

DR. ABRAMS AND HIS DISCOVERY

BY A.H.B.

Many people have heard of Abrams and his box but have no idea who Abrams was or what is meant by his so-called box. A little book called *The Detection of Disease*, by Oscar Parkes, C.B.E., M.B., and Eric Perkins, M.R.C.S., L.C.R.P., both of whom studied under Dr. Abrams, contains an excellent account of the man and his work, and it is from the first part of this book by Dr. Perkins, who now practises Dr. Abrams' methods in this country, that most of the information in this note has been derived.

Albert Abrams was born in San Francisco in 1863. He qualified at a medical college before he was of age or could receive his diploma. He went to the University of Heidelberg, where, in 1882, he graduated again and with the highest possible honours. He spent many months doing post-graduate work in Heidelberg, Berlin, Paris, Vienna and London under such famous masters as Virchow, Frerichs, Wasserman and von Helmholtz, whose scientific influence must have affected the whole of his subsequent career, constantly urging him to endeavour to correlate the laws of Biology with the laws of Physics.

On returning to America he was appointed Demonstrator, then Professor, of Pathology and subsequently Director of Clinical Medicine at the Leland Stamford University of California. In 1893 he was elected President of the San Francisco Medico-Chirurgical Society and Vice-President of the Emanuel Polyclinic. He was the author of numerous important books on medical subjects, and contributions by him were welcomed by leading medical journals throughout the world. He specialised in nervous diseases, and was for many years regarded as amongst the foremost neurologists of the day. He died in January, 1924, and within an hour of his death a cable was received inviting him to lecture on his recent discoveries at the Sorbonne in Paris.

Though a multi-millionaire by inheritance, Abrams' tastes were simple in the extreme. He was obsessed by his work of medical research, and bequeathed most of his fortune to an institution, the Blanche and Jean R. Abrams Memorial, where further research could be carried out and treatment given to the poor. Unfortunately, his will was disputed owing to a legal discrepancy, but a compromise was arrived at which enabled his wishes to be in some degree fulfilled.

Though possessing some of the eccentricities of genius, Abrams is described as one of the most generous and lovable of men, a magnetic personality, and a gentleman in the highest sense of the word. He was full of energy and enthusiasm, and worked unceasingly until he literally died of overwork.

So much for the man, and now for the system with which his name is always associated.

In these days of popular scientific literature it is common knowledge that all matter, including animal tissue, is composed of molecules which themselves consist of atoms of the so-called elements such as oxygen, hydrogen, nitrogen and carbon, and that all atoms are made up of infinitely tiny particles of positive and negative electricity—a positive nucleus with, as it were, a system of negative wave-particles vibrating round it. All this belongs to the domain of chemistry, and as such had no direct connection with the diagnosis and cure of disease. True, the chemistry of our tissues is the concern of the bio-chemist; he can discover evidence of malignancy but can seldom say how the disease can be recognised in its earlier stages. The Bacteriologist can recognise germs if he can find them. The Pathologist is chiefly concerned with the examination of tissues by means of a microscope. The study of the atom as such does not lie within the purview of any of them.

The discovery of radium in 1898 opened up a new scientific era, for it revealed the astonishing fact that the elements were not immutable but that atoms of certain elements by the continuous emission of particles of positive and negative electricity spontaneously disintegrated into atoms of certain other elements; the theory of the electrical constitution of the atom, through the work of Röntgen, Becquerel, Crookes, the Curies, Thomson, Rutherford, Bragg and others, followed in due course.

Abrams was the first man to conceive the idea that disease was primarily a problem in which the atoms and molecules comprising the human tissues were concerned. He saw that it was necessary to look deeper than the cell as revealed by the microscope and that, to use his own words, "the ultimate atomic divisibility of matter was represented by the electron and not by the cell."

