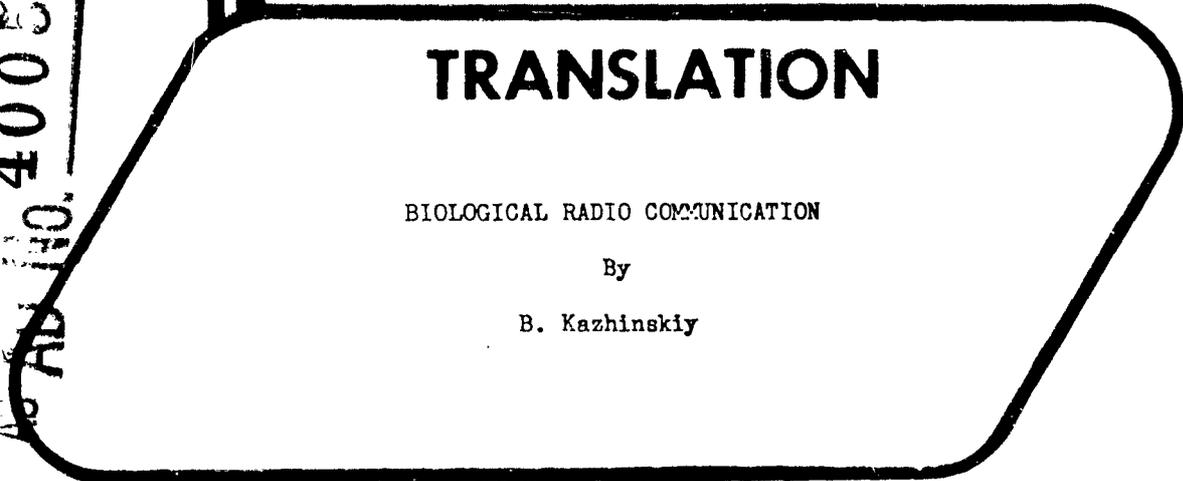


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TRANSLATION

BIOLOGICAL RADIO COMMUNICATION

By

B. Kazhinskiy

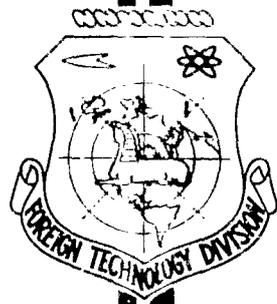
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FOREIGN TECHNOLOGY DIVISION

AIR FORCE SYSTEMS COMMAND

WRIGHT-PATTERSON AIR FORCE BASE

OHIO



UNEDITED ROUGH DRAFT TRANSLATION

BIOLOGICAL RADIO COMMUNICATION

BY: B. Kazhinskiy

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PREPARED BY:

TRANSLATION DIVISION
FOREIGN TECHNOLOGY DIVISION
WP-AFB, OHIO.

BIOLOGICAL RADIO COMMUNICATION

by

B. Kazhinskiy, Cand. Physicomath. Sci.

Can living organisms transmit signals to a distance? If so, then by what means? Can it be that in nature there exists biological radio communication and that each living organism is a microscopic radio station?

At first glance all this may seem to be nonsense or bordering more on the fantastic than on actuality. It was not in vain, however, that A. Belyayev in his novel "The Master of the World" used this most interesting and secret area of nature, creating a fantastic picture of a dominator of men transmitting thoughts at a distance. But few people knew that the prototype of one of the heroes of Belyayev's book was the then young scientist B. B. Kazhinskiy who devoted all his life to the study and the verification of the existence of biological radio communication.

We are beginning the publication of articles written especially for the Rabochaya Gazeta [this paper] by Cand. Physicomath. Sci. B. B. Kazhinskiy devoted to some strange phenomena in the life and behavior of man (and animals). It will be about silent communication between people, and in general in the animal world, about the transmission of invisible thought information, about the unseen directing by man of living beings ...

—o—

In the year 1889 in a scientific report by the great A. S. Popov, who first discovered radio communication, the question was proposed as to whether there exists in man such a sense organ as could perceive electromagnetic waves in the ether.

No little research was done in this field by the scientists of the USSR and in other countries, and among them the author of these lines, but only

now one has succeeded (occasionally only partially) in obtaining a positive answer. Before the astonished eyes of the researcher there opened up a whole world of amazing phenomena of unseen and unheard communication that exists in living nature.

Not only in man but also in animals there exist organs which transmit, receive, and even direct silent and unseen information passing between living beings on our planet.

