by the health authorities, and compensation will be paid to the owner of any cow which is found to be suffering from tuberculosis. In the meantime the public are advised to sterilize the milk before being given to infants, with a view to destroying tubercle bacilli and other organisms. In Liverpool a great amount of special care has been taken by the health authority to safeguard the milk supply. Special powers have been obtained to inspect the source of all milk coming into the city, and the result has been that I have myself observed a steady decrease in hospital of children suffering from tuberculosis.

The amount of disease conveyed from animals to man seems to vary in different countries. In Scotland there is more than in England; whilst in the British Isles there appears to be more tuberculosis conveyed by milk than on the Continent, where it is almost the universal practice to pasteurize the milk before drinking. Whether this be so or not, we are all agreed that in the campaign against tuberculosis every effort must be made to eradicate the disease from dairy cows. This, I admit, is a very costly undertaking, and millions of pounds would be required to do it effectively in England alone. The scheme suggested by Bang has had excellent results in Copenhagen, and a similar process should be gradually introduced into every country.

Assistance to Family in the Absence of the Bread-winner.

The question of providing assistance to the family in the absence of the bread-winner during his stay in a sanatorium has been to a great extent solved by the provision in the National Insurance Act already referred to, but this work requires further extension, and a central fund ought to be provided in every community for the special purpose of looking after the family when the parent is undergoing cure; otherwise it is impossible to expect him to give himself up to treatment for any prolonged time.

Provision of Suitable Employment in Cured and Arrested Cases.

The question of providing suitable employment for cured cases, and for those in whom disease is arrested, is one of great difficulty, although of immense importance. Very many private employers are now giving such workers out-of-door, easy employment, as it is only in this way that they can be expected to remain well and fight the battle of life. We wish to extend this practice, and appeal confidently to those employers of labour who have the opportunity of making such provision for their workers.

By adopting a combination of measures such as those enumerated, we can confidently hope slowly but surely to exterminate the disease which ought not to be in our midst, but is provoking such an amount of havoc, misery, and loss of human life. The new Ministry of Health, by co-ordinating and controlling all the necessary measures for the prevention and control of tuberculosis will be the means of saving an enormous amount of suffering and wastage of valuable human lives.

An Investigation

INTO

THE INCIDENCE OF ALBUMINURIA AND CASTS IN BRITISH SOLDIERS DURING TRAINING,

AND THE RELATIONSHIP OF THIS CONDITION TO WAR NEPHRITIS.*

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THE question of the incidence and significance of albuminuria in the soldier has in the past received very little attention, and the literature contains but scanty information as to the extent to which kidney deficiency is present in the army. Though the recruit is supposed to be physically fit, little provision is made for the testing of his renal function at the time of his medical examination, with

the result that the milder cases of nephritis without objective symptoms are likely to be drafted into the army. The outbreak of acute nephritis (so-called war nephritis) which began at an early stage of the war and still continues, rendered it necessary to investigate more fully the incidence of albuminuria and possible kidney lesions in the fighting forces, and it was in this connexion that the present investigation was carried out.

The original idea was to examine the urines of large numbers of men before they took part in active operations, and later on to correlate the information gained with the official returns of nephritis obtained from these men. It would thus be ascertained whether or not the majority of the cases ultimately returned as suffering from war nephritis had albuminuria at an earlier period. Such an investigation, though difficult and laborious, was obviously essential if any real light was to be thrown on the etiology of war nephritis, for in each case of nephritis that appeared one was always confronted with the unanswerable question: Has he had some kidney defect previously, and is this merely an exacerbation brought on as the result of the conditions of warfare, or has it arisen *de novo*? In the majority of cases an answer to this question could not be furnished by any clinical observations made on the patient while actually suffering from the disease, for the problem of pre-existent renal trouble is a most difficult one, and in many cases incapable of solution. It is perhaps not sufficiently recognized that renal disease may be present with few or no clinical symptoms, though evidence can often be obtained by careful laboratory investigation. On the other hand, it is now acknowledged that an acute attack may in a short time result in certain cardiac and other changes strongly suggestive of chronic disease.

