Lettsom, who walked Akenside's wards as a pupil, has left the most unprepossessing account of him, and from it much of the unkind opinion derives:

"Great was my disappointment in finding Akenside the most supercilious and unfeeling physician that I had then, or have since known. If the poor affrighted patients did not return a direct answer to his queries, he would often instantly discharge them from the Hospital. He evinced a particular disgust to females, and generally treated them with harshness. I was informed that this moroseness was occasioned by disappointment in love; but hapless must have been that female that should have been placed under his tyranny.

"I was inexpressibly shocked at an instance of his inhumanity exercised towards a patient in Abraham's Ward, to whom he had ordered bark in boluses; who in consequence of not being able to swallow them, so irritated Akenside, as to order the sister of the ward to discharge him from the hospital, adding 'He shall not die under my care.' As the sister was removing him, in obedience to the doctor, the patient expired.

"I never knew him to spit, nor would he suffer any pupil to spit in his presence. One of them once accidentally did so, who stood at some distance behind him. I was present. The doctor instantly span round on his artificial heel, and hastily, to demand 'Who was the person that spat in his face?'

"Sometimes he would order some of the patients on his visiting days to precede him with brooms to clear the way, and prevent the patients from too nearly approaching him. On one of these occasions Richard Chester, one of the Governors upbraided him for his cruel behaviour. 'Know,' said he, 'thou art a servant of this Charity.'" (Abraham, 1933.)

But all opinion was not quite so censorious. Mr. Meyrick, a surgeon and apothecary, frequently called in Akenside in consultation. To use his own words—"I knew him as a friend and recommended him as a physician. We were not much alike, for he was stiff and set, and I all life and spirits. He often frowned upon me in a sick room. He lost a good deal of business by the solemn sententiousness of his air and manner."

There is a long, balanced, and on the whole favourable study of Akenside by the lawyer-litérateur George Hardinge in Nichols's *Literary Anecdotes of the Eighteenth Century*, with which I would conclude these quotations:

"My father admired him as a gifted poet, as a man of genius, of learning, and of taste. . . . As I grew up into man, Akenside honoured me with a most affectionate regard. . . . When I came from College to the Inns of Court . . . I was often his dinner-guest, and generally with him alone. In addition to all his powers, arising from his genius and his eloquence, I had the enjoyment of his portfolio enriched by capital prints. . . . He had in general society a pomp and stiffness of manner, not of expression. . . . But the misfortune of this manner was in some degree connected with his figure and appearance. He looked as if he never could be undressed; and the hitch in his gait . . . compared with a solemn cast in his features, was, at the best, of a kind that was not companionable and rather kept strangers at a distance from him. Though his features were good, manly and expressive, a pale complexion of rather a sickly hue, and the laboured primness of a powdered wig in stiff curl, made his appearance altogether unpromising, if not grotesque. But, where he was intimate, was admired, and was pleased with his party, he conversed most eloquently and gracefully. He had the misfortune, however, to have little or no taste for *humour*, and he took a jest very ill. . . . His religious opinions were, I believe, a little whimsical and peculiar, but in general he kept them very much to himself. . . . He lived incomparably well."

These three commentaries, representative of a number of others, are all agreed on the complex character of the man. They underline the mixture of genius and—to use their contemporary idiom—of melancholy which are to be found in him. It was a melancholy at times corrosive, but more often, and especially in the company of his peers, mellow and kindly. But it would be a mistake to regard him as profoundly unhappy or dissatisfied with his achievements. After all, he had made his way from the northern city of his birth to the great metropolis, endowed only with his natural gifts and mother wits to become, in the words of his admirer, Cooper, "the twofold disciple of Apollo."