Is this not fantastic? Thoughts transmitted tens and even thousands of kilometers, feelings, experiences! But do not be in a hurry with your conclusions!

It pleased fate that thirty years after the mentioned report of A. S. Popov in 1919 in Tbilisi I experienced a clear case of perception by my brain in mentally becoming aware of the silvery sound of a vessel, in fact not heard by me, but by my dying friend, who was at the considerable distance of 1 kilometer from me. A careful consideration of this case from the point of view of radio technology then being studied by me brought me to the conclusion that here were revealed signs of the presence in the nervous system of man namely of organs of "electromagnetic senses." It is necessary to recall this occurrence because on account of it there began the long chain of my investigations and searches for these so "strange" organs of sense.

Just then I began to develop and promulgate in public appearances a concrete scheme of the action of the elements of the nervous system which thus reminded me of the action of condensers and solenoids of the Thompson oscillating circuit (known in radio technology as generator of electromagnetic waves). A report about this in Moscow at the All-Russian convention of the Association of Naturalists evoked a great deal of interest, and par-

ticularly of support on the part of Professor A. V. Leontovich, outstanding histomorphologist. Through a decision made at the convention I was enabled to carry on researches in the Physiology Department of the Timiryazev Academy. Since that time the whole tenor of my life has been the striving to know the secret of the organs of electromagnetic senses in man.

And so, in June of 1922 I succeeded in discovering under the microscope details of the nerves of a frog which have affinity with the windings of a solenoid. I saw with my own eyes also something that could be compared with the facings of a condenser, platelike expansions on some ends of the branchings of the nerve, "little metal plates." A. V. Leontovich himself in this matter called attention to the fact, very important for my theory, that in many cases these "little metal plates" were double, i. e., two little plates lying close to each other. By carefully examining these "little metal plates" through the microscope it was possible to distinguish that to each of them from somewhere there approached a hardly noticeable nerve fiber. This warranted my considering these "little metal plates" as facings of a condenser which are included in series with the windings of a solenoid in series in an oscillating circuit. A radio amateur will understand what a shaking enthusiasm I experienced at the moment when I for the first time saw this very organ of electromagnetic waves" about which A. S. Popov was asking.

K. E. Tsiolkovskiy, knowing that I was carrying on these researches, sent me as far back as February of 1922 from Kaluga, in which he wrote, "Simultaneously with chemical action, which is propagated very slowly in the nerves (in the act of thinking—B. K.) electromagnetic waves are excited which are propagated with the speed of light. These act on identically constructed nervous systems of people near to us and produce the known 'tele-

pathic phenomena'.² Later in a conversation with me at his house in Kaluga, on learning about the fact that the researches of the Ukrainian academician A. V. Leontovich, published in 1928, confirmed the position of my theory as to the presence of elements of an oscillating circuit in the nervous system (that is to say of the electromagnetic nature of the phenomena of the transmission of information in the mind) K. E. Tsiolkovskiy extended me his congratulations.

2. "Invisible Command"

In the autumn of 1922 I began to work in the Moscow Zoopsychological Laboratory of V. L. Durov. One thing interested me--what is the physical essence of the transmission of a mental command from a man to an animal; In the conduct of the experiments and tests, together with V. L. Durov, active part was taken by the neuropathologist Academician V. M. Bekhterev, Academician A. V. Leontovich and others.

Since I not only took part but did the writing up of the records of the experiments in this laboratory, it means that I know all the details and peculiarities, and so I wish to tell the reader about two classic experiments about the transmission of mental suggestion from a man to an animal.

In one experiment directed by Academician V. M. Bekhterev the experimenter V. L. Durov was to transmit to the trained dog Mars the mental suggestion command to bark a predetermined number of times. It was done in this way. V. L. Durov makes a motion with his larynx, yawning and breathing out air just as if he himself were barking (but without any sound), and repeats this as many times as the dog should bark.

This is the way the experiment worked out. V. L. Durov and the rest of the experimenters found themselves in a large room of the laboratory. Academician A. V. Leontovich leaves the room leading the dog Mars into another room separated from this room by two intermediate ones. The doors are tightly closed. Durov proceeds with the experiment. Bekhterev passes to him a sheet on which is written the number "14" known only to Bekhterev. Durov looks at the paper, shrugs his shoulders, and then taking a pencil

out of his pocket he writes something on the back of the sheet and hides it with the pencil in his pocket. He assumes his pose with his arms folded on his chest and mentally commands...