If, however, it were found that the great majority of war nephritis cases were suffering from albuminuria when examined at an earlier stage, then one might say with confidence that war nephritis was probably dependent on a pre-existing kidney lesion, which, though perhaps originally slight in degree, yet gave rise to an acute inflammatory process as the result of the necessary exposure and fatigue of the campaign.

The question of the possible relationship of albuminuria to war nephritis was, however, only one of the many points on which it was hoped to obtain much-needed information. Various problems, such as the effect of training, the part played by previous diseases, the influence of age and other factors on albuminuria, were investigated.

In all, 60,000 men were examined. Of these, the first 50,000 were men who had finished their course of training in England and had come to a base in France for a short period—generally nine or ten days—to complete their training before going to the front. Some of these, of course, had been in the line before, and were returning after being wounded or sick, but these constituted only an insignificant proportion of the total. The last 10,000 men were examined at Aldershot, and chiefly represented recruits who had undergone little or no training. They gave practically similar results to the other 50,000.

General Procedure in Examination and Collection of Urine.

In any investigation of albuminuria it is necessary to ensure the collection of specimens under suitable and comparable conditions. The incidence of albuminuria in a group of soldiers is often increased by as much as 100 per cent. or more as the result of a few hours' active exercise, so that a series of samples taken from the same men in the morning and at night would show very marked differences. Specimens should always be taken in the morning, since in this case the results are comparable, and really indicate the minimum incidence of albuminuria in any group of men at a given time. All the urines examined were, therefore, taken early in the morning, and, where possible, consisted of the first specimen passed. Various special arrangements, which need not be detailed here, were necessary to obtain particulars of the men for future identification.

Tests used for Protein and Methods of Grading Urines according to Amount of Albumin.

The testing reagent used in this investigation was salicyl-sulphonic acid. Of all the protein tests this is undoubtedly one of the most reliable and delicate; it is so easily applied that

* Summary of a report to the Committee on War Nephritis of an investigation carried out under the auspices of the Medical Research Committee.

any intelligent orderly can be taught to use it in a very short time, and it gives very accurate results. In the rough preliminary testing, six drops or more of a saturated solution of salicyl-sulphonic acid in distilled water were added to about half an inch of urine in an ordinary test tube. In urines containing a considerable amount of protein a dense white precipitate was at once formed, but any urine giving the faintest opalescence with the reagent was provisionally taken as positive.

In the laboratory the positive specimens were further examined by means of salicyl-sulphonic acid, and, in cases in which any doubt arose, by heat coagulation and by cold nitric acid as well. A rough estimate of the amount of protein present was made, based on the amount of precipitate obtained with salicyl-sulphonic acid. For convenience in tabulating results, six different grades of albuminuria were recorded as A, B, C, D, N, NN; these letters refer roughly to the quantities of albumin indicated in the table.

TABLE I.

Grade.	Rough General Description of Precipitate as given by Salicyl-sulphonic Acid.	Rough Quantitative Estimation of Amount of Protein Present.
A.	Very marked	200 to 300 mg. or more per 100 c.cm.
B.	Marked	80 to 200 mg. per 100 c.cm.
C.	Fairly well marked	20 to 80 mg. per 100 c.cm.
D.	Very distinct	5 mg. or less to 20 mg. per 100 c.cm.
N.	Faint	—
NN.	Faint trace	—

As no exact quantitative estimations were possible, it is obvious that the above grades of albuminuria are only rough general indications of the amount of protein present. In urines marked A, B, and C, the protein reaction was always well marked, and in D it was always quite distinct, so that a definite positive result was obtained by the ordinary tests (heat coagulation and cold nitric acid tests) as well as by salicyl-sulphonic acid. Urines of grade N sometimes gave the heat coagulation test directly, but more often after the addition of salt and of a trace of acid in some cases. In grade NN no definite results were generally obtained either on boiling or by the cold nitric acid test, though salicyl-sulphonic acid gave a definite slight opalescence. It is, of course, possible that not all the urines in the lower grades contained true protein; they are indicated here merely as giving results with salicyl sulphonic acid.

In short, any urine of grades A, B, C, D contained sufficient protein to give a definite well marked reaction with any of the ordinary protein tests, while grades N and NN did not generally do so unless very carefully examined, and even then, in NN samples, negative results were the rule.