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FIVE YEARS OF GENERAL PRACTICE

A STUDY IN SIMPLE EPIDEMIOLOGY

BY

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Until recently epidemiology was regarded as a relatively dull branch of medicine dealing largely with analysis of mortality rates and notifiable infections. Now, thanks to the teachings and writings of a more enlightened generation of epidemiologists, it has acquired a new and dynamic conception applicable to many common diseases in all branches of medicine, and it has developed a live philosophy whose principles are necessary in resolving many of the present-day medical problems.

In a like fashion "general practice" has also been neglected and untried as a field of medical research, and it is only in the past half decade that there has been some reawakening of interest. The scope of research in general practice has become apparent with the advantages of close doctor-patient relationships, of the knowledge of patients' personal, family, and social backgrounds, and of a close and intimate follow-up that may extend for the lifetime of patient and/or doctor.

A marriage of these two branches—general practice and epidemiology—would be expected to result in some interesting and profitable observations. This paper is presented to show some of the potentialities of epidemiological and clinical research in general practice. The subjects studied were chiefly the "trivial" and "minor" diseases of the community; but then these are also the common disorders that affect the majority and which entail overall a very significant amount of personal suffering, with natural economic costs. They were studied over a period of five years (1952-6) inclusive in one London suburban practice by means of simple methods that were eminently compatible with the daily routine and which did not interfere in any way with the normal happy doctor-patient relationships that exist in general practice.

Methods

Research, clinical and epidemiological, depends essentially on proper planning and record-keeping and on a discriminative analysis of the results. The methods and techniques have to be developed to fit the investigation being undertaken and the individual or group using them. In this practice the methods of recording have been evolved over the past 10 years and have been so adapted to the normal

daily routine that they add only about 30 minutes a day to the doctors' working-time.

Full details of the methods used have been reported (Fry and Blake, 1956), but in brief they are as follows.

1. A *day-book* records all daily consultations and visits with details of each patient's name, age, sex, reason for consultation, etc., in terms of disease groups (see below) and in addition notes are kept of referrals to hospitals for consultations, admission, or for direct radiological or pathological investigations. This day-book will give information of the volume of work performed in terms of time and seasons, of age and sex, and of disease groups, but such records will not give details of specific diseases or of individual patients in the practice.

2. A summary of each patient's diseases year by year is obtained easily by the use of specially prepared individual punch cards that are used each year for each patient. These cards will give a record of all attendances by the patient in terms of specific diseases as well as disease groups, age, sex, etc. The information is punched out on the card and analysed at the end of each year.

3. Information on specific diseases is recorded simply by means of a card-index system. A specific disease, such as hypertension or peptic ulcer, is allocated a box, and into this box are placed cards, each with the patient's name, date of birth, and short clinical details. As each new case of the appropriate disease is diagnosed so a new card is added to the box.

The population at risk has varied to some extent over the period under review with patients moving in and out of the practice; the numbers at risk for each year are shown in Table I, the figures being taken at the end of each year.

TABLE I.—Practice Population (1952–6)

	1952	1953	1954	1955	1956
Males	2,319	2,391	2,432	2,550	2,580
Females	2,354	2,501	2,615	2,705	2,871
Totals ..	4,673	4,892	5,047	5,255	5,451

Volume of Work

The most useful basic unit of work in assessing the amount of work done is the "consultation," taking this to mean all types of doctor-patient contact at the consulting-room and at the patient's home or in hospital. The attendance rate per patient per year obtained by dividing the total number of consultations by the numbers at risk gives a figure which can be compared year by year in the same practice and with other practices. The average attendance rates for this practice are shown in Table II and are remarkably constant within certain limits in spite of the changing incidence of epidemics and climatic conditions. These figures bear a relationship to the type of practice, geographically and socially, and also to the character and outlook of the doctor, and they vary to a considerable extent, as can be seen from Logan's (1954) studies, where the average attendance rates for eight practices varied from 2.9 to 4.7.