He exploited the physicists' conception that all matter is constantly emitting radiation, conceiving that this radiation was as specific for human tissue as it was for matter in other forms, and that tissue, injured by disease, would emit a radiation differing from that of normal tissue; in short, that every diseased and therefore abnormal atom or molecule would exhibit its own characteristic radiation.

Having determined to study disease on this basis, Dr. Abrams' first difficulty was actually to detect the radiations he wished to study. He had no doubt of their existence, but there was no instrument sufficiently delicate to meet his requirements. It is said that he hired a staff of electrical scientists to assist in his search, and, money being no object to him, he undertook to give a large reward to any man who could devise an instrument which would detect and differentiate between the radiation having its origins in, for instance, the cancer, the syphilis, or the tubercule molecule respectively. However, despite claims by

workers of the Abrams school, such as Starr White, Boyd and Wigelsworth, official recognition of such an instrument is not yet forthcoming.

Whilst his electrical experts were experimenting with a number of electrometers, voltmeters, amplifiers and galvanometers in various combinations, Abrams himself outstripped them all through a brilliant clinical observation, the starting point of twenty years of unremitting labour, which was terminated by his untimely death whilst still at work in his laboratory. This is how it happened.

He had been conducting investigations connected with the nerve mechanisms of the stomach, its contractibility in varying circumstances of health and disease, and its response to the stimulation of certain nerve trunks by mild electric currents.

Now the outline of the stomach can be defined by what is called "percussion," that is to say, by tapping with the middle finger of the right hand on the middle finger of the left hand placed gently on the abdominal wall. Exceedingly delicate and skilled technique is needed to obtain accurate information from the varying changes in pitch and resonance which an expert can elicit in the difficult art of percussion, and Abrams was a pastmaster in the art.

Many patients underwent examination by him, amongst them a middle-aged man, healthy enough to all appearance apart from a small chronic ulcer on his lip, known as epithelioma, a form of cancer.

The patient was asked to stand up whilst Abrams gently percussed over the upper part of his abdomen in an attempt to define the border of the stomach. Much to his surprise, Abrams found that several square inches of the man's abdomen, not exactly corresponding to the stomach area, sounded dull to his percussion instead of hollow, as a drum sounds hollow, and for the same reason—because air is behind it.

The patient was then told to lie down on a couch in another part of the room so that Abrams could "palpate" the abdominal wall, that is to say, feel for the possible presence of any kind of solid mass which might account for the dull percussion note he had just elicited. But he could detect nothing of the sort. More amazing was the fact that when Abrams percussed the man standing, still in that other part of the room, the note given out was still undeniably hollow or resonant.

Abrams returned again to his chair, placing the patient exactly where he had stood when the first observation was made. Again he percussed that area just above the navel, getting exactly the same result as he had at first—a dull note as if a bladder of lard had been substituted for the man's air-filled abdomen.

By this time Abrams was aflame. He knew he could trust his percussion technique and he was absolutely sure that, in

this patient's case, the note elicited *when the patient was facing in one direction differed entirely from that produced when the patient was facing in another direction*. Time after time he percussed his unfortunate patient, facing him in various directions, and the result of that long afternoon's work was to establish beyond reasonable doubt the astounding fact that the patient with the cancerous ulcer on his lip had a well-defined area on his abdominal wall which sounded dull to percussion when he faced west,* but sounded normal, that is, hollow, when he faced in any other direction.

The phenomenon which Abrams that day discovered was subsequently called by him an "Electronic Reaction," but that was after several years of prolonged and laborious research.

The patient was told to present himself for further work next day, when the first observation was repeated and verified, and an additional one made. A second area, quite dull to percussion, when the patient stood facing west, was found over the region of the inner border of the man's left shoulder blade though no auscultation of the chest revealed any abnormality. Many other non-cancerous patients were examined that morning, but none of them revealed those two strange patches of dullness. A search was made for sufferers from cancer in its early stages in various wards and dispensaries, and some were found. In each case Abrams was able to satisfy himself of the existence of the same two dull areas, one just above the navel and the other over the inner border of the left scapula.

