would be an oscillation of electromagnetic energy only. But surely, light is not ordinary matter not electrically charged.

EINSTEIN'S PREDICTIONS

Einstein took the Lorentz formula and on the basis of it he predicted another phenomenon of light, the bending of a light ray passing near the sun, as could be observed in an eclipse. But mind you, the Lorentz formula has been designed for light phenomena in relation to moving bodies. Eddington observed this phenomenon in 1919 and this swept Einstein to fame. If he is right here, he must be right too with regard to those crazy notions that a man travelling on a fast train will get flatter and live longer. These explanations and picturesque analogies have been brought forward by Einstein himself and have baffled every one. His stature grew when other phenomena were found which again conformed with the Lorentz formula, which (I state this again) was designed for particles electrically charged, or are they electromagnetic oscillations? I refer to the nuclear, or atomic particles which are speeded up in a vacuum tube by electricity.

THE PROOF FOR MATTER-ENERGY CONVERSION

What I am going to explain is happening in every home where a radio works. When the radio tube lights up something happens. Electrons, negatively charged fly with terrific speed towards the positively charged anode. But what is an electron? To this Eddington, mentioned on the foregoing page, has given a memorable answer. It's semantics again. He said that an electron is something, we don't know what, ^{but call electron,} which does something, we don't know what. Now this something which by any other name would be as mysterious, has been subjected to various experiments and it has been observed that if we add energy to it, that is, if we speed it up to higher velocities by electricity, its mass increases. As this is exactly what it should do according to the Lorentz formula, it was declared as another proof of Einstein's prediction, and Smyth explains such an experiment and its calculation in the official booklet in order to vindicate the use of uranium. But has the electron, and the proton mass in the ordinary sense of the word? No, says the rabid wave mechanic. It is an energy manifestation only. How then is that mass increase measured? It is not measured by weighing the gravitational pull, but something entirely different, the electromagnetic pull, the deviation of the path of these particles (or whatever they are) in an electromagnetic field. From this we infer only its mass or what we believe to be mass. And here an abyss opens up.

GRAVITATIONAL FIELD AND ELECTROMAGNETIC FIELD.

The tremendous difference between these two notions are known to every boy who ever played with a magnet. Bodies, not electrically charged, such as a stone and our planet earth, attract each other. They never repulse each other. Never does a stone fly away from the earth if we only let the gravitational force act on both (not any other force, such as our muscles in throwing the stone up). But once we deal with an electromagnetic field we observe attraction of bodies with different charge (positive-negative, North-South) and repulsion if the polarity is the same. In other words: in the gravitational field there is only attraction. In the electromagnetic field there is attraction and repulsion and we have not the slightest idea why and how.

EINSTEIN'S DILEMMA.

Einstein was aware - since 1905 - of the mess he got himself into. He had applied the Lorentz formula designed for electromagnetic phenomena to gravitational phenomena and as I said before, not the slightest shadow of any experimental proof has been forthcoming. All phenomena in line with the Lorentz formula related to electromagnetic phenomena, for which the formula was designed. And so, for half a century, Einstein has tried to rectify matters by trying to evolve a new theory which would be applicable to both fields, the UNIFIED FIELD THEORY, as he called it. In 1928 he declared the problem solved, but he admitted later failure. And since then he tried again and again until a few years ago, and again and again he had to admit failure and no experimental proof. A few years ago, I bought a booklet which on the dustcover announced an explanation of Einstein's new Unified Field Theory. I bought it and found it a fraud. Not the slightest explanation of Einstein's ideas about his reconciliation of both fields is to be found there. Einstein himself wrote a foreword to this booklet by Lincoln Barnett which ends with this admission:

"The present situation is characterized...by an uncertainty concerning the choice of the basic theoretical concepts."

For anyone who can read between the lines, who can translate high sounding words into plain language, these lines read: "The present situation is characterized by our uncertainty, that is our ignorance about the matter." For anyone who has read my previous explanations concerning the uncertainty of matter or energy manifestation with regard to such phenomena as occurring with light, electrons, protons, or whatever they may be, the admission of Einstein becomes revealing. Now let us draw the final conclusion.

URANIUM AND COAL

Let us consider a pile of uranium and a pile of ordinary coal, each say 1 ton in weight. They are matter, they can be put on a scale, they would crash down to earth if lifted by a crane, in short they represent matter in an gravitational field. And now something happens within the pile of coal. It heats up, just by itself. It gets hotter and hotter and if densely packed and finely divided by intermediate air, such as it happens when coal dust is present, it will ignite. What happened? Nothing else but the emission of electromagnetic energy, something we can measure, something which may or may not have a mass, in any case, something which is infinitesimal in size. And the very same thing happens in an uranium pile. And Professor Smyth says in that booklet that what happens in the pile of ordinary fuel is nothing else but a chain reaction in any sense of the word. Whether the same thing would happen in an uranium pile nobody knew in 1940. Many millions of dollars had

to be spent for mining one of the rarest minerals on earth, for building huge separation plants, etc., until a pile of uranium could be assembled. And then it was found "Yes, the pile can do the same thing as a pile of coal. It gets hot. It can make cold water warm." The millennium is at hand.