INCIDENCE OF ALBUMINURIA IN 50,000 MEN EXAMINED AT THE BASE.

All the men examined were, of course, marked "Active Service," and at the period of examination were undergoing a fairly strenuous course of training. The investigation took place during the summer months; it began about the end of May and was completed about the beginning of October, 1917.

In certain cases of albuminuria the presence of spermatozoa or pus in the urine indicated at once the probable cause, but it is important to note that in several cases definite epithelial, as well as hyaline, casts were present. It is generally stated that when spermatozoa are found in the urine certain bodies closely resembling hyaline casts are also met with. As these bodies do not come from the kidneys they are of no significance, but it is often very difficult to distinguish between such bodies and the delicate clearer variety of hyaline cast. When epithelial casts are present, however, there can never be any doubt as to their origin. In order to make all allowances for complications of this kind, the total number of men suffering from albuminuria of all varieties was ascertained, and the cases showing any possible cause for the presence of the albumin were noted. The examination of the morning specimens of urine certainly suffers from the disadvantage that spermatozoa are fairly common, but as these bodies are easily found on examination with the microscope, the condition does not give rise to any great difficulty.

The men were examined in groups of 10,000; the various results are recorded in Table II, in which the intensity of the albuminuria is also indicated. It will be seen that the

comparable figures obtained in the different groups agree remarkably well on the whole.

Roughly speaking, the total percentage of albuminuria unaccounted for by any of the conditions already mentioned (pus, spermatozoa, blood, etc.) was found to be about 5 per cent.; of this, only about 2 per cent. represented gross albuminuria of the A, B, C, D grades, while the other 3 per cent. was of the less marked variety.

The actual figures in the 50,000 men were as follows:

Total number with albuminuria...	... = 6.48 per cent.
Number with albuminuria after allowing for pus, spermatozoa, etc. ...	... = 5.62 "
Number with gross albuminuria (A, B, C, D grades) ...	... = 2.55 "
Number with gross albuminuria after allowing for pus, etc. ...	... = 2.19 "

TABLE II.—Showing Incidence of Albuminuria in each of Five Groups of 10,000 Men Examined.

Groups of 10,000 Men.	Percentage of Total Number with Albuminuria.	Percentage with Albuminuria after Allowing for Pus, etc.	Percentage with Gross Albuminuria (A, B, C, D Grades).	Percentage with Gross Albuminuria after Allowing for Pus, etc.	Percentage with Slight Albuminuria (N and NN Grades).	Percentage with Slight Albuminuria after Allowing for Pus, etc.
Group 1 ...	5.88	5.26	1.80	1.63	4.08	3.63
Group 2 ...	6.53	5.81	1.77	1.53	4.76	4.28
Group 3 ...	6.95	5.85	3.02	2.50	3.93	2.35
Group 4 ...	6.27	5.05	2.78	2.23	3.49	2.82
Group 5 ...	6.77	6.16	3.40	3.08	3.37	3.08
Average ...	6.48	5.62	2.55	2.19	3.92	3.23

On account of the large numbers of men examined the results obtained may be taken as a measure of the incidence of albuminuria in the British army during training. Our information regarding the incidence of albuminuria among soldiers in the trenches is very scanty, but, according to Ameuille and MacLeod,¹ appear to be more or less of the same order as was found in the present investigation.

PRESENCE OF CASTS IN ALBUMINOUS URINES.

All the specimens of urine which contained albumin were examined for casts. About 25 c.cm. of urine were centrifuged for a few minutes and the deposit examined under the microscope. As the vessels containing the urine had generally stood for several hours before the examination for casts could take place, most of the solid constituents present were by this time in the lower layers of the urine or on the bottom of the vessel. The upper layer of urine was therefore poured off as carefully as possible, and when only about 30 c.cm. to 40 c.cm. remained, this was shaken up and 25 c.cm. used for centrifuging.

In examining the deposit it was found most convenient to pipette about $\frac{1}{2}$ c.cm. of material from the bottom of the centrifuge glass, and to spread this in a thin layer over the greater part of an ordinary microscope slide. It was then examined quickly with a low power. When necessary, for purposes of identification of casts and their structure, higher powers were employed.