After days of painstaking observations on scores of patients Abrams at last allowed himself to entertain the notion that some kind of radiation, originating in the doubtless abnormal and characteristic molecules which formed each cancer cell, might be picked up by certain definite groups of nerve fibres, and that these nerve fibres caused a reflex muscular contraction, detectable by percussion, to occur on the patient's abdominal wall and thorax—on the analogy of the wave frequencies picked up by fibres of the optic nerve, which cause a muscular contraction of the pupil. The fading effect which invariably occurred when the patient was facing north or south might, he thought, be due to some deflection of the waves by the earth's magnetic field. For Abrams had been a pupil of Helmholtz; he knew vastly more about physics than the average doctor and was aware that in a fashion, atoms and molecules might be regarded as broadcasting stations emitting electromagnetic waves, each type of atom sending out its own characteristic wave.

Having conceived this notion, Abrams carried out a long series of experiments. Satisfied that the mysterious percussion phenomena which undoubtedly occurred on the abdomen and thorax of every patient suffering from cancer were reflex pheunomea resulting from faint stimuli caused by specific radia-

* i.e., at right angles to the horizontal component of the earth's magnetic field.

tions originating in the molecules of the cancer mass, it occurred to him to ascertain whether any similar reflex could be detected on the same areas of the body of a *healthy* young man when in close contact with a cancer specimen from the operating theatre.

For this apparently fantastic experiment he chose the healthiest young fellow he could find among his class of students. To begin with, he made the boy stand facing west, and percussed carefully the area of the abdomen just above the navel, and, as he expected, elicited a clear and ringing note. Then, a small fragment of a malignant tumour just cut from a patient, and placed in a metal container, was applied to the boy's forehead. Within two seconds the percussion note dulled slightly and rapidly became as entirely dull as if the boy had been transformed into a plaster cast. When the boy was facing north the resonance returned; when again facing west the dull note recurred; when the cancer specimen was removed the percussion note again became normal, that is, hollow sounding.

From this striking and epoch-making experiment, opening up as it did a new expanse of hitherto inconceivable possibilities from both the physical and medical point of view, Abrams felt justified in believing that the phenomenon observed on the nerve-muscle apparatus of the boy who was the subject of the experiment was a reflex response to a stimulus originating within the molecules of the cancer mass. He eventually named the phenomenon a "Reaction" and the boy came to be known as the "Subject" or "Reagent."

The experiment was repeated and verified thousands of times, not only by Abrams, but by a band of enthusiastic followers, including, in this country, Sir James Barr, a past President of the B.M.A., who described Abrams as by far the greatest genius the medical profession had produced for half a century.

Abrams then decided to find out whether the suspected radiation from the cancer specimen would pass along a wire and produce the reaction. To this end he got a six-foot length of ordinary copper flex wire, one end of which was soldered to a small disc of aluminium, and the other to a large disc mounted on an insulated handle. The small disc (or electrode) was fastened by an elastic band to the Subject's forehead, the handle of the larger disc (or electrode) being held by an assistant who was placed, with the cancer specimen, behind a screen, where neither Abrams nor the Subject could see him or be sub-consciously influenced by his movements. The assistant was told to point his electrode towards the ceiling until he (Abrams) had demonstrated the clear ringing percussion note on the Subject's abdomen, then to bring the electrode to a position immediately above the cancer specimen, after a few seconds remove it, then replace it and so on. The experiment was a complete success! The percussion note changed from hollow to dull every time the

hidden assistant brought the electrode near the specimen.

In his next experiment Abrams replaced the excised cancerous tumour by two female patients, one with an abscess on the breast, and the other with a breast cancer. The reaction did not occur when the disc was pointed towards the abscess, but did occur exactly as before when held in front of the cancerous breast.