STEAM TURBINE AND GAS TURBINE

Now that we can make warm water with an uranium pile, we can make steam, and if we have steam, we can drive a steam turbine, just as we do it with coal. What then is the difference? Coal is much cheaper. Ah, said the scientists 10 years ago, an uranium pile can burn almost indefinitely. Well, they are now more modest, as I have related on page 15. Such uranium piles are already working and it has been found that the uranium ingots must be replaced, just like coal. But suppose we get steam enough to drive a steam turbine. Do not responsible men realize that the days of the steam turbine are over for good? To drive a steam turbine, you have to make a flame first. That flame heats water, which produces steam, which in turn drives the blades of the turbine. But in the gas turbine, the flame itself is directed against the blades of the turbine. The flame itself drives the turbine, and this much simpler arrangement has been found much more efficient than driving by steam. Let us realize that steam has been driven off the road 70 years ago, and that it is being driven off the rail road with every new engine being built with a Diesel equipment, which in turn will soon be replaced by a gas turbine.

WHY THEN GOING ON WITH MAKING STEAM FROM URANIUM?

To this the scientists have two answers. The first is the "breeding" quality of an uranium pile. True enough, it burns out. True enough its efficiency is ridiculously low. True enough it costs a hell of a lot of money. True enough it is highly dangerous. Not that it will explode. But the radioactivity contaminates the air and can affect all organism. Already the scientists are worrying what to do with the "ash" supposed to remain dangerous for centuries. All this is true enough. But there is one factor of utmost importance. An uranium pile "breeds" plutonium, and plutonium can be made to explode - the atomic bomb. The second answer is that an uranium pile produces short-lived radioactive materials, which are a great boon to medicine and industry, as I have explained on page 14. But already such materials are produced without a costly uranium pile. They can be produced in a cyclotron. Here in Sydney the Department of Physics is making a great ballyho about "basic" atomic research, which has nothing to do with uranium. They clamour for an uranium pile. They go abroad with the money collected for atomic energy for peaceful uses, in order to study reactors overseas. And meanwhile the Department of Physics of Melbourne University lacking the fortune collected here in Sydney from industry and government has assembled a cyclotron and will soon manufacture radioactive substances for medicine and industry. There remains therefore only one excuse for wasting money on uranium piles: the atomic bomb. We shall examine this claim soon.

IN DEFENCE OF THE SCIENTISTS

I am harping on the scientists and surely the reader, who is accustomed to look up to the temples of science and their highpriests, will despise me. But it is not me who is voicing such criticism. I am only repeating what I am reading. Other responsible scientists and technicians have raised their voice time and again in condemning critique but their voices are drowned. The exaggerations about atomic energy, the incredible statements about the destructiveness of the nuclear weapons, in short, the sensationalism, which makes for publicity, simply deafens other voices. And there is of course money. Poor researchers in poor universities can make no discoveries. The politicians can be frightened enough to lose the next elections, because frightened voters will vote against them if they do not vote for expenditure for uranium research. So billions of dollars are voted for research. There are some bright spots in the picture too. At present, when I am writing this page a Congressional Committee of over 20 persons is touring Australia. They are concerned with the production of uranium for peaceful purposes, and they are honestly working toward this aim, because the scientists have told them what it means for peace and war. They enjoy their work.

SCIENTISTS MUST BE GIVEN MONEY FOR RESEARCH.

We have got to realize their plight. Their ideas are in a terrific mess. It is true that there must be some relationship between gravitational and electromagnetic phenomena, but not even Einstein can venture any idea as to the how. But their greatest plight is - excuse me again - semantics. In speaking of the atom, they talk of small particles, which have a mass and which are electrically charged. In school they demonstrate to children that two little balls charged with positive electricity will not keep together, but fly apart, because they repulse each other. At the same time they say that the nucleus consists of protons, which have a mass and which are positively charged. In Hydrogen there is only one proton with one positive charge. But in the higher elements more and more protons are bound together, all positively charged. But they should

fly apart, if all the theories on electricity make any sense. Why don't these little balls, all positively charged, do not fly apart? 'Why,' answer the scientists of the other physical party, 'because of your semantics. Stop calling names. Stop talking of particles, of bricks, of protons, of electrons, of little balls which collide, etc. The trouble with you nuclear physicists is that you use language' they say. I have cited Heisenberg on page 18. It is not me who speaks of the semantic muddle of present-day physics. They, the wave mechanics say so, and they emphasize that what happen in the world of ordinary experiences where we can weigh matter, cannot be compared with the world of the infinitesimal where utterly different laws of Nature prevail of which we have not the slightest idea. What proof have we then that the Lorentz's and Einstein's formulas (which deal with the world of the infinitesimal) can be applied to our material world? What proof have we that the energy released in infinitesimal quantities in laboratory experiments can be reproduced in large quantities? There is only one proof - the atomic bomb (that is, if there is one).

