before and after tonsillectomy in the same pupils, she suggests that the removal of tonsils had little influence in lessening the susceptibility to most infections.

7. We hold no brief for the retention of diseased or really obstructive tonsils or adenoids, nor do we wish to cast doubt upon the high value of the operation in cases in which there is sure evidence of toxic or obstructive damage. A review of the literature and the epidemiological observations made on a highly tonsillectomized child population suggest, however, that the excellent end-results of tonsillectomy in selected cases have been statistically overweighted by indifferent end-results in cases in which the operation has been performed without sufficient indications as a more or less routine prophylactic ritual. In our opinion, a large proportion of the tonsillectomies now done in children are unnecessary, entail some risk, and give little or no return.

In conclusion, we wish to thank the Medical Research Council and the Committee of Investigation into Epidemics in Schools for their kind permission to use their records for our observations, and Dr. E. A. Straker for much help.

REFERENCES

- ¹ Maxwell, J.: *St. Bartholomew's Hospital Journal*, April, 1932, p. 142.
- ² London County Council, Report of the School Medical Officer, 1930, p. 8.
- ³ Paterson, D., and Bray, G. W.: *Lancet*, 1928, ii, 1074.
- ⁴ Dearn, E. M.: Report of the School Medical Officer, Newcastle, 1930.
- ⁵ Board of Education, Interim Report of Medical Committee on Adenoids and Enlarged Tonsils, 1929.
- ⁶ Collins, S. D., and Sydenstricker, E.: *Pub. Health Bull.*, No. 175, 1928.
- ⁷ Hewitt, E. S., and Geddie, K. B.: *Amer. Journ. Hygiene*, January, 1932, xv, 1.
- ⁸ Cunningham, Ruby L.: *Arch. Int. Med.*, April, 1931, xlvii, 513.
- ⁹ Personal Communication.
- ¹⁰ Paton, J. H. P.: Report of St. Andrew's Institute, 1926, iii, 120.

- ¹¹ McLaggan, J. D.: *Lancet*, 1930, ii, 1150.
- ¹² Paton, J. H. P.: *Quart. Journ. of Med.*, October, 1928, lxxxviii, 109.
- ¹³ Clark, quoted by Rhoads: See footnote 14.
- ¹⁴ Rhoads, P. S., and Dick, G. F.: *Journ. Amer. Med. Assoc.*, 1928, xci, 1153.
- ¹⁵ Kaiser, A. D.: *Amer. Journ. Diseases of Children*, March, 1931, xli, 568.
- ¹⁶ Ash, W. M.: Report of the School Medical Officer, Derbyshire, 1931.
- ¹⁷ Glover, J. A., and Griffith, F.: *British Medical Journal*, 1931, ii, 521.
- ¹⁸ Selkirk and Mitchell: *Amer. Journ. Diseases of Children*, 1931, xlii, 9. Summarized *Bull. Hygiene*, November, 1931, p. 794.
- ¹⁹ Munroe, J. D., and Volk, V. K.: *Amer. Journ. Pub. Health*, 1930, xx, 495.
- ²⁰ Wilson, M. G., Lingg, C., and Croxford, G.: *Amer. Heart Journ.*, 1928, iv, 197.
- ²¹ Close, H. G.: *Guy's Hospital Reports*, January, 1930, p. 45.
- ²² Smiley, D. F.: *Journ. Amer. Med. Assoc.*, February 16th, 1924, p. 540.
- ²³ Forsythe, W. E.: Public Health Reports, March 9th, 1928, p. 560.
- ²⁴ Bradley, W. H.: *Arch. Disease in Child.*, 1930, v, 29.
- ²⁵ Coakley, C. G., and Pratt, E. L.: *Laryngoscope*, 1922, xxxii, 82.
- ²⁶ Campbell, M., and Warner, E. C.: *Lancet*, 1930 i, 61.
- ²⁷ Vining, C. W.: *British Medical Journal*, 1929, i, 629.
- ²⁸ Collis, W. R. F.: *Lancet*, 1931, i, 1341.
- ²⁹ Sheldon, W. P. H.: *Ibid.*, 1931, i, 1337.
- ³⁰ Schlesinger, B.: *Arch. Dis. in Child.*, 1930, v, 411.
- ³¹ Coburn, A. F.: *The Factor of Infection in the Rheumatic State*, Williams and Wilkins, 1931, p. 166.
- ³² Swift, Homer F.: *Amer. Heart Journ.*, June, 1931, p. 625.
- ³³ Dudley, S. F.: *Lancet*, 1931, ii, 1399.
- ³⁴ James, W. Warwick, and Somerville Hastings: *Proc. Roy. Soc. Med.*, June, 1932, xxv, 1343.
- ³⁵ Layton, T. B.: *Conservation of the Lymphoid Tissue of the Upper Respiratory Tract*, Ash and Co., 1931.
- ³⁶ Sington, H. S.: *British Medical Journal*, 1922, i, 341.
- ³⁷ Cleminson, F. J.: *Journ. Laryngology*, 1921, xxxvi, 505.
- ³⁸ Russell, Bedford: *British Medical Journal*, 1931, ii, 480.
- ³⁹ Stephen's Liberty, etc., p. 332, quoted by R. Hutchison, *British Medical Journal*, 1928, i, 335.
- ⁴⁰ Stacey, W. W.: Report of the School Medical Officer, Wallasey, 1923.
- ⁴¹ The Health of the School Child. Annual Report of the Chief Medical Officer, Board of Education, 1923, p. 29.