Thus was made the first diagnosis by the Electronic Reactions of Abrams, known in short as E.R.A.

After this, Abrams naturally turned his thoughts to the possible existence of other pathological reactions, and he set out to attempt to discover a reaction on the Subject's abdomen under the two following conditions:—

- (a) When the disc at the end of the six-foot wire flex was fixed to the Subject's forehead and the other electrode was placed in close contact with a *tubercular* specimen.
- (b) When this electrode was held immediately in front of a tubercular centre on some part of a living patient's body.

The Subject, stripped to the waist, was stood facing west, the electrode was placed by an assistant over a tubercular specimen, Abrams, as before, percussed over the area immediately above the navel, but the note now remained resonant, as the normal note should be. Abrams continued to percuss, trying other areas, and he quickly found a dull patch this time about one inch *below* the navel. He repeated the experiment over and over again with different pathological specimens of tubercular material and always with the same result.

He then tried the experiment when the electrode was applied to the chest of a man with obvious symptoms of pulmonary tuberculosis—again with the same result.

From his next experiment he found that an area existed about an inch to the left of the navel which responded to streptococcal infection, whilst an area characteristic of malaria was a little patch about two inches below and two inches to the left of the Subject's navel, the observation being made first from a sample of malarial infected tissue and then from a malarial patient, when the electrode was placed over the spleen or over the liver.

In trying to find the characteristic "diagnostic areas" for syphilis and sarcoma, Abrams was temporarily baffled, as he found that in each case the dull patch was identical with the cancer diagnostic area. But Abrams was a man of great determination and infinite perseverance, and one day an inspiration came to him. It was the outline of his hypothesis that the reactions were caused by electro-magnetic waves of different frequencies and that these waves were characteristic of the molecules from which they were derived. Thus he conceived the idea of an adjustable instrument interposed between the specimen and the Subject—as a very rough analogy like a long brick wall with a number of doors in it, each door corresponding to a

particular wave through which that wave alone could pass whilst the door was open.

An ordinary rheostat had something of this "wall and door" effect, and he had an old resistance box ready to hand possessing 61 different resistances which could be put in circuit by means of a pointer. Abrams cut his six-foot wire in two; the ends of one three-foot length were fastened to an electrode and a terminal of the rheostat respectively; one end of the second length was fastened to the other terminal, the other end being attached to the Subject's forehead. The assistant placed his electrode over the cancer specimen and the pointer of the rheostat was set at a certain resistance stud, chosen haphazard.

Abrams percussed the Subject's cancer diagnostic area and was delighted to find that no reaction occurred. He then told the assistant to "twiddle the knobs about" with his free hand. After a time he cried out "Stop!" The pointer of the rheostat was at stud 50, and the old familiar "reaction" dullness had appeared. It was lost on 49 and 51, but came through faintly on 80. In other words, the cancer wave had squeezed through door No. 30, but had passed easily through "door," or stud, No. 50, when the reaction was as definite as it was without the rheostat.

With some anxiety Abrams tried a sarcoma specimen which, without the rheostat, had given the same reaction as cancer. The assistant turned the pointer from one resistance to another, and after many anxious moments the Subject developed a reaction. Sarcoma had come through on 58 and it came through on that number alone—NOT on "50" and NOT on "30"! And it was found that syphilis came through on 55 only—not on 50, and not on 58.

Through years of patient toil Abrams compiled a book known as "The Atlas," in which were charted the diagnostic areas, and their appropriate dial settings on a type of rheostat which Abrams devised for the purpose.

This simple rheostat which Abrams called in its new connection a "Reflexophone" (now believed to function as a variable inductance) is the instrument which—under the name of the Magic Box—so much nonsense has been written by the ignorant and sceptical.

