BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 20 1950

INCIDENCE OF THE SPRUE SYNDROME

WITH SOME OBSERVATIONS ON THE NATURAL HISTORY

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The existence of food rationing in the United Kingdom since 1940 has given a unique opportunity of investigating certain diseases. One disease which has been the centre of much research in recent years is the sprue syndrome. Information on the collected applications for extra rations from verified cases of this syndrome has been made available to us by the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council. With the co-operation of the staff of the Scientific Advisory Division of the Ministry of Food it has been possible for us to investigate the incidence of this disease and also certain interesting aetiological factors which hitherto have been open to much speculation and which lacked statistical foundation to any satisfactory degree.

Scope of the Investigation

The main objects of research may be listed as follows:

1. The total number of cases of steatorrhoea of all types recommended special diets during the period January 1, 1943, and December 31, 1948, to be enumerated and the number occurring annually recorded. (Unfortunately figures for the years prior to 1943 were inaccurate owing to some of the files having been destroyed. As a result statistics previous to 1943 were discarded.)
2. The cases of the sprue syndrome to be separated into the three main types—namely, idiopathic steatorrhoea, coeliac disease, and tropical sprue—and the total and annual incidence of each to be obtained.
3. Rarer forms of steatorrhoea—for example, those associated with regional ileitis, fibrocystic disease of the pancreas, etc.—to be noted, classified, and enumerated.
4. The sex incidence of idiopathic steatorrhoea and coeliac disease to be obtained.
5. The incidence of the sprue syndrome in the Army and the Royal Air Force during the war years to be investigated.
6. The relationship of idiopathic steatorrhoea to its juvenile counterpart, coeliac disease, to be determined—that is, the percentage of cases of idiopathic steatorrhoea having coeliac disease in infancy, or symptoms or signs suggestive of such.
7. Investigation of the possibility that a genetic factor operates as an aetiological factor in coeliac disease, idiopathic steatorrhoea, and tropical sprue.

Incidence of Steatorrhoea: Method of Investigation

When food rationing started in 1940 a committee was formed to advise the Ministry of Food on special diets necessary for certain diseases or disorders. One of the latter was steatorrhoea. Experience in the first world war had shown (Hutchison, 1940) that the diagnosis might be so uncertain that it was advisable to obtain objective evidence that steatorrhoea was actually present. Before, therefore, any case was allowed dietary concessions a doctor's certificate containing a description of the patient's symptoms and also a chemical analysis of the patient's stool had to be submitted to the Special Diets Advisory Committee, which advised the Ministry of Food whether or not a grant of extra rations was justified.

It is obvious, therefore, that all cases of steatorrhoea applying for priority rations would eventually be referred to this committee. The documents relating to each case were filed at the Ministry of Food—in London for England and Wales, and in Edinburgh for Scotland—and it was possible for the cases of each type to be sorted and counted. The diagnosis of the type of steatorrhoea in some cases was obscure—a diagnosis of "steatorrhoea," "sprue," or "fatty diarrhoea" being on the doctor's certificate. For the purpose of this investigation a letter was sent to the doctor concerned asking if he would supply the correct full diagnosis.

It should be pointed out that no case could be counted twice (although recertification is necessary at regular intervals), as each record is separately filed.

Incidence of the Sprue Syndrome in England, Wales, and Scotland

The total number of cases of the sprue syndrome applying for extra rations between January 1, 1943, and December 31, 1948, was 2,044, of which 1,303 were cases of coeliac disease, 311 cases of idiopathic steatorrhoea, and 430 cases of tropical sprue (Table I). The remaining 27 were unclassified, as the original medical certificate gave insufficient information on which to make a diagnosis, and we were unable to obtain further details of the case owing

TABLE I.—*Incidence of Steatorrhoea (Sprue Syndrome) in England, Wales, and Scotland, 1943–8 (Population: 47,725,570)*

Year	Tropical Sprue	Idiopathic Steatorrhoea	Coeliac Disease	Unclassified	Total
1943 ..	44	41	87	3	175
1944 ..	81	55	519	3	658
1945 ..	129	84	347	4	564
1946 ..	87	45	123	3	258
1947 ..	34	22	67	3	126
1948 ..	28	64	160	11	263
	Av. 44		Av. 117		
Total ..	403	311	1,303	27	2,044

to the patient having changed his address, the doctor having died or moved from the district, and other reasons.