SMYTH VINDICATES THE USE OF URANIUM.

It is therefore natural and understandable that Professor Smyth in writing of "atomic energy for military purposes" in the official document, must start with the Einstein equation in order to vindicate the scientists who spoke of the atomic bomb, years before Hiroshima. He also must give some proof that this equation is correct. But what he fails to state is that these "tremendous" energies released from mass conversion are infinitesimal in size. They have not shattered a single test tube. Indeed their force is such that not even a dust speck could be blown away. Anyone who has handled explosive matters, (and I have) knows that tiniest amounts will cause explosions. Test tubes, flasks, laboratories and whole buildings will be blown up at one time or another. In contrast, not the tiniest explosion, not even under a microscope, has been reported by the nuclear scientists. Years ago I read an article of a reporter who was allowed to visit Oak Ridge. There, workers work behind terrifically strong walls and handle the most dangerous material, it is said. 'Has any explosion ever occurred?' asked the reporter. 'None whatever' was the answer. This revealing information confirmed my views. (About the "critical size" see later)

SENSATIONALISM AND SEMANTICS.

One last example how people and politicians are led astray, again by using words which have different meanings in different contexts. Smyth and all other scientists in speaking of the "tremendous" energies released are talking of millions of electron volts. Now the ordinary people (and politicians belong to them) know exactly what volt means. They have got an electric shock sometimes and they know that innumerable people have died by 110 volt only. Now the scientists are producing energies by the hundreds of millions of volts. It must be terrific. And the pictures of those laboratories with huge porcelain isolators confirm the misleading view. But what people do not know is that the high voltage used in these laboratories is of quite a different kind than the one of which scientists talk only in millions. Those millions of volts are not volts at all. They are an expression of a velocity, a speed, to which particles are speeded up. I can cite other instances by which scientific terms have caused semantic muddles which are consciously or subconsciously exploited by publicity hungry scientists in order to get money from the politicians. But I must go on. Let us now come to the actual talks on the atomic bomb.

HOW DID THE TALK OF AN ATOMIC BOMB GOT STARTED IN THE U.S.A.?

Professor Smyth relates in the official document that the idea of an atomic bomb occurred at first not to American-born scientists, but to foreign-born newcomers. This is understandable. Any scientist who has ever lost his job, because of racial or political reason, who has been driven out of his country, will loathe the government which persecuted him and will think of revenge. In 1934 Fermi, an Italian, studied the bombardment of Uranium with neutrons. His observations started the thing, and he was also the first to approach the U.S.A. Navy. In 1938 Frisch and Meitner, both refugees from Germany and working with Niels Bohr told him of their guess that the uranium nucleus might be split into two parts with release of energy. This process is now called "fission". In 1939 Niels Bohr left his Denmark and arrived in America to confer with Einstein. Four years later, Bohr escaped from Nazi-occupied Denmark in a boat. As soon as Germany went into war, the foreign-born scientists Fermi, Wigner, Teller, Weisskopf and others went into action.

AN APPEAL IS MADE TO EINSTEIN.

Those scientists realized that the second world war will sooner or later engulf America. They yearned to help the country which has given them asylum, work and peace. They honestly believed that the infinitesimal experiments which confirmed Einstein's prediction can be repeated on a large scale, and that perhaps be brought to a sudden reaction, an explosion. It is therefore natural that they approached the man whose ideas were at the basis of all this.

Scilard and Wigner went to Einstein. Later, these three discussed the matter with Sachs, and Einstein wrote a letter to President Roosevelt. Sachs then explained to Roosevelt "the desirability of encouraging work in this field." The President, on the strength of the letter from Einstein, appointed the "Advisory Committee on Uranium." He had to. Einstein was too great an authority.

EINSTEIN, SAINT OF SCIENCE.

