toleration of conditions which, as some author has put it, cause almost as much venereal disease within the bonds of matrimony as exists outside them—a statement which is probably true if the remote effects of the diseases are taken into account.

Think of the inconsistency of our laws which enable the working man or woman to get compensation for a trivial and temporary injury from an employer, who is as often as not only technically responsible for it; or which do not allow one with impunity to resent the impudence of a schoolboy by whipping him, and yet permits a person to marry who may by so doing damage another so seriously as to bring about lifelong suffering or mutilation, or even death, and perhaps produce a degenerative or defective progeny. Think of the criminality of this, with no law to prevent it, or to punish it! The crime, if the perpetrator has a knowledge of the danger, is almost comparable with that of the poisoner who, in cold-blooded secrecy, under the guise of friendship and affection, by his action leads to the disease or death of his victim. The thing is monstrous, and we as a profession should surely take the initiative in the way of making recommendations for educating every class concerning these diseases and their results, and by insisting upon the principle that freedom from transmissible disease should be a legal condition for marriage. Therein will lie the basis of true eugenics, and if this knowledge is ground into the people, and understood by them, the day may come, and come shortly, when public opinion will, for the protection of the innocent, and for the carrying out of eugenic principles, not only tolerate, but welcome, the requirement by law of certificates of health, indicating that "no just impediment" exists before matrimony is entered into. Then it will happen that if a person marries, knowingly having any of these impediments, and brings about any of the disastrous results which I have referred to, there will be no excuse for the remorse which he or she must suffer in consequence of having disregarded or evaded measures the purports of which were both plain and just.

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THE WORK OF THE CAMBRIDGE RESEARCH HOSPITAL.

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THE Cambridge Research Hospital for the study of chronic diseases was opened in 1906 in a small private house where the work was carried on for some time. As the research progressed it became evident that the hospital would become a permanent institution, and, owing to the inconvenience of the house and its distance from suitable laboratories, it was decided to build the present hospital; this was opened in May, 1912. The total cost of the hospital was £2,752. This sum includes the freehold site, research laboratories, fitting up of hospital and laboratories, an electric installation, petrol gas plant, motor house, sinking of well, laying out garden and drainage system.

The Research Hospital since its commencement has received the most cordial support of the medical profession, and the list of annual subscriptions shows a large proportion (60 per cent.) of medical men among the subscribers. Not only have they helped financially, but have most willingly given assistance in the research by recording cases and allowing free access to their patients in order

that observations may be made on their condition. Several thousand patients have thus been examined, and various observations recorded.

Since the hospital has been opened the following medical graduates have assisted in the research: C. Ackerman, H. Ackroyd, F. J. Allen, L. Baly, L. Bonnerjee, J. Barnes, Burt, F. P. Franklin-Evans, M. P. Fitzgerald, F. Gayner, P. Hall-Smith, J. Lambert, J. Lindsay, E. McCall, W. J. Mallory, J. R. Marrack, E. H. Morris, G. W. Nicholson, W. M. Penny, C. Ponder, T. S. P. Strangeways, A. W. Wakefield, and R. I. Whiteman.

The literature in connexion with arthritic disease is enormous; this has been carefully read and abstracted, and the following paper has been published in the *Bulletin* of the Committee for Special Diseases. The other references in this paper are to this *Bulletin* unless otherwise stated:

A Résumé of Some of the More Important Literature on the Etiology and Symptoms of Rheumatoid Arthritis. (Vol. i, No. 1, p. 4.)

The disease has also been studied from the historical point of view, and through the kindness of the Egyptian Government a number of valuable specimens of diseased joints showing arthritis in Egyptians from the third dynasty onwards has been received; these have been studied, and the following reports have been made on them:

Report on the Pathological Changes found in the Bones of Ancient Egyptians.

Report on the Second Consignment of Ancient Egyptian Bones.