Attention is drawn to the remarkable variation in the incidence of the sprue syndrome from year to year—a variation which is almost identical in England and Wales on the one hand and Scotland on the other (see Tables II and III). This annual variation is most pronounced in

TABLE II.—*Incidence of Steatorrhoea (Sprue Syndrome) in England and Wales, 1943–8 (Population: 42,636,000)*

Year	Tropical Sprue	Idiopathic Steatorrhoea	Coeliac Disease	Unclassified	Total
1943 ..	43	36	83	3	165
1944 ..	72	45	443	3	563
1945 ..	111	71	295	4	481
1946 ..	73	32	97	3	205
1947 ..	22	17	55	3	97
1948 ..	22	58	124	11	215
Total ..	343	259	1,097	27	1,726

TABLE III.—*Incidence of Steatorrhoea (Sprue Syndrome) in Scotland, 1940–8 (Population: 5,089,570)*

Year	Tropical Sprue	Idiopathic Steatorrhoea	Coeliac Disease	Total
1940 ..	—	—	1	1
1941 ..	3	7	—	10
1942 ..	1	1	2	4
1943 ..	1	5	4	10
1944 ..	9	10	76	95
1945 ..	18	13	52	83
1946 ..	14	13	26	53
1947 ..	12	5	12	29
1948 ..	6	6	36	48
	Av. 8		Av. 25	
Total ..	64	60	209	333

coeliac disease and tropical sprue and to a lesser degree in idiopathic steatorrhoea. With regard to coeliac disease, 87 cases applied for priority rations in 1943 and 519 in 1944. It can safely be assumed that 519 new cases did not develop during 1944 and that many of these were of many years' standing and were applying for priority rations for the first time in that year. A possible explanation for this sudden rise we consider to be due to the great publicity which accompanied the announcement that bananas had been made a priority food.

The rise in the number of cases of idiopathic steatorrhoea in 1945 corresponds with the rise in those of tropical sprue. It is possible that this rise was partly due to faulty certification, some cases of tropical sprue being called idiopathic steatorrhoea. On the other hand, the announcement that bananas were a priority food for cases of coeliac disease may have acted as a reminder that other types of steatorrhoea were entitled to priority rations.

The fall in the number of cases of idiopathic steatorrhoea and coeliac disease in 1947 is difficult to explain on any satisfactory basis, especially when the rise to even higher levels in 1948 is taken into account. One may postulate that in 1947 people, being under the impression that food-stuffs previously rationed would become more plentiful, became less interested in claiming priority rations. In

1948, with no sign of the disappearance of austerity, patients may have reconsidered the wisdom of this attitude and claimed their priority rations, thus causing a great increase in the number of cases of steatorrhoea recorded during 1948. This high figure may be partly due to the attention of family doctors being directed to the sprue syndrome consequent on the publication of a series of new forms of treatment, or to the advent of a State medical service.

As a result of the wide variation in the number of cases of the sprue syndrome recorded from one year to the other, an accurate figure for the average annual incidence is difficult to obtain. However, we are of the opinion that in the case of coeliac disease and idiopathic steatorrhoea the most satisfactory and accurate method of calculating the average annual incidence of each of these conditions, based on certification for priority rations, would be to rely on the average incidence of the three-year period 1946–8. On this basis the average annual incidence of coeliac disease was 117 cases, or one case per 135,000 of the population below the age of 15 years. Similarly, for idiopathic steatorrhoea the average incidence was 44 cases a year—that is, one per 700,000 of the population over 15 years of age.