Almost all the casts found were either epithelial or of hyaline nature; very few blood casts were encountered. The epithelial casts varied much in the stage of degeneration presented by the epithelium, but the majority of them showed the usual appearances seen in acute nephritis, where the outline of the individual cell is often fairly distinct. The hyaline casts also comprised many of the ordinary clear ill-defined variety, but a very considerable number were definitely granular in structure, and might be referred to as hyalo-granular casts. All stages of granularity, from many comparatively large well marked particles to a very few small ill-defined granules, were observed, but in all such cases the matrix of the cast presented a definite hyaline appearance.

For statistical purposes the casts were therefore divided roughly into two classes, epithelial and hyaline, and were characterized entirely on the appearance presented by

unstained specimens, since the large number of deposits examined did not permit of a more detailed examination.

In the great majority of cases where epithelial casts were present, hyaline casts were found as well, but in many specimens hyaline casts alone were found. While many authorities believe that the presence of epithelial casts—at any rate, in moderately large numbers—is pathological and indicates some definite lesion of the kidney, it is often supposed that the hyaline variety is of little significance. From what we see, however, in the urines of patients who are suffering from acute nephritis, it is certain that the hyaline variety may in many cases be the only casts present. In such patients, even when the disease is well marked, as indicated by the usual symptoms, it often happens that the urine contains only a few small hyaline casts, while in other cases very large numbers of this variety of cast may be present. On the other hand, it may be quite impossible to find epithelial casts.

The presence of casts was by no means confined to urines exhibiting a high grade of albuminuria, for, in several cases, urines with only a trace of albumin contained large numbers of epithelial casts, while in other cases many hyaline casts were found. Such results are by no means rare in ordinary practice where they are generally associated with a condition of chronic interstitial nephritis. In practically all such cases which the writer has seen in hospital practice the kidneys were found to be markedly defective, as indicated by the diastatic test. In the cases found in soldiers in France, however, the combination of large numbers of casts with mere traces of albumin was not apparently associated with any appreciable degeneration of the renal tissue, for the diastatic reaction was normal in the great majority of the cases in which it was used. The very large numbers of urines dealt with in this investigation precluded the possibility of applying this test to all such urines, but a considerable number were examined. With the exception of a very few cases, the diastatic reaction was between 15 and 25—figures practically identical with those obtained from normal urine.

It is not improbable that casts may sometimes occur in urines which are free from albumin, but it is certain that this is very rare, for in 100 specimens of normal urine examined no casts of any kind were found. This view is further borne out by the fact that the percentage of urines with a very small amount of protein which contained casts was comparatively small; in this connexion it was observed that urines which gave only an exceedingly faint reaction with salicyl-sulphonic acid (certain of the urines of grade NN) rarely contained casts. In no case were epithelial casts found in such specimens, and in the few cases in which hyaline casts were observed the number was usually limited to one or two. In order to settle the question definitely it would, of course, be necessary to examine several thousands of protein-free urines, but there was no time for this during the present investigation.

With regard to certain of the urines stated to contain hyaline casts only, it is possible that a few of them might have contained a very small number of epithelial casts as well, but it is certain that this could be the case only in a very few instances, since the examination for casts was carried out very carefully, several specimens of deposit from the same urine being sometimes examined.

Occasionally a few blood casts were found associated with epithelial casts, but the former were of such infrequent occurrence that no special record of them was kept.

Along with casts several other elements were found in the deposits, but nothing abnormal was observed. The extremely common occurrence of calcium oxalate crystals, which at some periods were present in large amount in almost every urine examined, is perhaps worth noting. No explanation of this phenomenon could be found in the nature of the diet partaken of at the particular period.

General Results Obtained.

For the 50,000 men examined, the average percentage of urines found to contain casts was 1.87; of this number 0.84 per cent. had definite epithelial casts, while in 1.03 per cent. hyaline casts only were found. The percentage of casts in the various groups of 10,000 men is indicated in Table III. It will be seen that the figures in the different groups correspond fairly well.

TABLE III.—Percentage of Casts in Five Groups of 10,000 Men each.