In the course of time Abrams adopted several devices which made the reactions more definite. For instance, the dull note indicating a reaction was sensibly increased if the Subject was made to stand on earthed metal plates; he found that if the reaction area was lightly stroked with a glass or vulcanite rod, the latter seemed to drag slightly when a reaction was present and slip along more easily when the reaction was abolished; he also found that reactions were more pronounced when he worked in a darkened room; again, some of the reactions were

increased or diminished by approaching one or other pole of a powerful bar magnet to the specimen under examination. The reactions were more definite if the specimen under examination was placed in a vulcanite container within which was an earthed metal electrode, the lid being a condenser formed of three-inch discs of aluminium and mica. This receptacle he called a "dynamiser."

For years Abrams continued to make additions to his Atlas from observations on patients and from specimens. His life's task was to discover a method of detecting the often abstruse causes of conditions which do not in their earlier stages produce gross changes in tissue with recognisable physical signs—in other words, he was striving to anticipate disease, *i.e.*, to detect disease in its earliest beginnings, before gross structural damage (on the evidence of which present-day clinical diagnoses chiefly depend) had even begun to occur.

He had no desire to displace the orthodox methods of diagnosis, but when these failed to solve his problem he supplemented them by the use of the Electronic Reactions, thereby gaining additional and confirmatory information which could be obtained by no other means.

Abrams made a notable step forward when he discovered that a single drop of blood was sufficient to produce the reactions indicative of the disease suffered by the patient from whom the blood had been taken. He was prompted to this experiment by the consideration that if, as stated by physicists, 18 grammes of water contained 606×10^{21} (six hundred and six thousand million billion) molecules, surely a single drop of blood must contain a vast number derived from the focus of disease through which the blood is continually passing; and if the disease were tubercular or malarial, a drop of blood would contain even more, and such molecules would all be giving off their characteristic radiation. Could these radiations be detected—and identified?

Abrams took a drop of blood from a cancerous, a tubercular and a syphilitic patient, and in each case the characteristic reaction was clear and definite. So far, then, Abrams' triumph was complete.

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On May 23rd, 1922, an experiment was carried out in London to test the truth of this extraordinary discovery. Dr. C. B. Heald, Medical Adviser to the Director of Civil Aviation, Major H. P. T. Lefroy, Head of Wireless Research at the Air Ministry, and Lieut.-Colonel Tizzard, brought four specimens of blood to be tested by Dr. Mather Thomson, one of Dr. Abrams' students and followers. He had been assured that all four specimens were pathological. The instruments used were similar to Abrams', and Dr. Heald acted as the Subject. Three specimens were correctly diagnosed as syphilis and cancer, and one healthy

one which had been provided by Dr. Heald himself; the fourth, diabetic, was diagnosed as tubercular, which was possibly correct as the diabetes may have been, and probably was, due to a tuberculous lesion of the pancreas.

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Abrams later on developed an addition to his original diagnostic rheostat in the shape of an instrument which enabled him to judge of the severity of any infection. It was a kind of volume control. If the disease were severe it would, so to speak, force its way through a resistance showing a higher reading than if the disease were in a mild stage. Blood from a patient in a precancerous stage might produce an unmistakable reaction though showing a low reading on the dial. Even cancer has to have a beginning; there must be a cause behind the formation of the first pathological cell, and Abrams believed that this cause had to be sought in the atoms which make up the cell. "Regard cancer not so much as a structure, but as a *process*," said Abrams. He further believed that if cancer could be detected before physical signs were apparent, that is to say, before diagnosis by so-called orthodox methods were conceivable, before any tell-tale tumour-mass or "lump" had formed, it should be possible to devise a non-surgical method of treatment and cure. Holding that the beginning of disease was a disturbance of electronic equilibrium within the molecule, he sought a means for restoring the lost equilibrium. To this end was evolved his treatment instrument, the "Oscilloclast."

The man primarily responsible for the production of the oscilloclast was Hoffmann, the inventor of the Zeppelin detector. It was designed to embody Abrams' requirements, to wit, the neutralisation of the waves issuing from the diseased tissues as shown by the blood reaction obtained on the "Subject" *via* the Reflexophone—by restoring the electronic balance.