Five minutes go by. A. V. Leontovich returns accompanied by the dog and relates.

"Coming into the room Mars lay down on the floor. Then he stood up and pricked up his ears as if listening for something and barked seven times. Then he lay down again. I already thought that the experiment was over and was about to leave when suddenly I saw that he stood up again and barked seven more times."

Durov jumps from his chair, seizes his hand firmly and taking the paper from his pocket says,

"It can't be ... Look what happened. Vladimir Mikhaylovich gave me the assignment with the figure 14 times, but as you know transmitting a number of barks greater than seven I do not recommend myself, and I decided in my mind that I would break down the task into two parts, and transmitted the feeling of barking at first seven times, and after making a pause seven more.

In another experiment with the with the participation of A. V. Leontovich and professors G. A. Kozhevnikov and G. I. Cheplanov it fell to me to record the course of an experiment, very important not only from the point view of proving the perception by a dog of mental information, but also because of a not less important circumstance. It consisted of the following. Having received from the outside previous information as a stimulus of one or another sensation, emotion, or impulse in its brain, the animal experiences this information as its own. G. A. Kozhevnikov expressed doubts about this project for our laboratory, affirming that if the trained ani-

mal even perceives something its movements are not accompanied by actual emotions and experiences.

To V. L. Durov such affirmation sounded like a monstrous distortion of actuality. He emphasized that in observing the behavior of trained animals (in experiments of suggestion) he was convinced every time that the animal carried out the mental task suggested to it fully experiencing its emotions. Quite an argument ensued, as a result of which it was decided to perform the experiment of suggestion to Mars under unusual conditions for an animal. The dog was to seek out an object completely unknown to it, and besides it was to be at a place where the dog was left alone. Also the conceived object was not to be in the field of vision of the dog. Coming out of the room into the vestibule (where up to that time no experiments had been made with Mars) V. L. Durov and G. A. Kozhevnikov examined three little tables found there, and selecting one they made out that the dog should come out of the room and go up to a high telephone stand on which lay some books, there taking the telephone directory and bringing it.

The experiment began. After a half minute of exchange of looks between V. L. Durov and the dog, Mars rushed through the open door into the vestibule. Through the crack it was seen that the animal rose on its hind legs at one of the little tables, and not finding anything on it it gets down and goes to the telephone stand. It again stands up on its hind legs and takes with its teeth from the batch of books the telephone directory and brings it.

This experiment serves as a proof that in the brain of the dog there was formed a concrete notion (about the telephone book) formed initially in the brain of the experimenter. In other words mental information from a man was transmitted to the brain of an animal. But it was transmitted

as a signal stimulus, and further the work of the consciousness of the animal proceeded in the measure in which its own impulses occurred, carried by its nervous system to its organs--the executors.

But how could this transmission be accomplished? The answer is, only by the electromagnetic waves emitted from the central nervous system of the man and caught by the central nervous system of the animal. For proof of this in 1922 (for the first time in the history of the science of mental suggestion) I designed a screening device which enabled one to insulate in the electromagnetic sense the experimenter from the animal experimented on. This device had the form of a cage with metallic network walls, i. e., there was used the effect of Faraday's screening cage known from physics. The first experiments showed the correctness of our assumptions. When the door of the cage was closed V. L. Durov was not able to give any command to the dog Mars (which was outside).

Afterwards the cage was replaced by a completely metal chamber. Its screening properties were confirmed by a special check with the aid of an UHF generator and an UHF radio receiver. With the experimenter inside the chamber he got strong reception (auditory) of signals from the UHF generator only when the door of the chamber was open. When the door was closed one could not detect any signals inside the chamber. This circumstance served for me as a proof that the nature of the phenomena involved in the transmission of mental information in making suggestions at a distance is just the same (electromagnetic) as in ordinary radio communication.

Still more remarkable results were obtained in the experiments in mental suggestion from man to man, but about this we will tell in our concluding article.

3. Thought Overcoming Distances

From the year 1926 on in our screening chamber experiments have been conducted of mental suggestion to persons. The outstanding hypnotist T. V. Gurshteyn conducted them. Afterwards he transferred his investigations to the Burdenko Neurosurgical Institute in Moscow. With the door shut he was never able to transmit a "command" to a person (who was in the chamber), whereas with the open door he unfailingly each time was successful. This irrefutably proved the electromagnetic nature of the phenomenon under investigation. T. V. Gurshteyn also conducted a series of successful experiments in transmitting thought to a man over a distance of 50 kilometers.