THE MENACE OF QUACKERY TO PHYSICAL MEDICINE *

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Cassell's Dictionary defines a quack as: "a boastful pretender to skill which he does not possess, especially medical skill," and shows that the word is derived from the cry of a duck. Since quackery in physical medicine is associated chiefly with claims for effects produced by apparatus rather than for the skill of the person using the apparatus, the definition needs some modification for the purpose of this discussion. A suitable definition would be: "One who boastfully pretends that apparatus has therapeutical effects which he knows it has not, or who is too ignorant or credulous to discover that it has not."

With this definition as a working basis it is clear that two types of quack must be recognized: the purposeful or "charlatan" quack and the "ignoramus" quack. Only an insignificant part, however, of the menace of quackery in physical medicine comes from the out-and-out charlatan quack, whether qualified or unqualified. The charlatan turns to physical and especially to electrical apparatus, because even to-day the general public understands very little about electrical currents, and he is therefore in a position to "put over" statements about the action and effect of his apparatus that are unlikely to be controverted. Moreover, apparatus with switches, wires, lights, or crackles suggests *per se* that something tangible is going to

be done, and has in consequence a strong element of initial suggestion. Further, the apparatus provides an excellent excuse for repeated visits and the consequent repetition of fees.

THE "IGNORAMUS QUACK"

The different types of ignoramus quackery can best be considered under the heads of: (1) The medically unqualified practitioner. (2) The manufacturer. (3) The medically qualified practitioner. Each of these classes presents a different kind of menace to the welfare of physical medicine.

1. *The Unqualified*.—I have placed the unqualified practitioner first, not because he constitutes the greatest menace, but because he constitutes the smallest and can be dismissed from our discussion in a few words. The unqualified practitioner is debarred by law from describing himself as a doctor of medicine, and has other legal disabilities and difficulties. Thus the great majority of those attending him are well aware that he is not a duly qualified medical man, and they seek his advice or treatment with their eyes open. He must therefore derive the majority of his clientele from the ranks of the superstitious, the over-credulous, or those who go as a last resource and a forlorn hope. With the increase of the interest and education of the public in electricity and physics—largely brought about by wireless—he is more easily seen through, and as the field of successful treatment by qualified men grows ever wider, the group of patients who fail to find relief along orthodox lines diminishes, and thus the quack's sources of supply steadily decrease. It can be laid down as a safe axiom that when medical diagnosis becomes accurate quackery walks out of the door. By accurate diagnosis I mean not only the correct naming of the disease, but a true understanding of the cause, as then the treat-

* Read in opening a discussion in the Section of Physical Medicine at the Centenary Meeting of the British Medical Association, London, 1932.

ment consequent upon the medical diagnosis will become effective. The diagnosis of diphtheria is absolute and its treatment universally accepted; the diagnosis of influenza is not yet clear, and methods of treatment are, in consequence, legion.

2. *The manufacturer*, before making or approving the advertisement of any apparatus, has a duty to the profession and to the public to satisfy himself that what he is putting forward conforms to certain criteria:

(a) Is the apparatus a genuine piece of physical apparatus properly assembled and capable of actually delivering the current or making the ray he claims for it?