Briefly, the original oscilloclast, which could be used either with direct or alternating current, consisted of two main parts, (1) a box containing an electric motor connected to the external electric main, and an arrangement of coils, and (2) a dial-pattern resistance box with ten resistances varying from 100 to 1,000 (numbered 1 to 10) from which a single lead could be taken to the patient. By means of a pendulum attached to the armature the magnets of the motor were energised at regular intervals, connection with the resistance box being made once during each period of energisation.

An arrangement of coils was connected in parallel with the lead between the motor and the resistance box.

The action of the oscilloclast as reported on by Professor Taylor-Jones, Dean of the Faculty of Physics at Bangor University, may be summarised as follows:

(1) The patient (who is insulated from the ground) is subjected

200 times a minute to an electrical impulse from the negative main,* which would impart a certain amount of negative electricity to his person, making his voltage with ordinary good insulation about 170 (that of the mains being about 200).

(2) Shortly after every alternate electrical impulse another impulse of electro-magnetic origin is produced in the apparatus and transmitted to the patient. The intensity of these impulses varies with the resistance in series on the lead, being least when contact is at 0 and greatest when at 10.

(3) An electrical oscillation is produced in the apparatus about 100 times a minute, of a frequency of about six million, corresponding to a wave-length of 50 metres.

The patient was insulated from the ground and the electrode attached to the lead from the resistance box was applied to the seat of the disease. Treatment was given for about an hour a day over a varying period of time, the resistance being varied according to the nature of the disease. If the diagnosis had yielded more than one reaction it was usual to give treatment with the appropriate resistances successively. Intermediate grades of resistance were obtained by inserting an extra rheostat in series, with the main one. Treatment was continued until no reactions were elicited from a blood specimen under diagnosis.

Such in outline was Abrams' system of diagnosis and treatment—*diagnosis* with the reflexophone through the agency of a healthy Subject, and *treatment* with the oscilloclast direct to the patient.

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Abrams has many followers in America and Europe, and his instruments have been developed and modified at the hands of various operators. There are schools in America at which instruction in E.R.A. is given, and there is an American Electronic Research Association which issues a monthly journal.

For some years an Abrams Society existed in England under the presidency of Dr. Mather Thomson. This has now been replaced by a medical Society, with a wider scope, for the study of Radiesthesia from all angles. The first president was Dr. Ernest Martin, and the present one is Dr. Guyon Richards.

Abrams died in harness in January, 1924. During his life and more so after his death he was subjected to much detraction and abuse, as are all originators of unusual ideas and methods. To begin with, he was a Jew; he charged high fees and sold his instruments at high prices; but what he gained was for the most part devoted to a charitable end. Apart from the utterly novel lines of his investigation, many of his experiments and claims were regarded as fantastic. For instance, his treatment with gamboge, his claim to distinguish sex and to be able to diagnose from a specimen of handwriting. Yet we dowisers now know that sex is readily distinguishable in terms of the electro-magnetic

* Presumably this occurs only when D.C. is used.—A.H.B.

polarity of body organs and limbs, and perhaps also through the effect of sex hormones, and that paper which has been in contact with a human being can act as a "sample," whilst treatment by colour is now quite usual. But perhaps his greatest fault in the eyes of his detractors was that, by using methods which outraged all medical tradition, he achieved undoubted success.

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In 1924 an investigation on E.R.A. was conducted in this country by a Committee consisting of two doctors and three scientists under the chairmanship of (then) Sir Thomas Horder. Their Report was read before the Royal Society of Medicine on January 16th, 1925, and it was subsequently published under the title, *A Preliminary Communication concerning the Electronic Reactions of Abrams, with special reference to the Emanometer Technique of Boyd.*

It should be explained that Dr. W. E. Boyd, M.D., of Glasgow, is a follower of Abrams, and that his Emanometer is a development of the Reflexophone. Dr. Boyd, of course, has to make use of a human "subject" facing west, and the reactions he obtains are those charted by Abrams.