TABLE II.—Yearly Attendance Rates Per Patient (1952–6)

	1952	1953	1954	1955	1956	Average
Males	2.9	2.5	2.9	2.9	3.2	2.9
Females	3.5	3.6	3.2	3.9	3.8	3.6
Average ..	3.3	3.2	3.1	3.4	3.5	3.3

In each year the attendance rates for females were appreciably higher than for males, confirming once again the fact that women are more frequent attenders at doctors' surgeries.

As would be expected, these attendance rates vary considerably with age, and it is the very young and the elderly who require relatively more attention than other age groups.

Table III presents the attendance rates for the five years in age groups, and it is seen that the greatest rates are for infants in the first year, when frequent supervision is necessary, including at least five attendances for vaccinations and immunizations. In adolescence there is again a fall in rates, and this continues until the sixth decade, when the attendance rates rise.

TABLE III.—Attendance Rates Per Patient in Age and Sex (1952–6)

Age:	0–	1–	5–	10–	20–	30–	40–	50–	60–	70+	Average
M. ..	7.8	3.5	3.2	2.1	2.6	2.4	2.3	3.6	4.2	5.7	2.9
F. ..	7.0	3.3	3.4	2.2	4.0	3.2	3.7	4.5	4.7	6.5	3.6
Average	7.5	3.4	3.3	2.2	3.3	2.9	3.0	4.2	4.5	6.1	3.3

Individuals

The family doctor should get to know his patients reasonably well, since in any one year he will see almost three out of every four of the patients in his practice. The proportions of individual patients seen in each of the five years is shown in Table IV.

TABLE IV.—Percentage of Patients Attending in Any One Year

	1952	1953	1954	1955	1956
Patients attending ..	77%	71%	68%	72%	70%

A most striking fact is that over the total period of five years 91% of all those at risk were seen on one or more occasions. It is interesting to speculate why the 9% never attended. Is it because they are "healthy" or because they are "inflated"—that is, are they on the list of patients in error?

The fact that pathological and radiological facilities are not universally available to all family doctors in all areas is a national disgrace and a scandal. It is quite impossible to practise a high standard of medical care without these facilities being available directly to the doctor. It is also quite unreasonable to expect a young doctor to step from hospital practice, where investigations are possibly overdone, to that of general practice, where in many areas these facilities are still not freely available to the family doctor. The new hospital-trained entrant to general practice will feel completely lost and utterly frustrated. Full facilities should be available in all areas to all family doctors.

Amongst the arguments used against allowing these full facilities it is stated that the hospital departments would be swamped with work. What are the facts? In my own area full facilities are available, and the local hospital laboratory finds that only about 20–25% of its work is directly for family doctors.

In my practice, records over the five years show that a fairly constant proportion of patients were referred for investigations each year, as were the proportion of those sent for consultations and direct admission to hospital. Table V shows that approximately 13% of patients in the practice were sent for radiological and/or pathological investigations. The vast majority of this 13% did not require further referral to consultant, and those that did were sent with some of the necessary investigations already carried out. In this way consultants' time was saved and the interest of the family doctor maintained. Almost 8% of patients required the assistance of a consultant at hospital, and only 0.7% needed admission as emergencies. It is obvious, then, that the family doctor is able to manage over 90% of his patients without reference to the hospital consultant.

TABLE V.—Proportion of Patients Referred for Radiological and Pathological Investigations and to Consultants in Hospital

	Radiological	Pathological	O.P.	I.P. (Emergency)
Patients referred ..	7.1%	6.4%	7.8%	0.7%

Disease Groups

Major difficulties in recording information and data on the incidence of disease in general practice are the large number of possible diagnostic labels and the difficulty in arriving at an accurate diagnosis. In an attempt to overcome these problems a number of broad "disease groups" were defined. By this means an accurate diagnosis was not imperative and the possible diagnostic labels were restricted to a manageable number. In all, 18 disease groups were used: rheumatic, digestive, cardiovascular, central nervous system, upper and lower respiratory infections, specific fevers, eye disorders, ear, nose, and throat disorders, skin conditions, neuroses, pregnancy and gynaecological disorders, vaccinations and immunizations, accidents, urinary disorders, dental, endocrine, varicose veins, and miscellaneous groups.