Not only is the above considered an accurate assessment of the average annual incidence of cases applying for priority rations, but it is our belief that the figures probably approximate to the true annual incidence of these syndromes. This view is based on the assumption that, since no material change in priority or general rationing occurred during the years 1946–8, it would be reasonable to assume that almost all the cases of coeliac disease and idiopathic steatorrhoea applying for priority rations within that period were in fact new cases.

The annual variation in the number of cases of tropical sprue is undoubtedly a result of varying war conditions. The majority of these patients are ex-Service personnel, and the figures correspond to the variation in the number of personnel in the "sprue zone," at the termination of the war, and to the number invalided home.

Incidence of the Sprue Syndrome in Scotland

It was possible to obtain separate figures for Scotland (see Table III). This was interesting for several reasons. First, one could compare the figures with those of England and Wales. Tables II and III show that in Scotland, as in England and Wales, coeliac disease is the most common type of the syndrome, being followed by tropical sprue and idiopathic steatorrhoea. The annual variation in Scotland, especially the rise in coeliac disease in 1944 and in tropical sprue in 1945–6, is almost identical with that shown in England and Wales. Also, the fall in 1947 and the rise in the number of cases in 1948 are similar. It is suggested that the factors affecting the figures for England and Wales operated also in Scotland.

The average annual incidence of cases of coeliac disease and idiopathic steatorrhoea in Scotland, based on certification for priority rations and on the three-year period 1946–8, is shown in Table III. It will be seen that 25 new cases of coeliac disease occur yearly, equivalent to one case per 45,000 of the population under the age of 15 years. In addition, there are 8 cases of idiopathic steatorrhoea, or one case per 470,000 of population over the age of 15. In comparison with the figures for England and Wales the incidence is higher. No satisfactory explanation for this is available, unless the rise be related to the interest in this syndrome taken by two large teaching centres in Scotland.

TABLE IV.—*Regional Incidence of Sprue Syndrome in Scotland, 1943-8*

Region	Population	Tropical Sprue	Idiopathic Steatorrhoea	Coeliac Disease	Total	Rate per Million
East ..	711,067	5	6	15	26	36.5
West ..	2,871,013	22	21	160	203	70.7
North ..	687,812	8	5	5	18	26.2
South-east	819,678	25	20	26	71	86.6

It was also possible to arrive at the regional distribution of cases of the sprue syndrome in Scotland (see Table IV), and it is interesting to note the variation from one region to another. The incidence, based on the rate per million of population, appears to be notably higher in the West and South-east regions. This may be related to the presence of clinical and research centres which have special interest in the syndrome in these regions—namely, Edinburgh in the South-east region and Glasgow in the West. The large number of cases of coeliac disease in the Glasgow region is especially noteworthy and is out of proportion to the incidence of the disease in other regions. This finding could be explained either by the presence of a long-established and well-organized special clinic for cases of coeliac disease in Glasgow or, alternatively, to a true increased incidence of the disease in the West of Scotland due to certain social or other environmental factors which tend to precipitate the condition. Similarly, the relatively high numbers of cases of idiopathic steatorrhoea recorded in the South-east region may be due to the interest taken by the Department of Medicine of the University of Edinburgh in blood diseases in general and the sprue syndrome in particular.

We were informed by the Ministry of Food that the high figures for the West and South-east regions could not be due to the reference of patients outside these regions, for they would still obtain their priority rations through their own regional food office.