The avowed object of the investigation was "to determine as conclusively as might be practicable whether there be any valid basis for the claims put forward in respect of the so-called 'Electronic Reactions' of Abrams or of any analogous technique allied thereto or developed therefrom."

The members of the Committee were M. D. Hart, A.M.I.C.E., M.Sc., D.I.C., Dr. C. B. Heald, C.B.E., M.D., M.R.C.P., Lieut.-Colonel H. P. T. Lefroy, D.S.O., M.C., A.M.I.E.E. (now B.S.D.), W. Whately Smith (now Carington), M.Sc.

Mr. Hart and Mr. Whately Smith were engaged on physical research work on behalf of the War Office and Air Ministry respectively. Dr. Heald and Lieut.-Colonel Lefroy have already been referred to as having conducted a test with blood specimens.

It is stated in the Introduction that the inquiry was limited to the diagnostic aspects of the technique and that the conclusions arrived at apply solely to the Reflexophone of Abrams and to Dr. Boyd's Emanometer. The instrument, however, appears to differ from Abrams' Reflexophone in several important respects; in fact, it is stated that it "appears actually to be a design *de novo* based on a different conception of the phenomena involved." However that may be, the use of a normal human being as a Subject on whom abdominal percussion was carried out was the same. An outstanding feature of the Boyd apparatus was the use of earthed metallic screens made of sheet copper or of copper gauze intended to eliminate contamination from external sources.

After a number of preliminary tests and experiments it was

decided "to rely exclusively on tests of such a character that the value of the results obtained could be unequivocally computed by mathematical methods." To this end certain crucial tests were carried out (under strict control) by Mr. Whately Smith on June 6th, 1924, in Dr. Boyd's laboratory at Glasgow.

The first test consisted in discriminating between two apparently identical substances indistinguishable by normal means. Of 25 successive trials, all were successful. The chance of this result being obtained by accident is 1 in 33,554,432 !

The second and third tests involved the selection and identification of one specific substance from among a number of others. Both were completely successful. The chances of accidental results were 1 in 180 and 1 in 7,776 respectively.

The fourth test was a repetition of the first. The operator gave 18 correct replies out of 20 trials; the two errors were probably due to faulty manipulation by the experimenter. Even if this possibility be ignored the chance of an accidental result is 1 in 5,518.

The fifth and last test was one in which a specimen could be cut off by a movable screen from the receiving plate of the apparatus. All of 16 trials were successful. The chance of this being due to accident is 1 in 65,536.

It was clear from the figures that the results could not be ascribed to the operation of chance alone; the only alternative explanation to accepting the phenomenon as genuine was to assume that Mr. Whately Smith had failed in accuracy or had been imposed on by trickery. The experiments were therefore repeated before Mr. E. J. Dingwall, M.A., the research officer to the Society for Psychical Research, who had made a special study of methods of deception. The tests witnessed by him were substantially the same as those carried out by Mr. Whately Smith and the degree of success was equally impressive.

Sir Thomas Horder and Dr. Heald each acted as Subject and operator during the tests, and when acting in the first capacity could definitely feel an alteration in their abdominal muscles as specimens were inserted or withdrawn without their knowledge.

Amongst the conclusions arrived at by the Committee was the following :—

" that the fundamental proposition underlying, in common, the original and certain other forms of apparatus devised for the purpose of eliciting the so-called Electronic Reactions of Abrams is established to a very high degree of probability . . . " and " that no evidence, justifying this deduction is yet available from the work of those who practise with the apparatus as designed by Abrams himself."

It is emphasised in the report that the conclusions "are not in the slightest degree pertinent to the diagnosis or treatment of disease in any practical sense."