The incidence of the disease groups shows that the situation is quite different from that found in hospital practice. Over the five years the most frequent groups were: (1) Infections of respiratory tract 30% of total; (2) digestive disorders, 12%; (3) skin disorders, 10%; (4) psychoneuroses, 8.5%; (5) "rheumatism," 6.5%; (6) cardiovascular disorders, 6%.

Certain sex differences were observed in these groups. Rheumatic disorders were more frequent in females in a ratio of 7:5. Respiratory infections predominated in males by 5:4. Psychoneuroses were more frequent in females by as much as 3:1. Accidents predominated in males by 5:4. Varicose-vein disturbances were five times more frequent in women. In the other groups there were no significant differences in the two sexes.

Studies of the age distribution of these broad disease groups (Table VI) brought out certain striking patterns that have some practical applications.

TABLE VI.—Average Yearly Attendance Rates Per 1,000 at Risk in Age Groups for Some Disease Groups

	0-	5-	10-	20-	30-	40-	50-	60-	70+
Upper respiratory infections ..	750	1,050	550	475	400	350	375	250	200
Lower respiratory infections ..	250	550	175	200	225	250	450	750	925
Digestive disorders ..	* 150	175	240	250	375	440	525	500	500
Skin disorders ..	375	275	410	375	325	350	325	325	275
Psychoneuroses { Male ..	50	125	275	250	230	275	225	200	200
Female ..	50	200	475	525	750	700	550	200	200
Rheumatic conditions ..	10	110	215	250	350	500	425	430	430
Cardiovascular disorders ..	1	10	33	50	125	355	500	1,250	1,250

* The rate for the first year of life was 550 per 1,000 at risk and for ages 1-4 it was 350.

Upper respiratory infections, including such common conditions as colds, sore throats, coughs, and "flu," were much more frequent in young children under 10, with a peak at the seventh and eighth years, followed by a dramatic fall and a more or less constant level in adult life. This natural pattern is of importance when considering any radical forms of treatment. The rates for *infections of the lower respiratory tract*, including both acute and chronic conditions of the lungs and bronchi, show quite a different pattern of age distribution, for apart from a peak in the 5-9 period the tendency is towards a rising level with age.

Digestive disorders had peak levels of attendance in the very young and the elderly.

Skin conditions seemed to be as common in all age groups.

The *psychoneuroses* had a pattern all their own with a peak in middle age, the peak being accounted for entirely by the females, the rate for males being constant.

Cardiovascular disorders showed the expected patterns of a predominantly degenerative disorder with a low rate in youth rising sharply with age.

Rheumatic conditions followed a pattern similar to that of the previous group, but there seemed to be a fairly constant rate after 50 and no rise with old age.

Specific Diseases

Whilst "disease groups" are useful in presenting patterns in a broad fashion, especially when accurate aetiological diagnosis is difficult, and when the large number of separate entities renders the keeping of records difficult, far more interesting and valuable information will be obtained if "specific" diseases can be defined, recorded, and followed up. This is quite possible in general practice if one restricts the conditions to be studied to a manageable number.

The value of studying common diseases such as hypertension, peptic ulcer, asthma, etc., in general practice is that, by taking into account all the grades of the condition, minor as well as major, a better natural picture of the disease will be obtained. The impressions derived from hospital reports tend to be somewhat false in some instances, as only the major grades might be presented, the minor ones not being referred to hospital by the family doctor. This will apply especially to conditions such as hypertension and peptic ulcer, and if one applies the hospital conclusions universally, then many cases might be managed on wrong lines.