(b) Is he prepared to submit the apparatus without obligation of any kind to the Physical Treatment Department of some well-recognized hospital for unhurried investigation of its clinical effects and physical efficiency?

(c) Is he prepared, in the event of the report proving definitely disadvantageous to any claims for the therapeutic value of the apparatus, to withdraw such apparatus or such claims until fuller investigation or alteration of the apparatus makes claims and clinical effects reasonably consistent?

(d) Will he also agree not to advertise or to sell to the public apparatus for treatment without a prescription from the medical attendant?

If he will do these things he will deliver a death blow to quack physical apparatus; and, had this been the universal custom of manufacturers, we should have avoided many of the ridiculous statements and claims that have received undesirable publicity and brought discredit upon our specialty.

The removal of quackery in the manufacturing line can be achieved most simply and effectively if the manufacturers will get together, raise sufficient funds among themselves or from the public, and come forward with these funds and ask the British Medical Association to set up a standing independent committee of investigation to which they could refer existing or experimental pieces of apparatus for test, both clinical and physical. I feel sure such a committee would practically rid physical medicine of inefficient quack apparatus, as only apparatus certificated by the committee would be employed by the great majority of practitioners.

3. *The Qualified*.—Among the qualified are quacks of two kinds: those who use electrical or physical apparatus themselves, and those who know nothing about physical therapy apparatus but send their patients on to technicians for such treatment.

The medical practitioner who employs electrical or physical apparatus can, by applying a short series of test questions to himself, find out quite clearly whether he is in part or wholly a quack:

(a) Has he, as far as clinical and theoretical study can carry him, acquired an understanding of the physical nature and physiological effects of the apparatus he is employing?

(b) Is he truthful in his statements about the probable effects of the currents he employs, and does he avoid overstatement of their benefits and underestimation of the failures?

(c) Does he only apply a current or a ray, or order a bath, after a thorough general medical examination of his patient?

(d) Does he select from the patients consulting him only those suitable for treatment?

(e) Does he avoid using one single apparatus for every type of patient?

(f) Does he give part of his time voluntarily to a hospital or clinic where he can keep in touch with all branches of modern medicine?

If he can answer these questions in the affirmative he is helping the subject forward. If he cannot, he is providing justification for those who hold the opinion that "all physical medicine is merely a kind of quackery." Let

these questions, then, be the test to distinguish between desirable and undesirable recruits for our subject.

On reading them through and remembering past experiences, I am inclined to add this further question: Is he prepared, if sponsoring a new apparatus, to submit it to impartial test? Because he must remember that physical medicine is still largely in the experimental stage and therefore liable to be regarded askance unless each new advance is brought before the profession with the most careful scientific safeguards, evidence, and procedure. The practitioner who employs the Abrams box, for instance, would find it very difficult to answer the test questions in the affirmative with a clear conscience.

In a recent publication eulogizing this method of treatment, the two authors state that "Dr. Heald also acted as subject, and he also could feel the reactions." They omit to mention that these observations were not made with the Abrams box at all. They also state that the Horder Committee has not yet investigated the pathological reactions of cancer, tubercle, syphilis, etc. Since this kind of statement continues to be repeated, it is time to say what actually took place. A selected number of specimens from a prearranged group of diseases, including the majority of those enumerated, were submitted for test to a number of exponents of the Abrams box. Its exponents were nominated by themselves; the method of taking the specimens was carried out by independent observers who conformed exactly to the requirements enumerated for the collection of the best material. In short, there was no particular asked for by the supporters of the Abrams box that was not granted. The only request the Horder Committee made was that the results should be available for publication, whatever they were.

The results were submitted to an independent statistician, who reported that there was absolutely no evidence of any agreement in the diagnoses made. The table setting out this laughable position was actually in galley proof when the exponents of the box demanded its deletion. The committee took the view—and I think quite rightly—that if we insisted on our right of publication we should only open a chapter of undesirable inter-medical bickering. It is clear, I think, from the quotations I have given that the risk we took of not being misrepresented was too great.