In view of the enormous amount of evidence available in America it is legitimate to doubt the validity of the second conclusion quoted above, and one cannot help wondering why the experiments were not carried a little further so as to show their pertinence to medical diagnosis—as might well have been done. Two members of the Committee had already witnessed the efficacy of Abrams' Reflexophone in connection with blood specimens. Why should not further experiments have been carried out on the same lines? In the Foreword it is stated that the Communication is preliminary and "that the work must be continued and that the nature, significance and the practical application of the facts here brought to light must be studied fully."

This does not appear to have been done—at any rate by the Committee—and eighteen long years have passed by!

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It is a contrast to turn from this Communication, generally known as "The Horder Report," with its undercurrent of critical distrust, to a book called *Abrams' Methods of Diagnosis and Treatment*. It was edited by the late Sir James Barr, C.B.E., D.L., F.R.S.E., LL.D., M.D., F.R.C.P., one of those broadminded and enlightened men who took full advantage of Abrams' wonderful discoveries. In his Foreword he criticises very adversely the Horder Report, especially for "the reflection cast upon the honour of Abrams' practitioners . . . in a statement, in support of which no evidence could be brought, that they were 'ethically unjustified' in helping the sick by the use of Abrams' methods." The book contains an appreciation of Abrams and a description of his methods, after which the author gives records of a number of cases in which the treatment was used, viz.: eight of Tuberculosis, ten of Cancer, four of Exophthalmic Goitre, three of Chronic Colitis, nine of Arthritis, three of High Blood Pressure, three of Duodenal Ulcer, and thirty-eight miscellaneous cases. All had been treated by the oscilloclast with good results, but in two cases of cancer the patient had died after having experienced considerable relief. Many of the cures are of a most striking nature; there is one labelled "Undiagnosed," in which a woman of twenty who had suffered for nearly a year "from prolonged and severe attacks of pain in the head and ear following an acute febrile attack of an influenzal character." She had been seen by more than 30 specialists; she had been given morphine and heroin, had a wisdom tooth and neighbouring molar extracted, been given mercurial inunctions and potassium iodide internally, had leeches applied over the mastoid, Arnold's nerve excised, received diathermic, deep X-ray and radiant heat treatment. Being no better, she decided to try Abrams' treat-

ment, though exceedingly sceptical of the result. It was begun on January 7th, 1924, and by October 15th she was quite well.

The book ends with the report by Professor E. Taylor-Jones on the electrical properties of the oscilloclast, already referred to.

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Of a rather different type is a little book called *The Abrams Treatment, an Investigation*, by G. Laughton Scott, M.R.C.S., L.R.C.P., B.A. It may be epitomised as a grudging and cautious recognition of the value of Abrams' treatment. Forty-five cases selected from the work of three practitioners (including Sir James Barr) and nine experimental cases undertaken by the author are reviewed. In his conclusion he states that "he is unable to avoid the conclusion that the instrument exercises in favourable cases an exceedingly powerful influence on general health, which in the treatment of particular diseases may be, and frequently has been, very useful."

In an Appendix there is a report on the oscilloclast with a diagram, by Mr. A. S. E. Ackermann, A.M.I.C.E., and Mr. William Clark, A.M.I.E.E., the result of an examination of an instrument made in October, 1924. It differs essentially from the report of Professor Taylor-Jones which was dated April, 1925, in that no mention is made of the impulse of electro-magnetic origin and the electrical oscillation which Professor Taylor-Jones has carefully recorded.

However, all this is ancient history. Knowledge of electric wave action has increased enormously during the last twenty years, and to-day there is probably no question regarding the oscillatory effect which is the keynote of Abrams' treatment. No doubt the man who invented the Zeppelin detector had as good knowledge of electrical theory as any of his contemporaries. Even to-day much difference of opinion exists amongst experts on certain fundamental points, such as whether the inductance of a straight wire increases or decreases when it is bent into a circle. What is the correct answer?

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