Just as interesting were the experiments conducted by V. A. Poderni in 1923 in the Institute of Brain Research in Leningrad under the direction of V. M. Bekhterev. They confirmed the fact of transmission over a distance from brain to brain of mental information about emotional sensations and visible forms as well as of motor impulses.

By the experiments of V. M. Bekhterev on people there was established an important regularity (conformity to rule) in mental suggestion. A man having entered into close "psychic contact (i. e., having adjusted a close psychic communication) with another person can not only transmit to him mental (without words) suggestion, but he can have an influence on the depth, extent, and definiteness of the sensations, and on the character of the mental presentation itself. Besides, he can (by means of mental suggestion) have an effect on the behavior of the other person and direct his behavior as he wishes.

Beginning with 1957 abroad, particularly in the U. S. A., the investigation of the problem of transmission of mental information has been going on to considerable extent, but as it turns out mainly because the results can have great military significance. The Department of Defense of the U. S. A. organized the respective projects in special laboratories, and the foreign press makes no secret of this. A number of important commercial concerns are carrying on the same researches in the hope of creating an apparatus, for example, for better exchange of information between underwater craft during navigation. At the Friendship Airport in the State of Maryland (U. S. A.) there was set up a long experiment in the exchange of mental information (transmission of visual images) from the inductor, the student Smith, who was in the laboratory, to another (indicator in our nomenclature), Lieutenant Jones, aboard the navigating atomic submarine Nautilus, which was submerged in the ocean at a distance of 2,000 km from the base. During the course of 16 days, twice each day, the student Smith concentrated on contemplating and thinking about (during the course of one minute) one or another card, which was exposed by an automatic device, and showed one of five figures, circle, square, cross, star, or three wavy lines. During the course of the experiment there fell out of the automatic device five cards, which were laid one on top of the other. The inductor took each card in the same order, looked at it, and drew its image on a sheet of paper. On the sheet five figures were obtained. Having sealed the sheet in an envelope, he wrote on it the date and hour and gave the envelope to the conductor of the experiments.

Something similar was going on on the Nautilus. Sitting in his cabinet quite alone Jones in precisely the same way (with strict synchronization of the time) drew on paper the the visual impressions of the images mentioned

as they appeared in his consciousness, and gave the sheet to the Captain of the Nautilus. The latter sealed the sheet in an envelope, and put on it the date, the hour and his visa. Thus there came to be on the Nautilus a second series of 32 envelopes. Afterwards when Colonel Bowers confronted the contents there was discovered a similarity of the images in more than 70 percent of the cases, whereas by the theory of probability 20 per cent would be sufficient so as not consider these coincidences mere chance.

While soberly evaluating such possibilities of the use of biological radio communication, the people of science and labor in the USSR, and in the countries of socialism, reject every idea of using the accomplishments of biophysics for purpose of aggression.

Let us take note together with you, reader, what great prospects open up in the field of biological radio communication. With the aid of a fine electrical measuring apparatus, having determined the length of the wave, amplitude, and other parameters which correspond to the concrete mental information (transmitted by one and received by another person, and producing in this other one a sensation, feeling, or thought) we shall be able to design an instrument which will artificially reproduce these parameters. Thus there will appear in the world the first "artificial brain" radiating into space thought information. By the same principle one can create a medical apparatus, the "artificial hypnotist," etc.

Along with the creation of instruments intended for all kinds of development of the intellectual capacities of man, biological radio communication can find practical application, for instance, in pedagogy. In studying the physical nature of the transmission of mental information over a distance I came to a striking conclusion--by going more profoundly and widely into the research by the method of B. M. Bekhterov, far enough to make

decisive experiments on people it is possible to use what has been attained for supplementary introduction of more active means of training the personality of man.

Let then our readers, and especially the young with their inquiring minds, the students, the teachers, and the dreamers of scientific activity be imbued with the importance of what has been expounded in our article. It is well if the most active of them will wish to go deep into the study of the physiology of the nerves from the point of view of biological radio communication. This will make it possible for them to discover in the makeup of the separate nervous structures and their combinations "live" models of future more perfected instruments, automatic devices, etc.

May there meanwhile originate timid analogies, or, on the other hand, working hypotheses quite daring in design. Afterwards there will occur the construction and the testing of the unusual newly discovered nature. Thus nature is our constant teacher in the creation of innovations, and will be in this area too the provider of novelties, bold ideas, and discoveries tending to move man forward and only forward along the path of progress.

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