In my considered opinion it is among members of the medical profession who never touch or use any electrical or physical treatment apparatus—the second kind of qualified quack—that the worst form of quackery is found and constitutes the greatest menace to the subject. The medical practitioner who sends patients to non-medical technicians for treatment by electrical or other physical apparatus must be able, if he does not wish to be in effect a quack of the *ignoramus* class, to answer the following questions in the affirmative:

(a) Has he taken care to ascertain by examination that his patient is likely to benefit by physical treatment?

(b) Has he made his prescription for the type of physical treatment he desires so precise in all essential details that a physical treatment technician can give a useful standardized treatment?

(c) Does he, when his patient is in the hands of the physical treatment technician, keep regular clinical control of the results of the treatment?

(d) Does he, if he cannot prescribe details of technique accurately, make sure that his patient is seen by someone capable of so prescribing?

If he does these things, then he is truly informed of the modern advances of medicine, and if he does not, I suggest that he is in reality a quack, and constitutes one of the real menaces of quackery in relation to physical medicine.

An authority with wide experience of the difficulties of physical medicine technicians, particularly in relation to their undertaking not to treat patients except on the prescription and under the control of a medical practitioner, puts their point of view as follows:

"The great grouse which the recognized physical medicine technician has, is the manner in which he is allowed to continue treatment prescribed by a responsible medical practitioner without that supervision and control of the treatment which the medical practitioner ought to exercise from time to time. What I mean is this. A medical practitioner advises a particular course of treatment at the hands of a physical medicine technician. This treatment may last a considerable time, and during the application of the treatment certain circumstances may arise which, in the opinion of the technician, warrant a discontinuance of the treatment or a modification of it. In these instances is the practitioner who ordered the particular form of treatment always disposed to listen to the observations of the technician in the same way in which a physician is disposed to listen to the observations of a nurse who is looking after a patient? I constantly hear from people who are undergoing a particular form of physical medicine treatment that they are left too long in the hands of the technician without a reference back to the practitioner in charge of the case. I appreciate, of course, that this may be due to insufficient knowledge on the part of the practitioner who ordered the treatment, but occasionally it happens that it is due to the fact that, having once ordered the particular line of treatment, the physical medicine expert himself does not exercise that measure of supervision which he ought to do."

THE TEACHING OF PHYSICAL TREATMENT

I admit that the practitioner may fairly reply to some of these questions, "How can I do these things? I have never been given the opportunity to familiarize myself with the prescribing of physical treatments." This must be remedied, because it will at once be admitted by every thinking medical man that physical measures now take an essential and prominent part in his armamentarium of diagnosis and treatment. To take as examples only x rays, radium, and endothermy, the first has become of universal value and the second and third are the adopted children of all surgeons; yet all the original work that has made this possible has come from the small band of workers in physical medicine.

The reason why the ranks of practical workers in physical medicine inevitably contain a small number of quacks is undoubtedly because the professional attractions of this specialty are not sufficient to secure a flow of first-class recruits. If physical medicine is to thrive and take its place as an honoured branch of medicine, as the British Medical Association firmly intends it shall, the time has come entirely to alter its position in relation to medicine and surgery. The medical man on qualifying, or finishing a house appointment, sees before him certain well-defined lines along which he may advance. He knows that if he turns to general medicine and is successful he will pass through the grades of medical registrar, assistant physician in charge of a few beds with opportunities for teaching, and finally to full physician with beds and all their opportunities for original work. There is a very similar route if he turns to surgery or to the specialties of gynaecology, laryngology, ophthalmology, orthopaedics, and dermatology. If, however, he considers physical medicine as a career he sees that the majority of those specializing in this subject have not the same status in their hospital as the practitioner of even the least of the specialties mentioned. He realizes that they have no beds or prospect of beds, and that only in rare instances have they that great stimulus to good work—the opportunity of teaching students. If he is really inquisitive as to his future he will discover that in a number of hospitals the medical man in charge of the physical therapy department is not even a member of the medical staff. If he has been on the house staff he will know that the usual practice is that the physical medicine department may not have cases referred to it directly, and that it is largely used as the dumping ground for the hopeless chronics. Is it then any wonder that this subject does not draw an adequate flow of good new recruits?

These drawbacks and disadvantages are easily remediable by those who rule medicine, and indeed in some places they are already being removed. I am proud to say that the hospital to which I belong has removed most of them, and will undoubtedly remove the remainder as opportunity offers. But elsewhere there is much to be done, and I consider that the advancements in treatment by means of physical measures are so great and so frequently used that it is the duty of those in authority to free the subject from hampering and vexatious disabilities.