	Percentage with Casts.	Percentage with Epithelial Casts.	Percentage with Hyaline Casts.
1st group of 10,000 men	1.60	0.75	0.85
2nd	1.52	0.88	0.64
3rd	2.01	1.00	1.01
4th	2.13	0.9	1.23
5th	2.10	0.65	1.45

As might be expected, the percentage of albuminuric urines containing casts was highest in those cases where the albuminuria was well marked. Thus, in the 50,000 cases, the percentage of albuminuric urines of grades A, B, C, D containing casts was 44.6, while of grades N, NN, only 20.3 per cent. had casts.

TABLE IV.—Percentage of Albuminuric Cases showing Casts in Different Grades of Albuminuria.

	Grades A, B, C, D, 50 %	Grades N, NN, 17.1 %
1st 10,000	50.1 %	15.7 %
2nd	37.0 %	22.6 %
3rd	46.4 %	24.0 %
4th	39.5 %	22.5 %

Observations on the Amount and Probable Significance of Casts found in Urines.

In certain of the specimens containing casts only very few casts were actually found. Thus, in the case of the epithelial variety, only one or perhaps two were identified in certain urines, while it was fairly common to have urines showing only two or three hyaline casts. As already stated, the significance of the presence of a very small number of hyaline casts is obscure, and the truth probably is that such findings may in certain cases denote definite pathological changes in the kidneys; in other cases they are of little significance. On the other hand, a urine containing albumin, together with epithelial casts in moderate or large numbers, must be regarded with suspicion, and almost certainly denotes, in the great majority of cases, that the renal tissue is the seat of some inflammatory condition which may be progressive in nature and may ultimately lead to well defined renal disease.

From this point of view it was of interest to ascertain the number of cases in the 50,000 men examined which gave urines showing albuminuria and large numbers of casts. Naturally, the figures obtained are liable to considerable variation, since the personal factor plays a great part in estimating what is to be considered as "large numbers" of casts. Probably the best method would be to count the casts in a given number of fields of the microscope, having previously taken the necessary precautions for ensuring approximately accurate results. This, unfortunately, was impossible in the present investigation, as the necessary time could not be afforded. An attempt, however, is made in the following table to indicate as nearly as possible the number of men whose albuminuric urines contained casts in sufficient numbers to arouse suspicion. In cases where many hyaline casts were found accompanied by only one or two epithelial, the casts are classified as "hyaline."

TABLE V.—Number of Men in 50,000 Examined whose Albuminuric Urines contained large numbers of Epithelial or Hyaline Casts.

Epithelial casts in large amount	271
Hyaline casts in large amount	279
Total with epithelial and hyaline casts in large amount	550
Percentage with epithelial casts in large amount	0.54
Percentage with hyaline casts in large amount	0.56
Total percentage with casts in large amount	1.10

General Results.

From Table V it appears that the total number of men who had albuminuria together with moderate or often large numbers of epithelial or hyaline casts was 550. Of

these, 271 had epithelial casts, while in 279 cases the casts were chiefly of the hyaline or hyalo-granular variety. If the results of the examination of the urine for albumin and casts have any significance, it appears certain that the minimum number of men suffering from definite renal deficiency in the 50,000 cases examined was 550. From this it is probable that the "active service" part of the army contains, during training, at least 1.1 per cent. of men whose kidneys are inefficient and who are suffering from some degree of disease more or less marked.

Since the total number of men suffering from albuminuria accompanied by casts was 936, this number indicates the maximum number of men who gave any indication of kidney disease as the result of examination of the urine. No doubt many of the urines containing only a few hyaline casts were healthy specimens; but, on the other hand, it is exceedingly probable that certain urines containing a few casts were found negative on examination, as it is not always easy to find casts unless they are present in moderate numbers, when there is, of course, little chance of overlooking them. Since, in some of the cases in which casts were apparently absent, the kidneys were probably not quite normal, one may provisionally accept the view that the specimens of urine containing small numbers of hyaline casts, which were not the result of kidney disease, were balanced by the urines from defective kidneys in which no casts were found.

That the renal tissue may be defective and the urine practically free from casts is proved by the fact that cases of acute nephritis may, on convalescence, show neither albumin nor casts, and yet the kidney efficiency as indicated by the diastatic reaction may be very low.