Steatorrhoea (in England and Wales, 1943-8) Due to Causes Other than the Sprue Syndrome

Table V demonstrates the wide variety of conditions which may be associated with steatorrhoea. The actual number of each type is almost certainly on the low side, probably owing to the failure of doctors to realize that

TABLE V.—*Steatorrhoea (in England and Wales, 1943-8) Due to Causes Other than the Sprue Syndrome*

1. Due to lacteal obstruction (tuberculous abdomen 5, Hodgkin's disease 2, unclassified 1)	8
2. Chronic pancreatitis	13
3. Following resection of small gut or short-circuiting operations	12
4. Due to regional ileitis	5
5. Due to subacute intestinal obstruction (? cause)	2
6. Due to gastro-colic fistula	2
" " gastro-ileal fistula	1
" " ileo-colic fistula	1
7. After partial gastrectomy	1
8. Due to carcinoma of pancreas	3
9. Due to pancreatic cyst obstructing pancreatic duct	1
10. Due to fibrocystic disease of pancreas	9
Cases due to sprue syndrome	1,726
Total cases of steatorrhoea, 1943-8	1,784

NOTE.—Several more cases due to causes other than the sprue syndrome have been received recently and must be added to this list (October, 1948-9). Moreover, certain cases classified originally as idiopathic steatorrhoea have now been diagnosed as being due to tuberculous abdomen and reticulosis. (Note by Professor Davidson, December 1, 1949.)

priority rations were available to cases of steatorrhoea irrespective of their cause. Moreover, we have recently received information that certain cases classified originally as idiopathic steatorrhoea have now been correctly diagnosed as due to abdominal tuberculosis, Hodgkin's disease, etc.

Sex Incidence of Coeliac Disease and Idiopathic Steatorrhoea

An ideal opportunity arose of checking the sex incidence of these diseases. It will be seen in Table VI that, of 1,077 cases of coeliac disease, 517 occurred in males and 560 in

TABLE VI.—*Sex Incidence of Coeliac Disease and Idiopathic Steatorrhoea*

	No.	Population at Risk	Rate per Million	Ratio
Males with coeliac disease	517	7,479,000	69.1	} 1:1.1
Females with coeliac disease	560	7,192,000	77.7	
Males with idiopathic steatorrhoea	103	12,896,000	8	} 1:1.2
Females with idiopathic steatorrhoea	142	14,611,000	9.7	

females. The ratio of females to males following correction due to variation in the male and female population is 1.1 to 1, which shows that the disease affects both sexes evenly.

Similarly, the female-male ratio in idiopathic steatorrhoea is 1.2 to 1, which again denotes equal sex incidence.

Some Notes on the Incidence of the Sprue Syndrome in the Royal Air Force and the Army

Complete statistics of the incidence of the sprue syndrome in all the three Services of the armed Forces could not be obtained.

Table VII shows that only a small proportion (approximately 5%) of the R.A.F. patients admitted to hospital with symptoms of the syndrome were invalided. It also

TABLE VII.—*Incidence of Sprue in the R.A.F., 1942-6*

Year	Cases Admitted to Hospital	No. of Deaths	No. Finally Invalided	No. Returned to Duty	No. of Personnel in "Sprue Zone"	Incidence per 1,000 Cases Admitted to Hospital
1942 ..	18	—	—	6	30,317	0.6
1943 ..	161	1	2	57	82,643	2.0
1944 ..	489	1	11	470	93,219	5.2
1945 ..	401	—	21	440	126,846	3.2
1946 ..	158	—	26	180	Unknown	
1947 ..					Unknown	
Total	1,227	2	60	1,153		

NOTE.—The deaths, invalidings, or cases returned to duty do not necessarily relate to cases admitted during that particular year: they may be derived in part from cases admitted in the previous year. Twelve cases were remaining in hospital on December 31, 1946.

shows that the annual variation in the incidence in R.A.F. personnel is probably due to several factors, including variation in the number of personnel in the Far East at any particular period, depending on the war situation, the end of hostilities, and the return of troops to this country. The highest incidence is found in 1944 (5.2 per 1,000), and the fall in 1945 is presumably due to the end of hostilities and movement of troops away from the sprue zones to areas where sprue is not prevalent.

The figures in Table VIII relating to the number of cases discharged from the British Army with the sprue syndrome refer to British Army personnel discharged with sprue contracted in any theatre of war. Table IX shows the incidence of sprue in the Indian Army. It is of interest to note that the incidence was consistently higher in Army officers than in other ranks.