Great men of science have lived their lives in comparative obscurity.. The public, the laymen, knew little of their work, simply because it was not sensational. It was another theory, another explanation of some phenomenon already known. It was not a crazy topsy-turvy theory, contradicting all our concepts. Who knows of Riemann who evolved theoretical formulas of multi-dimensional geometrical conceptions? Who knows of Fitzgerald who tried to explain the Michelson-Morley experiment by a shortening of space in the direction of movement? And who knows of Lorentz whose very formulas are the basis of the relativity theory? These three scientists said all there was to be said for this theory, but they said it in the abstract language of science. A man had to come who, in addition to the language of science, could talk the language of the people. (Excuse me, it's semantics again). This man was Einstein. He started talking of railway lines, of trains travelling along a straight rail road, of signals sent along that straight path, of observers standing along the line, or sitting in the train, all things which are very familiar to every man, to every boy. And then the bottom fell out of all our conceptions about trains. The observers mixed up their signals, the trains got flatter in the direction of the line. And the worst thing to stomach was that the man along the line grew older faster than the man in the train. It made no sense at all, but most physicists jumped on the bandwagon and began to explain the theory, until even scientists of all other sciences admitted that the thing is too high for them. Then one physicist remembered "Alice in Wonderland". This man was Gamov. He was apparently impressed that the Alice stories were written by a great mathematician Lewis Carroll. Not that they contain anything about mathematics. If they contain anything which is cited by scientists today, it is only semantics ("What I say three times is true" said the Queen, or was it the mad hatter?). And so Gamov started his series of "Mr. Tompkins in Wonderland", an explanation of the relativity theory for children and adults, and with pictures too, pictures of flattened trains and motorcars and people. Such things "did it" for Einstein in America. When the Riverside Church in New York was built, the unheard-of thing happened, the graven image of Einstein was included among the saints and sages, who are dead for many centuries. Einstein did not protest, as he should have done, at least weakly and vainly. He enjoyed it, and apparently, as he grew older, he let things happen which are simply "not done" among scientists. That booklet by Lincoln Barnett which I cited on page 20 carries the brazen title "The Universe and Dr. Einstein" and Einstein did not object. On the contrary, he wrote a foreword for it. And though he stated guardedly in the foreword that 'may be I am wholly wrong' (see quotation on p.20) he did not enlighten Barnett that (what I stated before) there is not the slightest shadow of any experimental proof available that space shrinks and time slows down. And so, when Einstein wrote to the President that an atomic bomb is feasible, the President had to accept the words of the present saint of science.

EINSTEIN AND THE ATOMIC BOMB.

I related in the beginning that the atomic bomb saved my life, and the lives of the foreigners under Japanese rule in China. When the Americans entered Shanghai, the atomic bomb was the topic of the day, and the announcements of the U.S. Army radio were eagerly listened to. I tried to get every scrap of information and one announcement made a deep impression on me. Einstein was asked of his opinion about the bomb. He refused to say anything. This appeared to me very strange. Einstein was usually fond of saying something, especially when he could say something for peace. After all, the atomic bomb has ended the war; it has saved the lives of at least half a million of American boys, with 5 times the number of wounded. Why did he refuse to say anything? And (later on) why did the Russians refuse to say anything, when Truman alleged that they have the atomic bomb? And why did the Atomic Energy Commission refuse to say anything, when the press alleged that they have exploded a hydrogen bomb? May be something is fishy somewhere? May be Einstein had his doubts in 1945?

EINSTEIN AND THE SCIENTIFIC EXAGGERATIONS

We forget so quickly. Ten years ago, stately professors expressed grave concern about the implications of atomic bombs. They hinted that such an explosion may trigger off a chain reaction blowing up the whole planet. To this Einstein expressed scorn. 'Forget about it' he said in more elaborate language. Einstein had his scorn too with regard to the continuous talk of letting the Russians in. Politicians and statesmen advocated that Russia should be allowed to learn of the atomic bomb, provided a control committee is set up to control Russia, with

regard to the use of atomic weapons. 'How can you control Russia?' Einstein asked scornfully, 'she will do whatever it pleases the men in the Kremlin.' To this, the statesmen and columnists had an answer, of course. It's semantics again. 'We must establish a watertight system of control,' they said. Everyone knows that watertight is watertight. No drop can get through in a water-tight container. How they are going to make the waste expanse of Siberia "watertight" with regard to the use of atomic weapons, is another thing. Under the controlheadquarter the Russians may have a secret store of bombs. Indeed, this continuous talk of joint atomic control has baffled me ever since. Everyone agrees that the Russian leaders are unscrupulous. That they will not hesitate to use any weapon within their reach and to hell with any agreement of joint control. Yet, these talks persists. Either the Western statesmen who advocate this are not "realistic" (as the expression goes), or they must know that the atomic weapons, even in Russian hands present no real threat. In any case, it is interesting to note that Einstein who was intrigued in 1939 by his friends about the possibilities of an atomic bomb, was much against anything connected with it, after 1945. But he had started the ball rolling.