Taking all these points into consideration, we arrive at the conclusion that at least 1.1 per cent. of men on active service are probably suffering from some degree of more or less chronic renal disease, while the maximum number giving any indication of renal deficiency by the ordinary examination is 1.88 per cent.

In round numbers it is possible to state with certainty that not more than 2 per cent. of men give any definite indication of kidney disease, if we allow that kidney disease in general is associated with the presence of albumin and casts in the urine. Fairly definite signs of disease are found in about 1 per cent. of men.

As practically all the men examined had a minimum of four months' training and the great majority of them had over twelve months, it would appear that the presence of albumin and casts in the urine is no indication that the individual is incapable of severe and prolonged exertion.

RELATION OF LENGTH OF SERVICE TO INCIDENCE OF ALBUMINURIA AND OF CASTS.

One of the most important features of the present investigation was to ascertain whether or not the general conditions associated with training for active service tended to have a detrimental effect on kidney efficiency as indicated by the ordinary examination. It is almost certain that any appreciably injurious effect on the renal system brought about by training would be indicated by an increase in albuminuria, if not in the incidence of casts as well. The longer the soldier had been in training the greater should be the amount of albumin found. The importance of ascertaining definitely the effects of training is obvious, since we have here the total result of many factors, such as exposure, severe exercise, food, etc. If it were found that albuminuria steadily increased with the length of service, it would be necessary to analyse these different factors and find out, if possible, the particular cause of the condition.

Fortunately, the problem of the relation of training to kidney efficiency no longer presents any difficulty. Training has no influence whatever either in increasing albuminuria or in causing existing albuminuria to become more marked. Further, the incidence of casts does not increase with length of training. The evidence on which these statements are based is supplied in Table VI.

The men examined were Number 3, 4, and 5 groups already referred to, each group consisting of 10,000 men. No account was taken of men with less than three months' service, since the numbers in this category were too small to be of any importance. Owing to this cause, and the fact that it was impossible, in a very few cases, to ascertain the exact period of service, the actual numbers indicated in each group always fall a little short of 10,000. The total number of men actually examined in this investigation on the effect of training amounted

to 29,607. For each group of approximately 10,000 men the total period of service up to thirty-three months is given. Those with a longer period of service than thirty-three months are grouped together, while, as already stated, the few with two months or under are omitted. The total amount of albumin, as well as the incidence of well marked albumin and of casts, is given for each period.

Reference to Table VI shows that the average number per 1,000 suffering from albuminuria in men of from three to seven months' service was 69. For each successive period of five months the numbers are exceedingly close, being 69, 71, 68, 73, 62, and 61 per 1,000.

There is neither an increase nor appreciable decrease of total albuminuria with length of training, but the incidence remains practically constant. This would seem to show that training plays no part in the etiology of this albuminuria, and the probability is that the same incidence exists in civil life.

It might be argued, however, that an increase in the total albuminuria might not be expected, since the kidneys which were susceptible to the conditions under discussion would have been already injured in the first two months of training before the men came to France. It might also be argued that kidneys which were not affected in the early period of training were not susceptible, and were sufficiently resistant to withstand any injurious factors associated with training.

On this hypothesis an increase in the total albuminuria would not be expected; but, on the other hand, an increase in the severity of the albuminuria in cases already affected would certainly be looked for. The severity of the albuminuria, however, does not increase. Taking the grades A, B, C, D as indicating well marked albuminuria, the average numbers exhibiting this degree of albuminuria in successive periods of five months' training are 34, 31, 30, 31, 36, 35, and 29 per 1,000. Here again there is neither increase nor decrease, but a constant incidence.

Apparently, service conditions neither originate albuminuria to any appreciable extent nor do they aggravate already existing albuminuria.

Further, the number of urines containing casts remains practically constant during training, the figures for successive periods of five months being 24, 27, 29, 20, 31, 22, and 22 per 1,000.

These results give a final answer to the question of the effect of severe conditions as seen during training on the incidence of albuminuria and of casts.

It appears fairly certain that training is not responsible for the production of any injurious renal effects, for if training entailed conditions actually detrimental to the kidney, one would at least expect some increase in the severity of pre-existing albuminuria.