Systematic clinical observations are being made on the following points in connexion with arthritic disease:

1. *An Inquiry into the Etiology, Family History, and History of Onset in Cases of Arthritis.*—The following reports have been published:

A Report on Some Points in the Etiology and Onset of 200 Cases of Rheumatoid Arthritis. (Vol. i, No. 4, p. 55.)

A Report on Some Points in the Etiology and Onset of 195 Cases of Rheumatoid Arthritis. (Vol. ii, No. 3, p. 83.)

An Inquiry into Some Points in the Family and Clinical History of 125 Cases of Gout. (Vol. ii, No. 3, p. 95.)

2. *The Clinical Examination of Arthritic Patients.*—This forms an important part of the work. Several thousand patients have been examined, and these clinical observations combined with pathological studies have thrown much light on the disease. A report on this subject will appear later. The following report has been issued:

The Arterial Blood Pressures in Arthritic Disease. (Vol. ii, No. 2, p. 11.)

3. *A Series of Observations on the Symptoms and Physical Signs present in Arthritic Patients.*—These observations are of great interest, and explain much, but they also show that the most careful clinical examination unchecked by prolonged study of joints in the *post-mortem* room will in some cases result in misleading or absolutely fallacious conclusions. Publication of the studies has been intentionally delayed, but the following reports have appeared:

Observations on the Temperature and Pulse-rate in 95 Cases of Rheumatoid Arthritis. (Vol. iii, No. 3, p. 75.)

Examination of the Urine in 90 Cases of Rheumatoid Arthritis in Women. (Vol. iii, No. 4, p. 97.)

The Incidence of a History of Vaginal Discharge in 115 Cases of Rheumatoid Arthritis in Women. (Vol. iii, No. 4, p. 92.)

4. *The Prognosis in Cases of Arthritis.*—This is being studied by keeping in touch with patients over long periods. The studies show that the progress of the disease is spontaneously arrested in a large number of cases, and that although this event may be long delayed, it may be hoped for even in the most progressive form of the disease. It does not follow, however, that when the arthritis is arrested the patients' deformity will become less or that the use of their limbs will return. On the other hand, both the deformity and the crippling may increase, although the morbid processes in the joints have ceased to progress. This is explained by the fact that limitation of movement or disuse of the joint has led to the formation of habits of indolence, distaste for movement, and loss of power from disuse, so that unless the patients are aroused in some way to re-educate their muscles the condition of crippling may persist; if, however, for any reason they begin to use the

joints even slightly improvement may be expected to take place, and it is really wonderful what a degree of strength and utility can be restored to a completely disorganized and dislocated joint. This explains at least some of the good results claimed for various forms of treatment. The patient, owing to the hopeful interest taken in his joints by his medical or other attendant, begins to take a hopeful view of them himself, and to endeavour to use them himself, with the result that greater strength and freer movements are obtained; this is followed by still greater efforts, and therefore greater improvement. There seems to be a strong mental factor in a large number of chronic cases, and given a keen medical attendant with a firm belief in his "cure" he will obtain improvement in some cases that have failed to respond to other methods of treatment or to the same method in less keen hands.

5. Observations on the Results Obtained by Different Forms of Treatment.—Various remedies have been put forward from time to time either as specific cures or means for the alleviation of the various forms of the disease. Among the forms of treatment that have been studied at the Research Hospital or elsewhere the following are included:

By *drugs*: for example—Guaiacal carbonate, sodium salicylate, aspirin, arsenic, potassium iodide, etc.

By *external application*: Blistering, ointments, liniments, poultices, essential oils, mud (fango).

By *electricity*: Cataphoresis, vibration, galvanic current.

By *injections*: Vaccines, anti-serums, horse serum, fibrolysin, etc.

By *appliances*: Splints, bandages, extension, etc.

By *waters*: Bath, Buxton, Harrogate, Strathpeffer, Wiesbaden, Carlsbad, etc.

By *radiant heat*.

By *massage*.

By *radium*.

By *patent medicines*.

By *passive congestion*.

By *removal of septic foci*.

By *removal of fluid from joints*.

By *operative measures*.