Remembering how valuable certain physical measures now are in orthopaedics, venereal disease, gynaecology, and dermatology, as well as in general medicine and surgery, one is forced to ask: "Has not the time come when our specialty should be fitted into existing medicine rather than remain an isolated subject?" The medical curriculum is already so heavily loaded that to add to it any further periods of training is obviously unwise. The number of post-graduate diplomas is also already more than sufficient for any single profession.

A SUGGESTED SOLUTION

My suggestion for the solution of this problem is the centralization in one department of all physical measures in a hospital. Physical medicine is found at present scattered through all branches of hospital service, both surgical and medical. Light treatment is perhaps given in the skin department, massage in the orthopaedic department, and electrical treatment somewhere else. If all the physical treatment apparatus were grouped in one department the resulting centralization of effort and methods would be of benefit to the patient and of great educational value to the student. Moreover, if the heads of this department were recognized as likely candidates for appointments to the surgical and medical staff, there would be no difficulty in securing medical supervision.

It is common enough for one physician on a staff to have a bias to cardiology—using a delicate and complicated electrical apparatus—and another to have a leaning towards biochemistry, while one of the surgeons specializes in orthopaedics and another perhaps in cystoscopy. There is no reason why one physician and one surgeon out of the staff of every hospital should not make a specialty of physical medicine. These members would have reached their position on the staff via the post of assistant physician or of assistant surgeon in charge of the physical therapy department, instead of assistant physician or assistant surgeon in charge of out-patients, and would retain throughout their full staff appointment their interest in physical technique as applied to medicine or surgery as the case might be. I recognize that these proposals are somewhat revolutionary and only capable of gradual development, but I put it to this meeting that by their adoption the problem of beds, of status, of teaching, and of the avoidance of any additional load to the curriculum would be satisfactorily solved. At the same time they would ensure that the oncoming generation of practitioners would learn, in the ordinary routine of hospital work, the general lines of physical medicine, technique, and prescribing. Then physical measures would constitute as integral a part of the practitioner's knowledge as the technique of asepsis.

In conclusion, it would in my opinion be a great day for physical medicine, not only in this country but also in America and on the Continent, if we could agree, as a result of this discussion:

1. That the test questions lay down a sound ethical standard for practitioners of physical medicine, practitioners utilizing physical apparatus, and manufacturers.

2. That the best interests of physical medicine in the future lie in a closer and more practical link with general medicine and surgery.

3. That the establishment of a committee for investigating claims for apparatus would largely stop the flood of quack appliances.

A CASE OF HOOKWORM DISEASE

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The following case of ankylostomiasis furnishes several interesting points.

CASE RECORD

In September, 1929, a missionary, aged 40, visiting me with a patient, mentioned casually that he himself was suffering from malaria, and asked me what dose of quinine would I recommend for the attacks. I said 10 grains three times a day, to be reduced after three or four days to 10 grains at night, etc. A year later the missionary again presented himself, complaining that he was suffering from malaria and that quinine did not relieve him. He looked sallow and melancholy; complained of irritability, headaches, inability to concentrate, mental torpor, insomnia, lack of energy, and a slight pain over splenic area. He also complained of slight shivers and a feeling of fever coming on irregularly. A few days previously he had played hurling to make himself perspire, and on the following day he felt very ill. He said his feet and face were then swollen, and he stayed in bed for two days before coming to see me.

Examination

On examination the swelling of feet and face was not evident; the abdomen was soft and pultaceous, and a little diffuse soreness on palpation was present. The spleen was not enlarged. The cardiac first sound was rather sharp. The sclerotics had a faint yellowish tinge. His temperature was normal. As he had a feeling of feverishness, headache, and shivers the previous evening, I asked for a blood examination, feeling that, in such circumstances, a negative report, combined with a normal spleen, would point to some condition other than malaria. Examination by Professor T. Walsh revealed absence of malarial parasites in fresh and stained films and the following figures: red blood corpuscles, 4,438,000; haemoglobin, 85 per cent.; colour index, 0.95; leucocytes, 26,600; eosinophils, 75 per cent.; lymphocytes, 15 per cent.; polymorphs, 10 per cent.