THE REPORT OF THE URANIUM COMMITTEE TO ROOSEVELT.

"It specifically mentions both atomic energy and an atomic bomb as possibilities" writes Smyth. The first money rolled in \$ 6000 from Army funds for the procurement of 4 tons of graphite and 50 tons of uranium oxide. When the committee met for the second report "two important new factors had come into the picture". The first was the discovery that only U 235 produces fission when bombarded with slow neutrons. The second was a report that "a large section of the Kaiser Wilhelm Institute in Berlin had been set aside for research on uranium. In short, the Germans are at it, and we must not get caught napping.

HOW MUCH HAVE THE GERMANS DONE IN PRODUCING AN ATOMIC BOMB?

The true answer is incredible. They did nothing whatever. Now, you may know better. There were innumerable articles in the press since 1945 telling of phantastic spy stories and of the mad race to get the atomic bomb first. There is the famous story of the British raid on a Norwegian factory which produced heavy water. This raid was said, threw the Germans back by years. Well, it's all a lie. The fact is that the Germans had no intention to produce an atomic bomb and they made no preparations for anything by which atomic power should produce an explosion. Strange, isn't? The more so as Smyth relates that Hahn and Strassman reported already in 1939 that an isotope of barium was produced by uranium bombardment. Even more strange, as Smyth reports that "during 1939 and 1940 many public statements, some of them by responsible scientists, called attention to the enormous energy available in uranium for explosives." In 1939 and 1940 Germany was not at war with the United States. There was a German Embassy in Washington which collected every scrap of information. Yet the incredible truth is that German scientists must have discarded the idea. After the war a Commission was sent out to Germany to collect all material on scientific research, as well as on any weapon which had been pursued by the Germans. I found the book in the library in which the leader of that special commission reported about the advances of Germany towards an atomic bomb. They found nothing. They found no hint that German scientists worked on an atomic bomb, and though they collected tons of papers and interrogated many scientists the result was Nil. The answer to this may be that the German scientists won't tell and had destroyed all papers. This is in contradiction to the fact that many German scientists have accepted invitations from the U.S.A. to work on guided missiles, rockets, etc. and are doing it wholeheartedly. And yet, the fact remains that the public talks which went on in America about an atomic bomb were discarded by German scientific intelligence and by German scientists in general. Perhaps they harboured the very same doubts which I harboured and found confirmed by the reports on the explosions.

ROOSEVELT SET UP THE NATIONAL DEFENCE RESEARCH COMMITTEE

The Uranium Committee became a subcommittee and by November 1941 the expenditures totalled about \$ 300,000. This was only the beginning. But it is interesting to note that even in 1941 no scientist knew whether a chain reaction could be initiated and maintained and whether this chain reaction could ever be induced to be explosive. Everyone, including the British scientists were however very much optimistic and research work proceeded. Bush, the president of the NDRC took up the matter with Roosevelt and Wallace, and it was decided to push the work more vigorously and to provide special funds for it. This was just before Pearl Harbour.

THE SCIENTISTS AND THE MILITARY.

Soon many millions of dollars were spent for the erection of huge separation plants. But the amazing thing is that the scientists could not produce even the tiniest explosion in a test tube. What they produced were mainly hopes and hypotheses, based on their nuclear research, but no experiment which proved that an

explosion will ever be feasible. Even the whole year 1942 passed almost to the end and the scientists had not produced a mild chain reaction which would make cold water mildly warm, least of all was there anything in sight which indicate that an explosive chain reaction would ever be possible. Military experts are hardboiled realists. They want to see "performance", destruction, fire power, penetration of steel plates, etc. Anyone who ever studied a bit of the science of explosives knows that the power blast of an explosive is measured by enclosing a tiny amount of an explosive in a small lead container in which it is then exploded. The walls bulge a bit by the explosion, and the increased volume of the lead flask is then measured. There are more of such scientific tests. It is amazing to see that, in this case, the military experts were taken in by the scientists by promises, much indeed in the same way as alchemists in the past extracted huge sums from kings and courtiers by promises to make gold, by the building of large laboratories, furnaces, extraction and separation plants, etc. As this strange phenomenon is connected with the idea which induced me to write this analysis, let me dwell a little on this.

THE EXPERTS AND THE PIONEER.