The following papers have been published:

The Treatment of Rheumatoid Arthritis by Bier's Method of Passive Congestion. (Vol. i, No. 5, p. 79.)

The Relation of Infective Foci to Rheumatoid Arthritis. (Vol. ii, No. 3, p. 106.)

It will be noticed that although many observations have been made on the treatment of the disease, little has been published. The reason for this is that our observations do not entirely agree with the claims put forward in their favour by many authorities, but we are anxious not to throw doubt on their efficiency except on absolutely sure grounds.

The facts referred to under prognosis must be emphasized with regard to treatment. It is to be regretted that in connexion with every new form of treatment that comes up, premature reports, claiming good results in the treatment of arthritis and other chronic diseases, should be issued. These reports are often based on the treatment of a few cases, and make little or no reference to failures and no allowance for the likely response of a chronic invalid to a "new thing."

Our studies show definitely that the treatment of arthritis should be based on a knowledge of what has occurred and what is occurring in the affected joint, and each joint should be examined and treated from this standpoint. In this way only can rational treatment be carried out. The general condition of the patient must, of course, be studied at the same time, but the routine exhibition of drugs and use of other remedies—chemical, thermal, physical, etc.—is to be deprecated. The changes in the joints must be recognized from previous dissection and study of *post-mortem* specimens similarly affected; and with the knowledge thus gained the various changes must be dealt with.

With regard to the more purely scientific side of our researches, work is being carried on along the following lines.

6. The Diagnosis of Various Forms of Arthritis.—This study was undertaken in order if possible to arrive at some conclusion as to the cause of various forms of arthritis, and much time has been spent in testing the value of certain methods of diagnosis, for example, the examination of serum. Several of these in our hands have proved value-

less, but studies along these lines are still being carried on. The following reports have been published:

The Ophthalmic Reaction. Some observations on 10,000 collected cases. (Vol. ii, No. 4, p. 117.)

The Conjunctival Reaction to Tuberculin in Arthritic Diseases. (Vol. ii, No. 4, p. 125.)

An Inquiry into the Value of the Opsonic Index. (Vol. i, No. 8, p. 115.)

7. A Study of the X-Ray Changes found in Arthritic Joints.—An exhaustive research has been carried out, with the result that it is now possible for us to recognize many changes in the diseased joints of the living patient with great accuracy. X-ray photographs were taken of diseased joints obtained from the *post-mortem* room; the joints were then dissected with the photograph before the observer. The photographs were then compared with photographs of arthritic joints taken from a large number of patients. The following reports on this research have been published:

A Study of Joints from Rheumatoid Arthritis and Chronic Gout by means of Skiagrams, and Dissection of the Affected Parts. (Vol. i, No. 6, p. 87.)

A Study of Joints from Cases of Rheumatoid Arthritis and Chronic Gout by means of Skiagrams, and Dissection of the Affected Parts. (Vol. iii, No. 5, p. 103.)

A Study of Skiagrams of the Hands of 100 Cases of so-called Rheumatoid Arthritis and Chronic Gout. (Vol. i, No. 9, p. 145.)

A Study of Skiagrams from 18 Cases of Rheumatoid Arthritis and 3 of Chronic Gout on which the Purin Metabolism has been Studied. (Vol. iii, No. 2, p. 67.)

8. Research in the Post-mortem Room.—This has been actively carried on and examination of over 2,000 joints has been made. These studies have led to most important conclusions and thrown new light on the subject. A museum showing the changes which occur in morbid joints has been arranged, and the specimens form a collection which is absolutely unique; practically every change which is known to occur in arthritic joints is illustrated, and many changes that have not been previously observed are shown. Some of the specimens were shown at the meeting of the British Medical Association in Birmingham in 1911.

9. A Study of the Morbid Anatomy of the Joints and Organs from Cases of Arthritis.—This is a natural sequence to the study of cases in the *post-mortem* room; a more thorough examination can be made by dissection of the preserved specimens in the laboratory. A full report is being prepared on this side of our work. This will show that the present description of the morbid anatomy of the disease needs revision.