A specimen of the stools examined later showed the presence of the ova of ankylostoma in large numbers. To avoid the possibility of error in reference to the eosinophil figure another blood examination was made the next day, and the figures were substantially confirmed.

Previous History

The patient's past history was as follows. He arrived in Nigeria in November, 1923, and enjoyed fair health until early in 1925, when he began to suffer from what he thought was slight malaria. His symptoms were: a feeling of heat, though he could not perspire, slight pains in the abdomen, lack of appetite, slight shivers occurring irregularly, irritability, and depression. He gradually got worse, and at the end of six months had lost 28 lb. in weight. He improved somewhat until at the end of 1926 he went to live at Aginebode, on the banks of the Niger. He now noticed that his abdomen was sore, food felt heavy and sour, and his faeces were blackish. A long walk would produce swelling of his feet, his appetite became very poor, and he became thin, suffered from insomnia, depression, headaches, inability to concentrate, buzzing in the head, and repeated syncope. Occasional rest enabled him to carry on. About June, 1927, he got what he felt was an attack of asthma, which lasted three weeks. There was no

history of dermatitis or "ground itch." He left for home in May, 1928. When he arrived home he recovered his appetite slowly, but the feverish feeling still persisted, and with it depression and sleeplessness.

Treatment and Progress

Instead of supper, 1 oz. of mist. alb. was given. In the morning 15 grains of powdered thymol in capsules were given every hour for three doses, and two hours after the last dose 1 oz. of mist. alb. was administered. Three days later, October 4th, 1930, a blood count showed: red blood corpuscles, 4,640,000; haemoglobin, 90 per cent.; colour index, 0.97; leucocytes, 15,240; eosinophils, 55 per cent.; lymphocytes, 16 per cent.; polymorphs, 25 per cent.; monocytes, 3 per cent.; basophils, 1 per cent.

On October 7th ankylostoma eggs were seen in small numbers in the stools. On October 8th the thymol treatment was repeated. On October 9th 0.5 c.cm. of oil of chenopodium was administered every hour for three doses, 1 oz. of mist. alb. being given two hours after the last dose. On November 6th the patient returned for re-examination. No ova were found in the stools, but the blood count was practically the same as that of October 4th, giving a white cell count of 50 per cent. eosinophils. On February 4th, 1931, the patient's blood was normal, showing only 1 to 2 per cent. of eosinophils, and all symptoms had disappeared and have not returned up to the present date.

DISCUSSION

This case presents evidence that the hookworm can live for at least twenty-eight months, as the patient left Africa in May, 1928, and the ova were recognized in September, 1930. The possibility of reinfection at home may be eliminated, although the disease is not unknown in these islands (Cornwell bunches, etc.).

It also illustrates a very marked degree of eosinophilia. This is supposed to connote a high degree of resistance, and certainly the patient's condition was good considering the abundance of eggs and abnormal blood picture. It tends to confirm the opinion that a specific poison is elaborated in this disease. Headaches, melancholy, and inability to concentrate suggest a specific poison attacking brain and liver (the chief seat of eosinophil formation). The presence of these symptoms in the ordinary case of hookworm disease may be attributed to the usual resultant secondary anaemia, but its absence in this case and the absence of any other gross physical signs suggest that these symptoms resulted from the action of a specific poison, more especially as these symptoms disappeared on treatment.

The significance of eosinophilia is not yet understood. It may be associated with endocrine disturbance. In rapidly fatal cases of hookworm disease the eosinophilia diminishes. In hydatid disease eosinophilia disappears if suppurative of the cyst occurs. Petersen and Saelhof found that eosinophilia occurred in irradiated dogs only if the liver had been included in the irradiated area. In hookworm disease the tissue at the sites of the bites of the worm in the intestines is packed with eosinophils. The absolute and relative diminution in polymorphonuclear leucocytes and the absolute increase in lymphocytes may be noted in the blood picture of this case.

The absence of anaemia is a striking feature when we remember that the disease is called tunnel workers' anaemia, tropical chlorosis, Egyptian chlorosis, and that Whipple has demonstrated a haemolytic poison in the parasite.

Although the parasites were killed and eggs absent from intestines, evidently the poison still remained for quite a long period in the system, as we see no great change in the blood count after a month.

The blood picture, the persistence of the infection, and the reaction to treatment are points of clinical interest in the case to which I feel attention may profitably be drawn.