In Part II on page 9 and 10 I have told of the terrible injustice meted out to mankind's best sons, the pioneers of new ideas. They are driven into debt, despair and death not by the men in the streets, but by the men in the chairs, the experts, who make a comfortable living by teaching the familiar and orthodox ideas, and who therefore reject the newcomers whose ideas are much contrary to the prevailing theories of the day. In our time, a literary form has gained enormously in the world of reading, the biography. Hardly a magazine appears which has not a biographical article. Here in Sydney an illustrated magazine appears which can exist without advertisements simply by bringing "real-life" stories of unusual people, long dead or very much alive. Its name is PEOPLE and they brought a picture story about me and my work too. The "Daily Mirror" here in Sydney brings a biographical story on a full page every day, and I know people (including myself) who buy this paper mainly because of that page, which are collected and appear later on in a separate magazine PARADE. - These stories tell of terrible blunders made in decisive hours by kings and statesmen by generals and professors, and they tell also of the tragedies by which pioneers of new ideas, be they inventors or composers, painters, philosophers and other idealists met their fate at the hands of the experts of the day. Slowly such stories are making their impact on the men in the street, but also on the men in the chair. The first to gain were the artists. In the past, great painters, whose pictures are hung today in great museums, had to die of starvation, poverty and general neglect. Today painters know how to make a living. Most important is to create a "new" style and a philosophy with it, the more controversial the better. Indeed, the more it contravenes with established ideas the greater is the chance that it will provoke interest. The sky is blue. We shall paint it green. A human being has two eyes. We shall make three, nay ten and more. The more idiotic the scrawls the better. And lo, the experts at last saw the light, and not to get caught napping that they have overlooked the new revolution in art, they fell in line and began to praise and explain the new art to bewildered people, who then in turn began to believe the experts, not realizing that they have been duped by the artists, whose main desire is to eat and not to starve, to sleep in a bed and not under a bridge.

PIONEERING INVENTIONS IN THE MILITARY FIELD.

Great Britain was the dominant military power in the nineteenth century, and therefore the history of military inventions with regard to British generals and admirals is revealing. The man who invented the propeller screw for ships and the revolving turret for ship guns was chased out by the admiral to America. The same fate befell the inventor of the torpedo. His ideas were scorned by the experts of the day. The British people with their sense of humour assert that their military experts are always preparing for the last war. I was surprised to learn that even Churchill fell victim to this idea. In the first volume of his war memoirs he relates that huge sums were spent on a giant machine which could cut trenches at the rate of a yard a minute, a mechanical monster which could eat through the earth as it crawled along. Apparently, even Churchill did not realize that the invention which ended the stalemate of years of trench warfare in 1914-1918 was the tank. The Germans, who were bent on aggression, realized the importance of the tank on land and the aircraft against ships. The British, who were bent on defence, had to learn this by tragical blunders. But the very same thing happened in other wars and in other countries. The Austrian generals rejected the man who showed them a rifle which could be loaded from the rear. He promptly sold it to the Prussians. They then easily defeated the Austrians at Koeniggratz 1866, as the Austrian soldiers had to do elaborate work for every shot, plunging powder into the muzzle from above, then the bullet, then a stick...well, it was over in a day.

THE MILITARY EXPERTS, THE SCIENTIFIC EXPERTS AND THE TOP LAY PEOPLE.

The reader is kindly asked to realize the difficulty of my task in this analysis. Analogies are dangerous and can be wholly misleading, according to the Logic of Semantography. History never repeats itself, only men make blunders at different times and under different circumstances. Another rule of the Logic of Semantography is that we never know what goes on in the minds of people who make decisions. On the foregoing page I have referred to the flood of biographical stories which are making their impact on experts and lay people. These stories are mainly of two types, the blunder story and the success story. The experts of today will admit that experts of yesterday made blunders, but they will not admit that they themselves are unable to see a new idea when confronted with it. Sure enough, they are pestered by people with new ideas, but they are obviously cranks. It remains therefore for the lay people to doubt the experts, when they express caution or point out that nothing, but nothing, has been brought forward to prove that a super bomb is feasible. When Fermi approached the Navy in March 1939 he had to admit this, and consequently the Navy experts were non-committal and did not advance a single cent. It was only when the lay people came in that money began to flow. These lay people may have been influenced by the blunder stories in the military field, but also by the success stories, and there is no greater success story in the scientific field than the Einstein story. When these lay people are presidents of great countries things will begin to happen. The big money, the many millions of dollars began to flow when the "Top Policy Group" (as it was called) was established. This group consisted of the following people: the President, the Vice-President, the Secretary of War, the Chief of Staff (all so far lay people in the scientific field). The last two people of the Group were Vannevar Bush, Chairman of the National Defence Research Committee (of whose scientific qualifications I am unaware at the moment, I shall look them up later and report in a footnote below). The last man was Conant, the chemist. About him, I shall write at a later date.

LAWRENCE ANNOUNCES THE SUPER BOMB.