No doubt, after severe and sudden exertion protein does appear in the urine, but it seems to be a merely transitory phenomenon which soon disappears on resting; it does not appear to exhibit any tendency to become permanent even after thirty-six months or more of training. Pre-existing albuminuria also may be aggravated after severe exercise, but the fact that severe albuminuria is not more common

TABLE VI.—Incidence of Total Albuminuria, Well Marked Albuminuria (A, B, C, D grades), and of Casts in Three Groups of Men at Different Periods of Training.

(Total number of men investigated = 29,607.)

Period of Training in Months, Inclusive.	No. of Men.	Total Albuminuria.				Well Marked Albuminuria.				Casts.			
		Average per 1,000.				Average per 1,000.				Average per 1,000.			
		Group 1.	Group 2.	Group 3.	Average.	Group 1.	Group 2.	Group 3.	Average.	Group 1.	Group 2.	Group 3.	Average.
3 to 7 ...	4,820	62	68	79	69	27	33	43	34	13	17	43	24
8 to 12 ...	4,121	85	57	66	69	34	30	30	31	31	20	30	27
13 to 17 ...	3,743	82	62	69	71	26	27	37	30	27	23	37	29
18 to 22 ...	3,175	78	53	73	68	38	24	31	31	16	14	31	20
23 to 27 ...	2,875	66	73	77	73	30	39	40	36	20	34	40	31
28 to 32 ...	2,660	61	68	51	62	38	37	32	35	14	22	32	22
33 and over	8,213	61	61	61	61	28	28	30	29	18	19	30	22

after thirty-six months' service than it is after three months, indicates that in these cases as well this increase is transitory; on resting, the albuminuria soon returns to its old level.

Results of Investigation into the Possible Relationship of Previously Existing Albuminuria to War Nephritis.

Out of the 50,000 men examined only 161 cases were returned up to March, 1918, as possibly suffering from nephritis. In 29 of these the diagnosis was doubtful, as they were returned as suffering from "albuminuria." In the remaining 132 a diagnosis of nephritis was ultimately obtained in all cases, though in several of these the preliminary diagnosis was also "albuminuria"; in these patients, however, the diagnosis at the base hospitals was "nephritis." It is therefore fairly certain that at least 132 cases of definite nephritis were returned from among the group of 50,000 men previously examined for albumin. As certain of the other 29 cases were also, probably, suffering from nephritis, the total 161 cases may be taken as the maximum number of individuals who developed nephritis within nine months after being examined at the base. It makes little or no difference to the ultimate result whether or not a few of these were erroneously diagnosed. Indeed, there is no reason to suspect that in the great majority of cases there was any doubt as to diagnosis, but, in any case, this factor could not possibly be of sufficient importance to make any real difference to the conclusions based on the returns.

Out of the 161 patients returned as nephritis or albuminuria, only 28 suffered from albuminuria just before going to the front. Of these, 7 had epithelial and hyaline casts, while 8 had hyaline casts only. The exact results obtained together with the grade of albuminuria found, are given in Table VII.

TABLE VII.

Total number of men returned as nephritis or albuminuria	161
Number free from albuminuria when previously examined at base	133
Number with albuminuria when previously examined at base	28
Grade of albuminuria in the 28 positive cases:	
Grade A	2
Grade B	2
Grade C	1
Grade D	6
Grade N	7
Grade NN	10
Total number with casts	15

Thus, out of the total 161 returns only 17.4 per cent. had albuminuria when examined a few months before they developed nephritis, while only 9.3 had both protein and casts.

Out of the 29 cases returned as "albuminuria," 20 were free from protein when previously examined at the base. Nine had albuminuria, 4 of these having definite epithelial and hyaline casts, while one showed hyaline casts only. The grade of albuminuria in these cases was as follows:

A=0. B=1. C=1. D=0. N=3. NN=4.

From these results it is fairly certain that some of these cases at least were suffering from nephritis though returned as "albuminuria."

Taking all these results together, it is now proved that the great majority of the cases that return from the front area as war nephritis do not show albuminuria a few months before contracting the disease. It would therefore seem that previous albuminuria plays little or no part in the etiology of war nephritis. The disease arises *de novo*, and is not an aggravation of some pre-existing kidney defect the presence of which can be ascertained by any of the ordinary methods of examination.