TABLE VIII.—*Discharges from the Army Due to the Sprue Syndrome*

	1943	1944	1945	1946	1947	Total
Tropical sprue	6	49	196	73	18	342
Idiopathic steatorrhoea	8	5	10	5	2	30

TABLE IX.—*Incidence of Sprue in the Indian Army*

	British Troops				Indian Troops			
	Officers		O.R.s		Officers		O.R.s	
	Cases	Rates per 1,000	Cases	Rates per 1,000	Cases	Rates per 1,000	Cases	Rates per 1,000
1939 ..	1	0.5	8	0.2	1	0.4	4	0.0
1940 ..	2	1.0	3	0.1	4	1.0	3	0.0
1941 ..	1	0.3	8	0.2	8	1.3	21	0.1
1942 ..	10	1.6	12	0.2	9	0.8	19	0.0
1943 ..	14	1.4	30	0.3	15	1.1	53	0.1
1944 ..	36	2.6	147	1.2	16	1.0	210	0.2
1945 ..	27	1.4	96	0.7	7	0.4	190	0.2

It is obvious that the prognosis of tropical sprue as it occurred among Service personnel in the 1939-45 war was extremely good. Not only was the number finally invalided to Great Britain small in comparison with the total number affected, but a considerable proportion of those invalided from the East must have recovered in Service hospitals in Great Britain. Thus we have been informed that approximately 1,073 Army patients with tropical sprue were invalided to Great Britain between February, 1943, and February, 1946. Table I shows that 341 civilian cases of tropical sprue were receiving priority rations in Great Britain during this period. The good prognosis in tropical sprue is further indicated by the small residue of civilian cases receiving priority rations in 1947 and 1948—namely, 34 and 28 respectively.

Relationship of Idiopathic Steatorrhoea to Coeliac Disease

It is well known that coeliac disease continues into adult life in some cases. It is also recognized that some cases of idiopathic steatorrhoea have a history of alimentary disorders suggestive of coeliac disease, whilst others show evidence of faulty growth and skeletal deformities suggestive of malabsorption in infancy and early childhood.

With the large number of cases of idiopathic steatorrhoea at our disposal we had a first-class opportunity of investigating the relationship of idiopathic steatorrhoea to its juvenile counterpart, coeliac disease—an opportunity made possible, however, only through the co-operation of many general practitioners, to whom we are most grateful.

The accompanying questionnaire was sent to a random sample of 100 family doctors in charge of cases of idiopathic steatorrhoea receiving priority rations. For control purposes 100 normal persons over the age of 15 were asked the same questions. The results of this investigation are shown in Table X. It will be noted that 34% of the patients with idiopathic steatorrhoea were either proved cases of coeliac disease in childhood or had a history of alimentary disorders in childhood, while in only three of the controls was there any indication of malabsorption or intestinal disease.

It should be stated here that the evidence of an alimentary disorder in childhood and other symptoms had to point strongly towards a missed, abortive, or mild case of coeliac disease, otherwise it was counted as "negative." We consider that the total figure (34%) may be on the low side,

TABLE X.—*Relationship of Idiopathic Steatorrhoea and Coeliac Disease*

	Cases of Proved Coeliac Disease in Childhood	Evidence of Alimentary Disorder or Malabsorption in Childhood	No Evidence of Coeliac Disease
100 cases of idiopathic steatorrhoea ..	5	29	66
100 controls ..	—	3*	97

* Two had had rickets in childhood and one had chronic diarrhoea.

QUESTIONNAIRE

MINISTRY OF FOOD

Lothian House,
Lothian Road,
Edinburgh, 3.

Dear

The existence of food rationing in the United Kingdom since 1940 has given the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council a unique opportunity of investigating certain diseases. One of these diseases which is of particular interest is the sprue syndrome.