I shall regret if the reader forms the conclusion that I disparage the scientific achievements. The very contrary is true. I am today (though nearing the 60 mark) as fascinated and enthusiastic about scientific endeavours and achievements as I was as a boy and as a student. What I am trying to unfold is a story of which I feel sure that it will be one of the greatest "bombshells" of the twentieth century, how honest scientists have been laid astray by words, by assumptions, by analogies, by hunches and hopes. In July 1941, Lawrence in his report to the National Academy Committee wrote

"If large amounts of element 94 were available it is likely that a chain reaction with fast neutrons could be produced. In such a reaction the energy would be released at an explosive rate which might be described as 'super bomb'.

It is the privilege of the pioneer of new ideas that he can see the application of his idea long before others can realize them. Bertrand Russell, Julian Huxley and others have classified my work as being of a pioneering character. Exercising my privilege I maintain that teenagers of a later generation, who have learned Semantography in school, would reduce Lawrence statement to its real value. The semantographic symbols for the words if, likely, could, would, and might all carry the question symbol (?). No matter how high an authority Lawrence may be, any teenager would be able to tell him that he may be wholly and totally wrong. But we are not so far yet. Words exert magic influences especially when coming from authority. The significant word here is "large amounts of element 94." In order to have large amounts of this element, called Plutonium, large amounts of sums have to be spent on large extraction and separation plants. These large amounts of money are the people's money and it is understandable that no one who advocated or spent these large amounts will ever admit that they were a wasteful expenditure. On the contrary.

SMYTH ANNOUNCES THE SUPER POISON.

If the July 1941 report of the National Academy Committee used cautious words (see above) the November report of the same year used words of quite a different nature:

"A fission bomb of superlative destructive power will result from bringing quickly together a sufficient mass of element U 235. This seems to be as sure as any untried prediction based upon theory and experiment can be."

Footnote:

These reports are made for the top lay people and the words will result and sure are indicating a certainty. The second sentence retracts the whole certainty by saying that it is an untried prediction, yet it is stated that this prediction is based on theory and experiment. This again is extremely misleading. The word experiment indicates that some sort of small scale explosion in the laboratory has been performed, on the basis of which the prediction has been made. What the lay people did not know is that not the tiniest explosion had been observed and furthermore that all the theory and experiment refer to particles of infinitesimal size electrically charged, in short, to electromagnetic phenomena. On page 19 and 20 I have explained the great gulf between these phenomena and gravitational phenomena relating to matter, such as a chunk of a bomb. It would have been a different story if a small scale laboratory explosion had occurred, which had then formed the basis of a theory and a calculation. This has been the case with every explosive ever invented by man. The remarkable thing is that in the case of the atom bomb no such explosion had occurred and I maintain that something else happened, something of which only few people know. I ask again the reader for patience. I must go first through the relevant portion of that booklet by Professor Smyth.

THE CELEBRATED TNT FORMULA

In the report mentioned above we find that according to calculation "The available explosive energy per kg of uranium is thus equivalent to about 300 tons of TNT." Let me again stress that this calculation has not the tiniest experimental explosion at its basis. This TNT comparison has impressed lay people ever since. Another comparison made in the report is the following: "If the estimate is correct that 500,000 tons of TNT bombs would be required to devastate Germany's military and industrial objective, from 1 to 10 tons of U 235 will be required to do the same job." This calculation must have impressed the top lay people enormously, and must have offset all doubts and misgivings about the estimated cost, an initial 500 million dollars for nothing but 'to push the separation methods to the production stage' as the booklet mentions. We know today that the above TNT calculation with regard to Germany is totally wrong. One 1000 bomber raid brought about 10,000 tons of explosive on Germany's objectives. Just 50 bomber raids brought 500,000 tons of explosive, and there were hundreds of such raids. The fact is, (something we learned only after the war) that all those devastating carpet bombing raids did little industrial damage. Another misleading and naive assumption about those "1 to 10 tons of Uranium 235" is that military and industrial objectives are concentrated on a small area where they can be finished off with a few bombs. The opposite is true.

SMYTH ANNOUNCES THE SUPER POISON

Another calculation which must have impressed the top lay people is the use of fission products as poison gas. Smyth relates that according to his own calculations, "the fission products of a 100,000 kw chain-reacting pile ^{or one day} might be sufficient to make a large area uninhabitable. He mentions too that "serious consideration was given to the possibility that the Germans might make surprise use of radioactive poisons." This must have given the top people the necessary jitter. The fact is (though radioactive material is dangerous) that not a single person in the world has died through radioactive radiation or poison from an atom bomb, not even people in Hiroshima, not even the celebrated martyr of the Japanese fishermen. For this I shall bring statements of responsible people. The atom tests in the Nevada desert at which troops participated proved clearly that troops can advance immediately into the area of the explosion and that a simple foxhole is sufficient to protect them from any harm. We should believe that radiation and poison gas goes around corners and into fox holes. Apparently this is not the case. In short, the effects of the bomb are wildly exaggerated.

