Human Communication using Fields Generated by the Nervous System

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While studying the human nervous system it becomes obvious that the structure is so complex and extensive that, at present, it is beyond an analytic evaluation. However, neurologic studies have revealed functioning principles from which generalities may be drawn. These generalities may be applied to guide us to further the discovery of empirical facts.

The nervous structure *is* electrochemical in nature. The established laws of physics tell us that where there are electrical phenomena there are also fields associated with them. Upon examining some of the models of the structure one concludes that the associated fields are not entirely confined to within the individual nerves, nor for that matter to within the body. This paper deals with the fields which appear exterior to the body.

Part I

Measuring the Fields

The electrical portion of nervous activity is largely pulsed in nature. Fourier considerations put the frequency content of these pulses in the sub-audio and low audio range. The individual nerves generate too small a field to be measurable but there are times when enough of them will add together to give a measurable resultant. The permittivity of water is 80 and the body is largely made up of water. This high permittivity will affect the way the individual fields add together and couple out of the body, the components being out of proportion to the physical locations of the individual generating nerves.

In order to measure these fields one must decide upon the type of antenna to be used. Maxwell's equation for any possible antenna equivalent at these frequencies indicate that the values of the radiating energy terms are small compared to the non-radiating terms and may be ignored. Therefore a quasi-static analysis will do. In addition dB/dt is so small that magnetic coupling would be difficult. A quasi-static E field approach becomes the most effective and a pair of capacitive plates the best antenna.

The authors constructed an experimental set-up using the foregoing line of reasoning as a guide. Our antenna plates were 18" X

18" X 1/8" situated 8" apart in a butterfly configuration. It was difficult to estimate the size of the fields to be measured so the approach used was to have as little noise in the first stage of amplification as was possible. An amplifier using two 12AY7 tubes, common mode rejection and twin "T" 60Hz. rejection filters was built to be used as a pre-amp driving and EGG recorder. The input Z was 40M ohms grid to grid. The antenna and amplifier were placed in a room-sized Faraday cage, the recorder being situated outside the cage. A wooden chair was placed with its back 18" away from and toward the antenna.

More than 25 of Dr. Ward's patients were tested. Each person was individually evaluated for anxiety level during an interview. Immediately following the interview the person was asked to sit in the chair and a reading was taken.

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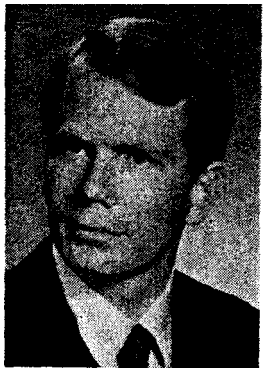
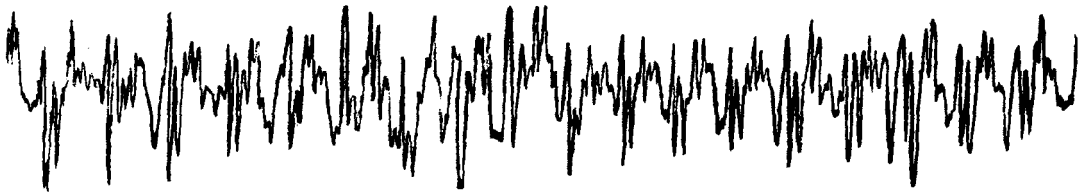


Results

One outstanding result was the amplitude-anxiety relation which was followed without exception (see Fig. 1). The heart pulse was very prominent in most of the recordings. In addition, a series of tests were made to evaluate the fields resulting from gross muscle movement. As expected,

Typical Low Anxiety Recordings

Typical Moderate Anxiety Recordings



Typical High Anxiety Recordings

Fig. 1

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these signals were much larger in amplitude than those generated by the same person while sitting still. The people with the higher anxiety always had higher level P.M. fields. Other signals were caused by moving an otherwise static charge on the clothing. The signals generated this way were at times very prominent but could be reduced by the proper choice of clothing and discharging of the static electric charges upon entering the cage. However, moving charged objects generate signals which can be useful.

Important conclusions to be drawn from the tests briefly described are:

(1) Quasi-static fields, caused by the nervous system, are presented exterior to the body and are measurable at a distance.

(2) The fields contain information about the nervous activity and tension, muscle movement and heartbeat of the individual.

(3) Static electricity can reveal information about the environment.

Part II Hypothesis

During the course of evolution man has developed an extraordinary sensitivity to his environment, using every practical medium, in order to survive. He has developed means to communicate with others of his kind, a talent that further enhances his survival probability. The quasi-static fields generated by the environment contain valuable information (the environment including other living creatures). Fields generated by the nervous system of others contain information about them. It is not logical that man has not developed a sensitivity to these fields when such a sensitivity would be a definite and very important survival factor. If human beings were able to sense these fields and use the information contained upon them, it would indeed fill a mysterious void in the spectrum of stimuli to which they are sensitive.

The mechanisms required to detect these quasi-static electric fields may possibly exist in humans. The entire body could be used as the antenna. The salt water content of the body would allow low frequencies to penetrate the body more easily because corresponding attenuation coefficients are smaller. The coupling coefficient would be -higher at low frequencies- as a—result of lower capacitive bypassing. Coincidentally, the ideal frequency range for reception is just that range shown to be transmitted. After (and if) the incoming signal is separated according to its amplitude and frequency content each component may be channeled to a neuron which would be triggered in the usual way. The information is then made use of in a semi-conscious manner. The signals generated by the receptor's own nervous system and other interfering signals would have to be dealt with.

Preliminary Experiments

Preliminary experiments were performed, the object being to influence behavior using artificially generated fields. One of the authors wore a concealed transmitter. The antenna consisted of insulated foil patches taped one to each arm. The transmitter generated high amplitude spikes with a repetition rate of about one per second. The objective was to artificially duplicate the

fields exhibited by a highly anxious and dangerous person and observe the results.

Preliminary Results

The preliminary results were that while the transmitter was turned on in the presence of another person, that person always became highly anxious. The signs of the anxiety were seen in the gross change of behavior, in particular the large increase in muscle tension of the face, hands, voice and decreased physical agility.

Discussion

Human behavior and feelings are nowadays "understood" in terms of intellectual processes and rationalized philosophies. In the light of the possible discovery of human receptiveness to quasi-static electric fields many aspects of human behavior and emotion may now be explained in terms of the more tangible reflex.

Much needs to be learned about the extent of this form of human communication. We feel that possibly herein lies a key to such phenomena as crowd behavior, hypnosis, love relationships and everyday human interaction. We wonder what effect man-made "noise" has upon us. Some sources of mental disturbance may be simply that the person is confused and upset when receiving stimuli from others and thinking that it is coming from within, therefore behaving unappropriately.

If one can learn to recognize the source and meaning of this stimulation and learn to react appropriately, he will have acquired a strong factor in his favor. Since mental attitudes are transmitted and directly influence others there is good reason for a person to assume a positive loving attitude, for such an attitude will attract to him all of the good things that people have to offer. A negativistic attitude can only elicit reactions which will reinforce a person's own discomfort.

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