With regard to your patient for whom you requested special rations on account of idiopathic steatorrhoea on this committee is interested to know whether or not the patient had any symptoms suggestive of coeliac disease during childhood and whether there is a possibility of a genetic factor being present in this condition. In this respect the committee would be greatly obliged if you would supply the following information :

A.

- Whether the patient was a proven case of coeliac disease during childhood.
- Whether the patient was ever in hospital during childhood for the treatment of intestinal disease, and, if possible, the nature of the disease.
- Whether any digestive disturbances including chronic diarrhoea, abdominal distension, or flatulence occurred during childhood.
- Whether there was any retardation of growth or general development during childhood.

B. Has any relative of the patient suffered from :

- Steatorrhoea.
- Continuous or intermittent diarrhoea of unknown origin, with or without other symptoms of the sprue syndrome—e.g., dyspepsia, intestinal flatulence.
- If the answer to question (i) or (ii) is in the affirmative, would you please state the relation to the patient (whether father, brother, uncle, etc.).

We are making this request purely as part of a scientific investigation which has no connexion with the usual certification which is required for extra rations for your patient.

In replying will you be so kind as to use the enclosed franked label.

Yours sincerely,

L. S. P. DAVIDSON,
Professor of Medicine, University of Edinburgh.

since it is based solely on information obtained by the questioning of patients. Physical examination might have revealed abnormalities of the skeleton or growth suggestive of malabsorption in childhood which would have further increased the figure.

Another interesting point, on which we hope to throw light in the future, is the answer to the vexed question, "What happens to children with coeliac disease?" We propose to keep in touch with the practitioners in charge of cases of coeliac disease receiving priority rations and thus obtain an answer to this question in two or three years' time, when many of these children will have reached adolescent or adult life.

A Genetic Factor in the Sprue Syndrome

It was noticed, during a previous study (Davidson, Girdwood, and Innes, 1947) and in the present investigation, that in several instances more than one person in the same family suffered from one or other type of the sprue syndrome—for example, in one family four siblings had

idiopathic steatorrhoea. They were young adults of different age and of both sexes (two female and two male), and all had faulty fat absorption as shown by the fat-balance test. Other cases gave a history suggestive of a hereditary element. Thus a man aged 62 who had suffered from steatorrhoea all his life, starting with coeliac disease in infancy, had a father and sister with "chronic diarrhoea."

Bearing the above cases in mind, we investigated the possibility that a genetic factor was of aetiological importance in the sprue syndrome. Our method of investigation was similar to that used previously when inquiring into the relationship of idiopathic steatorrhoea to coeliac disease.

In the first instance the records of approximately 200 cases of coeliac disease were selected and the appropriate questionnaire was sent to the family doctor in charge of the patient. Up to date 130 replies have been received (see Table XI). It will be seen that 9.2% gave a history of steatorrhoea in some members of the family—in most cases it was a brother or sister with coeliac disease—whilst 3.8% had relatives who gave a history of a condition highly suggestive of one or other type of the sprue syndrome.

Similarly, a questionnaire was sent to family practitioners in charge of cases of idiopathic steatorrhoea. In a significant percentage (10.6) of the 75 replies received relatives had definite steatorrhoea or symptoms suggestive of such (see Table XI).

TABLE XI

	No. of Cases	Relative with Steatorrhoea	Relative with Symptoms of Malabsorption Syndrome
Coeliac disease	130	12 (9.2%)	5 (3.8%)
Idiopathic steatorrhoea ..	75	3 (4%)	5 (6.6%)

In both instances the figures as they stand suggest that a genetic factor is involved—probably a recessive gene yielding a diathesis. It should be pointed out, however, that the familial incidence might be related to environmental factors operating on the family. In 8 out of 12 cases of coeliac disease a brother and a sister were affected. In order to exclude an environmental factor it would be necessary to inquire closely into the history of the syndrome in more distant relatives. We consider, however, that enough information of importance has been collected to warrant a thorough study of the possibility that the syndrome is conditioned by a genetic factor which may be accentuated and brought to light by a variety of predisposing environmental agents.