FEAR OF THE GERMANS

On page 24 I have related the incredible fact that the Germans have done nothing whatever about an atomic bomb, though their Washington Embassy must have informed them about the public statements on atomic explosives, made by responsible American scientists. Smyth relates that the British had set their heart on heavy water as a moderator, instead of graphite as the Americans did. Chadwick was very much perturbed about the activities of a factory in Norway which produced heavy water, as "it was difficult to imagine a use for these materials other than in work on the uranium problem. They feared that if the Germans got atomic bombs before the Allies did, the war might be over in a few weeks." Now we know who instigated the British raid on the Norwegian factory. Today, after Germany has been searched thoroughly, we know that the raid served no purpose, and the fear was without grounds. German scientists might have worked on the Uranium problem, but not on the Uranium bomb. We know that ordinary scientific research goes on even in war-time in many countries. But the fear which the British scientists imparted to two American scientists who were sent to England served its purpose. Smyth relates that "The sense of urgency

which Pegram and Urey brought back with them was of great importance." This sense of urgency was then reflected in a report by Conant to Bush in which he advocated that not one separation method, but all five (centrifuge, diffusion, electro-magnetic, uranium-graphite and uranium-heavy water for producing plutonium) should be "pushed to the production stage" (for which) "a commitment of five hundred million dollars would be entailed." Five hundred million dollars!!! Why use all five methods? Because it was not known whether any of them would bring any result. Remember, no chain reaction had been produced yet. And so, the great flow of money started because, as Smyth writes, "It was feared that elimination of any one method might result in a serious delay. It was thought that the Germans might be some distance ahead of the United States in a similar program." This is the kind of talk which we find repeated today, namely that Russia is ahead of the Americans in atomic weapons and the like. Just as the scientists of today have no definite information about Russia's research, their colleagues 10 years ago had equally no definite information about German research. Today we know that the fear about German atomic bombs was wholly unfounded. I shall be able to prove that the fear about Russian atomic bombs is equally unfounded, and for that about atomic bombs in general.

CONANT WRITES ABOUT THE DECISIVENESS OF ATOMIC BOMBS.

"Conant emphasized a question that has been crucial throughout the development of the uranium project" writes Smyth. "The question was whether atomic bombs would be decisive weapons or merely supplementary weapons. If they were decisive, there was virtually no limit to the amount of effort and money that should be put into work." And Smyth adds "But no one knew how effective the atomic bombs would be." How effective indeed? As an explosive it was miserably effective. Major De Seversky who was sent by the War Department to study the effectiveness in Hiroshima and Nagasaki reported that a single blockbuster would have done the same damage (see later). But as a means to bring the Japanese nation to a "honourable" surrender, the bomb was very effective.

THE U.S. ARMY TAKES OVER.

The president approved the program and the expenditure. On September 17, 1942 the Secretary of War placed Brigadier General L.R. Groves of the Corps of Engineers in complete charge of the Army activities relating to the "Manhattan District" the code name for the work on atomic bombs. . Being not a scientist he asked Conant and Tolman to serve as his scientific advisers. Being an engineer he must have reviewed the progress made with dismay. This progress was briefly: no chain reaction had been produced, no small explosion had been produced, of plutonium not more than 500 micrograms had been produced, which is another way of saying that the amount is half of a thousandths part of a gram, or 0.000,5 of a gram, or 0.000,02 of an ounce. When a chain reaction was at last produced it was found that, in order to produce a single bomb, the pile would have to be kept going for 70,000 years. But no one knew whether it will be ever possible to produce an explosive chain reaction. Groves saw to it that the plants were kept going and that they produced the materials desired. In the meantime he provided all facilities for the physicists in Los Alamos under Oppenheimer to do the necessary calculations. And this they did. They calculated through 1943, through 1944, and through 1945. Smyth stresses the great importance given to theoretical physics in this matter. So far through all the years the bomb itself was nothing but a theoretical dream. In the meantime, the Allied Armies and Navies advanced bit by bit by ordinary combat methods. Germany was defeated without the atomic bomb, and the Japanese suffered defeat after defeat by ordinary combat methods and again without the atomic bomb. They were on the verge of surrender and indeed they were ready to surrender without ever having heard of the atomic bomb. It looked indeed as if the theorizing physicists in the desert of New Mexico had calculated in vain - until a use was found for the atomic bomb, or what was called an atomic bomb. As this part of my analysis is based on my own observations and conclusions I shall now end the quotations from Professor Smyth booklet "Atomic Energy for military purposes." I shall now start to relate my own experiences in Shanghai.

See S.S.No.173 (p.19 - 23) and later publications.