10. A Study of the Histological Changes found in Rheumatoid Arthritis.—A study of the microscopic changes seen in the tissues of diseased joints and also of the organs from arthritic cases is being made. The following reports have been issued:

The Morbid Histology of Some Cases of Rheumatoid Arthritis. (Vol. i, No. 7, p. 103.)

A Report of the Science Committee of the British Medical Association on the Histological Changes found in Chronic Arthritis.

11. Studies of the Spinal Cord in Arthritis.—Much stress has been laid by various observers on changes reported in the spinal cord in arthritic diseases, and important conclusions were drawn from these reports. A microscopic study of spinal cord from arthritic diseases has been made, and the following paper is in the press:

The Spinal Cord and Posterior Ganglia in Rheumatoid Arthritis. (Vol. iv, No. 4.)

12. A Study of Hypertrophic Pulmonary Osteo-arthritis.—A study of a case of this rare and interesting condition has been made, and a report published:

Report on a Case of Hypertrophic Pulmonary Osteo-arthritis. (Vol. ii, No. 5, p. 131.)

13. Bacteriological Investigations.—These have been made on the blood, the joint fluids, and various secretions. In the majority of cases these examinations have been found negative, probably because the methods at present available are not suitable. From a certain number of cases, however, organisms have been isolated which may or may not have been the cause of the arthritis. Owing to this uncertainty it would be most unwise to publish details of these experiments before sufficient evidence has been obtained

to show whether these organisms are or are not related to the disease. The following report has been published :

Report on the Clinical and Bacteriological Examination of the Vagina in 60 Cases of Rheumatoid Arthritis. (Vol. iii, No. 4, p. 83.)

14. *Chemical Research.*—An important and tedious research is being carried out in the Research Hospital on the metabolism of arthritic patients. These studies are most exacting to the observer, to the nurses, and to the patients, and could not be possibly carried out without the aid of such an institution. The following reports have been published :

Observations on the Purin Metabolism. (Vol. ii, No. 6, p. 146.)

Observations on the Uric Acid Excretions in One Normal Person and in 4 Cases of Rheumatoid Arthritis. (Vol. iii, No. 2, p. 87.)

Observations on the Uric Acid Excretion in Gout and Rheumatoid Arthritis. (Vol. iii, No. 2, p. 17.)

Observations on the Calcium Metabolism and Uric Acid Excretion in Rheumatoid Arthritis. (Vol. iv, No. 3, p. 33. In the press.)

15. *The Effect of Climate and Soil on Disease Generally, and So-called Rheumatoid Arthritis Particularly.*—It is believed by the medical profession and the public that residence in certain districts is harmful to those suffering from certain diseases ; while there is some evidence that this is true, it is by no means sure, and it is important that the question should be settled if possible ; for, by the advice of their doctor, patients are constantly removing from one locality to another reputedly more suitable for their condition, at great personal loss and hardship to their family. In connexion with our studies a geographical survey has been organized, in order, if possible, to determine the relationship, if any, of climate, geological formation, vegetation, and allied factors to certain diseases.

The study includes the following factors :

- (a) Geographical situation.
- (b) Geological formation ; for example, limestone, clay, sand and soil generally.
- (c) Vegetation ; for example, trees—pine, oak, elm—thickly or sparsely wooded ; cultivation, pasture, crops, moorland.
- (d) Altitude.
- (e) Rainfall.
- (f) Sunshine.
- (g) Temperature.
- (h) Wind.
- (i) Water supply—hard, soft.
- (j) Situation ; for example, mountain, fen, moorland, sea coast, inland.

Another line of research which the above studies have shown to be urgently needed and which at present our funds will not allow us to undertake is operative treatment of arthritic joints. In many patients the changes in the joints can only be remedied by operation, and there is great probability that the pain which is present in many cases of arthritis, and for which no treatment is of any avail, might be entirely removed by operation. For these and other reasons it has been decided to build an operating theatre as soon as funds can be obtained. This urgently needed line of work will be begun the moment the theatre is built.