The method used to study specific diseases was by means of the card index, and each new case of specific disease was recorded and filed with its fellows in a separate box. By these simple means the conditions were observed and recorded, and Table VII shows their incidence over the

TABLE VII.—Incidence of Certain Specific Conditions in the Practice (1952-6)

Disease	M.	F.	Total	% Over 5 Years
Acute chest infections (new cases) ..	307	281	588	115
Acute tonsillitis ..	302	315	617	125
Acute otitis media ..	377	380	757	150
Chronic bronchitis ..	142	98	240	48
Asthma ..	23	27	50	10
Pulmonary tuberculosis (new cases) ..	8	15	23	5
Peptic ulcer ..	112	38	150	30
Neoplasms (all types) ..	41	45	86	17
Acute abdomen (all types) ..	30	28	58	11
Epilepsy ..	25	21	46	9
Diabetes ..	18	10	28	5
Coronary artery disease ..	51	26	77	15
Hypertension ..	110	216	326	65
Anaemia ..	15	74	89	18
Organic C.N.S. disease ..	27	47	74	17
Migraine ..	50	117	167	33

five years. The figures quoted for the acute infections of the respiratory tract, anaemias, acute abdomen, and pulmonary tuberculosis refer to new cases occurring in the practice during the five years under review, but in the instances of less acute and more prolonged conditions some of the cases were first diagnosed over longer periods and the figures represent a total incidence rather than a five-year record.

Acute and chronic conditions of the respiratory tract are far and away the most common specific conditions that the average British family doctor will meet, but at the same time the high levels of peptic ulcer, hypertension, and migraine should be recognized.

An examination of the distributions of these conditions according to age and sex reveals some interesting facts.

Acute chest infections by definition included all cases of acute bronchitis, pneumonia, and pleurisy. The incidence shows a maximal level in the young and old (Table VIII).

TABLE VIII.—Incidence of Acute Chest Infections Per 1,000 at Risk, in Age Groups

0-	1-	5-	10-	20-	30-	40-	50-	60-	70+
180	115	115	25	20	22	45	55	130	150

TABLE IX.—Incidence of Acute Otitis Media Per 1,000 at Risk in Age Groups

0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	10-	20-	30-	40+
300	175	200	475	700	750	550	625	200	250	55	6	50	5

Acute otitis media follows a different pattern of age incidence. It is largely a condition of children, with a maximal peak at 5-7 followed by a falling rate and a very low one in adults (Table IX).

Acute tonsillitis is also predominantly a disease of childhood, but here there is an appreciable incidence in young adults. In my practice it is very rare in infants and in the elderly (Table X)—in fact, I do not recall ever having had a case over 60.

TABLE X.—Incidence of Acute Tonsillitis Per 1,000 at Risk, in Age Groups

0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	10-	20-	30-	40-	50+
—	10	—	160	150	240	250	130	160	180	100	90	80	35	10

Chronic bronchitis is a difficult condition to define. Here the diagnosis has been restricted to patients with cough and sputum persisting for longer than three months in any two consecutive years. There was a male preponderance of 3:2, and the pattern of an incidence rising with age (Table XI) suggests either a cumulative response to some irritating factors or a degenerative condition.

Peptic ulcer is a common condition in our community and is more frequent in men by as much as 4:1 in this practice. The 150 patients mentioned have all had the diagnosis confirmed by positive radiological examinations. The patterns of incidence encountered over the past five years (Table XI) show maximal peaks of activity in adults

TABLE XI.—Incidence of Chronic Bronchitis, Peptic Ulcer, and Migraine Per 1,000 at Risk, in Age Groups

	10-	20-	30-	40-	50-	60-	70+
Chronic bronchitis ..			10	25	80	160	225
Gastric ulcer { Male ..		2	8	10	30	11	10
Female ..			4	8	3	11	8
Duodenal ulcer { Male ..		40	85	85	60	11	5
Female ..		6	25	18	12	8	
Migraine { Male ..	10	17	25	22	23	25	20
Female ..	18	27	85	80	55	25	20

from 20 to 59. There is a relatively low incidence of duodenal ulcer at 60 and after, and it is tempting to inquire whether the natural history of duodenal ulcer is towards a natural and spontaneous "cure" with advancing age. This is further suggested by the fact that of the 150 patients, only 32 (21%) have had to undergo surgical treatment; all the others seem to manage quite well following their normal occupations with alkalis and diet for their acute episodes.