REFERENCE.

¹ *Lancet*, September 9th, 1916.

THE POLICY OF THE OSTRICH.

BY

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ON New Year's Day I was sitting after lunch with an old friend, in London for the war, who before he joined up enlivened his work as lawyer and financial adviser with an occasional incursion into literature. The afternoon he told me, was his; the Government department which had been so fortunate as to secure his services was being demobilized. Asking him what he proposed to do next, "I am thinking," he said, "of retiring to some quiet spot and putting together a collection of essays upon the 'Dead Hand.' Returning to the Old Country after all these years, more and more each day there is being borne in upon me the extent to which the dead hand of tradition and

customary point of view presses upon society and represses logical and needed advance in every direction." And forthwith he launched upon a succession of modern instances.

PHYSIOLOGY AND SOCIAL DUTY.

I could not wholly follow him when he touched upon sexual relationships: with him I had to admit that physiologically the human male is intended to be polygamous, whereas the social code demands that he be monogamous. But his deductions that therefore the social code was wrong, and that we should acknowledge and admit polygamy, failed, as I pointed out to him, to take into consideration the fact that the family constitutes the unit of society, our whole social and moral code being erected upon that foundation. Polygamy, I continued, has in the past been tried and found wanting, and to-day the Mohammedan nations which give a legal sanction to polygamy are nevertheless in general reverting to monogamy; the social environment of man to-day appears to demand that he be the husband of one wife. The real difficulty lay, not in society, but in the fact that man has not yet become physiologically adapted to his social state: the good of the family indicates one course of conduct, man's constitution impels to another. It is an evidence of progress that, as a community, we place the benefit of the family before the desires and comfort of the individual; but doing this, we are placed in the dilemma that the performance of physiological function, save under the aegis of monogamic marriage, becomes regarded as anti-social, and that an act which the individual in his heart of hearts knows to be in itself natural and desirable has to be regarded and taught to be contrary to good morals. We find ourselves torn asunder between Peter and Paul: the Peter that is within us teaching that what God has given us is clean and to be enjoyed; the Paul, that woman is a snare, and that even a bishop should have but one wife—and scarcely that. And as youth is largely irresponsible, and the sense of social duty is a plant of slow growth, which in some is throughout life choked by the weeds of personal predilection, it has followed that the whole matter of sexual conduct has for generations been surrounded with an atmosphere of insincerity, not to say hypocrisy. We give lip service to public duty; the majority of us strive to uphold the social law, but I imagine that even the best of us, be it in thought, word, or deed, cannot as men wholly throughout our lives escape from the dominance of our natural passions—that is, if we are real men, healthy and virile.

It is the knowledge of this insincerity, which in the past has permeated the whole treatment of the matter, that makes it so difficult for most of us to take up the public discussion. In its incapacity to reconcile the physiological and the moral aspects of the subject, the British public and its leaders have sought the solution of silence—of proceeding as though the problem did not exist; they have written themselves down—ostriches. Here it is that the "dead hand" comes in—the dead hand of a training begun in early childhood, whereby we have been taught to regard the open discussion of sexual matters as "taboo"; the "dead hand" of school-boy "form," according to which public acknowledgement of one's standing in relationship to moral matters, save on the part of those who have donned the cloth and become professional moralists, brands one as either a prig or a humbug.

Happily we are passing out of this phase. The work of the Royal Commission on Venereal Disease, and now the forcible and courageous pronouncement regarding syphilis made recently by the *Times* heralds the ending of the old régime of silence, concealment, and taboo.

VENEREAL DISEASE IN THE ARMY.

What this policy, this submission to the dead hand of custom, has cost the army and the country during the last four years is awful to contemplate.

For our salvation as a nation and an empire we have needed the services of every available man—have needed them at the height of their physical capacity. Time and again during the last four years, owing to our want of man power, it has seemed that the greater concentration of the enemy forces must result in a break through our lines and bring ruin to us. Even without such a break our losses in man power have been large, and to-day it is the A1 men who have survived whom we most need to be the fathers