Inquiry from several of our colleagues interested in the sprue syndrome has elicited the information that they also had families with more than two members suffering from steatorrhoea. Thus, Professor Graham, of Glasgow, has given us six family histories in which two or more members of the family suffered from the sprue syndrome. Two similar family histories have come to our notice in Edinburgh and one in Leeds.

Summary and Conclusions

The unique opportunity afforded by priority food rationing has enabled us to study certain features of clinical interest in 2,044 cases of the sprue syndrome, consisting of 1,303 cases of coeliac disease, 403 cases of tropical sprue, 311 cases of idiopathic steatorrhoea, and 27 unclassified cases.

Evidence is produced to suggest that the average number of new cases of coeliac disease and idiopathic steatorrhoea developing annually in Great Britain is approximately 117 and 44 respectively. In both diseases males and females are equally affected, and in 34% of cases of idiopathic steatorrhoea a history

was obtained which suggested that the disease started in childhood.

Information obtained from the Army and the R.A.F. in regard to the incidence of tropical sprue, and discharges from the Services related thereto, clearly shows that the prognosis of tropical sprue as it affected personnel in the 1939-45 war was extremely good.

Lastly, records were obtained of a number of families in whom two or more relatives were affected with idiopathic steatorrhoea or coeliac disease, a finding which suggests that a genetic element may be of great importance in the aetiology of the syndrome. The problem of the aetiology of the sprue syndrome, with especial regard to the genetic factor, will be dealt with in a subsequent communication.

We wish to express our thanks to the Ministry of Food and to the Food Rationing (Special Diets) Advisory Committee of the M.R.C. for permission to undertake this investigation; to various officials of the Ministry of Food in London and Edinburgh, and in particular to Miss Hollingsworth, for the large amount of work undertaken in collecting and classifying food priority certificates; to the Directors-General of the R.A.M.C., R.A.F., and the Indian Army Medical Services for permission to publish the data relating to Service personnel; to Major R. B. Stalbow, R.A.M.C., and Wing Commander G. Williams, R.A.F., who were mainly responsible for providing us with the requisite information regarding Service personnel published in this paper; and to many general practitioners in charge of cases of the sprue syndrome who assisted us in our inquiry into the relationship of coeliac disease to idiopathic steatorrhoea and the family incidence of the sprue syndrome.

REFERENCES

- Davidson, L. S. P., Girdwood, R. H., and Innes, E. M. (1947). *Lancet*, **1**, 511.
Hutchison, Robert (1940). *Ibid.*, **1**, 194.

STEATORRHOEA IN A FAMILY

BY

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Steatorrhoea is not a very uncommon disorder, and has been recognized for many years. Garrod and Hurlley (1913) quote Tulpus in the seventeenth century as being one of the first to describe fatty stools, and credit the earliest use of the term "steatorrhoea" to Kunzmann in 1824, while Gull (1855) described it in association with diseased mesenteric glands. Gee in 1888 published his classical monograph *On the Coeliac Affection*, and subsequently there have been many papers describing the clinical picture of steatorrhoea in both children and adults.

In his monograph Gee remarked that "naked-eye examinations of dead bodies throw no light upon the nature of the coeliac affection," and it is still true that in the great majority of patients dying from steatorrhoea little information about the fundamental pathology can be obtained at necropsy. Such cases occurring in adults have been called idiopathic steatorrhoea, and Bennett, Hunter, and Vaughan (1932) have indicated that in many of these cases the onset could be traced back to childhood or adolescence; and they expressed the view that coeliac disease and idiopathic steatorrhoea were variants only of the same disease. In neither of these two conditions has a familial incidence been noted.

In only a small number of patients with steatorrhoea is any underlying disorder of structure discovered. Cases have been described from time to time associated with chronic relapsing pancreatitis (Dornberger *et al.*, 1948). Other cases have shown involvement of the mesenteric lymphatics and small intestines by new growth (Fairley