The following table gives details of our annual expenditure since the opening of the hospital.

	Hospital.	Research.	Bulletin, etc.	Total.	Annual Subscriptions.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1906 ...	336 16 8	189 16 2	14 2 6	540 15 4	—
1907 ...	256 2 8	158 5 10	91 11 3	506 0 2	—
1908 ...	177 4 11	141 18 2	23 2 9	510 12 7	—
1909 ...	192 8 6	197 10 7	106 7 0	496 16 1	192 19 0
1910 ...	250 10 10	173 6 0	19 3 2	526 0 0	206 16 6
1911 ...	102 12 9	82 2 7	61 18 6	246 13 10	192 18 0
1912 ...	395 14 1	134 14 4	29 19 0	560 7 5	212 0 3

It will be seen that the annual expenditure averages £500 yearly, a small sum compared with the sums spent by many other research committees, especially if we take into consideration the additional expense involved by the

up-keep of the hospital and nursing staff, and the feeding and treatment of patients. Our income from annual subscriptions averages £200 yearly.

Medical men are beginning to make special journeys to Cambridge in order to see the hospital and something of our work and methods. I extend a cordial invitation to any medical man who is interested in the subject to come and see the hospital, and will do my best to make his visit pleasant and interesting. I should, however, be glad if any intending visitor would make an appointment before coming to the hospital.

THE SIGNIFICANCE OF PHLEBOLITHS.

BY

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SOME few months back I was asked by an insurance company to make an x-ray examination of the kidneys, ureters, and bladder of a gentleman who had applied to them for a policy upon his life.

It transpired that in the course of an examination undertaken by the medical referee to the insurance company the patient had stated that two or three years previously he had had an attack of abdominal pain which lasted for several hours. In his description of the attack he related all the classical symptoms usually attributed to the passage of a calculus from the kidney to the bladder, but as far as he was aware no stone had passed through the urethra, and since the attack he had enjoyed perfect health and had experienced no further trouble.

The patient, a well-built man, without an ounce of superfluous fat, had at my instructions been prepared for the examination by the taking of an aperient on the night previous, and the administration of an enema on the morning of the examination. The radiographs were excellent, and on careful examination there was no shadow to indicate the presence of a calculus. The radiograph of the pelvis showed a line of phleboliths in the usual position, namely, half an inch above the upper edge of the pubis on the left side. It was in the left flank that the patient experienced the afore-mentioned attack of pain. On the right side, in a corresponding position, there were two small and similar shadows.

I was asked by the insurance company to furnish them with a report as to the man's fitness. This I avoided, but I furnished them with a copy of the radiograph together with a description of it, and suggested that they should send it to their medical referee, who was a specialist in diseases of the urinary tract. Whether or not the life was accepted as a first-class one I do not know, but the case deeply interested and impressed me, and was the indirect cause of my writing this article.

During the last ten years I have radiographed hundreds of cases in which the presence of calculi was suspected, and, whilst in many instances no stone has been found, in a large number phleboliths were clearly defined in the pelvis, and were always most numerous on the side in which the patient complained of pain or discomfort.

I have recently been greatly impressed by the large number of cases which have been sent to me, in which all the classical symptoms of stone were present yet in which no shadow was found, with the exception of phleboliths. In some of these cases the phlebolith shadows were only found on the side in which pain had been experienced, and in all cases where phleboliths were present they were always more abundant on the affected side than upon the opposite one.

I may say that all the cases I refer to were specially sent for examination as having symptoms which at least pointed to the possibility of a calculus, and that in my experience of these cases, both in hospital and private practice, lasting over a period of six years, the percentage of stones found varies between 17 and 20.

In *Quain's Dictionary of Medicine*, 1885 edition, the following sentence occurs : "Phleboliths are harmless, and they require no treatment." Whether this be true or no I am not in a position to say, but there cannot be the slightest doubt that phleboliths are of far greater significance than is usually admitted.