Migraine is truly a psychosomatic disorder, and, as in other similar conditions such as hypertension and peptic ulcer and in the psychoneuroses themselves, there are marked sex differences and the age distribution shows certain peaks and trends. The rate for males (Table XI) shows a more or less constant level from age 20 onwards, but in the females, who account for over two-thirds of the cases, there is a definite peak between 30 and 59 years. Here again this natural pattern is suggestive of a tendency towards a spontaneous cessation of activity with age, which, if confirmed, will help in understanding suitable management and prognosis.

Hypertension has tended to be rather a mechanistic diagnosis based on the readings of the sphygmomanometer. Fortunately it is becoming more widely appreciated that these readings of themselves are of little help in the clinical management of the patient. A diagnosis of "hypertension" by present-day criteria must never be the indication for prescribing drastic, potentially dangerous, and unpleasant remedies. With the criterion that a persistent (found on two or more separate occasions) diastolic blood pressure of over 100 mm. Hg constituted "hypertension," the condition was present in at least 326 patients in this practice, with a rate of 13% for all those over the age of 40. This

very high level of incidence makes one wonder yet again whether "hypertension" based on the readings of a machine is a "disease" in the true sense of the term. From Table XII it will be seen that over the age of 70 at least half of

TABLE XII.—Incidence of Hypertension Per 1,000 at Risk in Age Groups

	40-	50-	60-	70-	80+
Males	18	74	125	360	420
Females	32	100	260	500	450

those alive will have hypertension. In view of this high frequency it is essential that we clarify our views on the need for treating such large numbers of cases that are in the majority of instances quite symptomless. Table XII shows the incidence of known hypertension in the practice, and the rise with age is apparent in both sexes. In patients under 80 the rate in females was almost twice as high as in males.

Discussion

It may well be asked, "What is the use of all these epidemiological facts and figures?" and, quite rightly, the question demands a definite answer in favour of their collection if family doctors and others are to be encouraged to go on carrying out like and similar investigations.

These studies over the past five years have gone a long way in helping me to acquire some knowledge of the patterns and natural histories of the common conditions of general practice—conditions on which there is very little information in the standard textbooks.

Apart from the old wives' tales that one heard, there was no suggestion in medical literature that children tended to "grow out of" their coughs, colds, sore throats, and ear-aches around the ages of 7 and 8. Records collected over this and longer periods definitely suggest that this is a scientific fact. The high level of symptomless "hypertension," twice as common in women as in men, and which requires no specific therapy, was never stressed in my teaching hospital. The epidemiological suggestions that there might be a natural tendency for cases of migraine and duodenal ulcer to undergo a spontaneous remission and "cure" have never been suggested to my knowledge.

Facts such as these have very definite application to the proper management of our patients. If there is this tendency for children to grow out of their respiratory infections, then surely the present high rate of tonsillectomy is unjustified logically as well as medically? If there is this natural tendency towards spontaneous remission in duodenal ulcer, then are our strict dietetic restrictions, bed rest, and other unpleasant measures really justified? If the natural course of migraine is towards a spontaneous remission in the majority of cases, then it would be of great comfort to patients to know this. Obviously these few figures quoted from just one general practice require confirmation. This in itself is more than a justification for further such studies in general practice research.

Even the apparently dull figures relating to the volume of work done at the various ages have been of real value as a piece of operational research. Because of the facts that the young and old require such a disproportionately large amount of extra work, special clinics have been organized for these two groups, with good effects for both doctor and patients.

Another reason why it is necessary to obtain further information on the incidence and nature of morbidity in general practice is to help teaching hospitals plan a more realistic system of medical education that will take into account the common conditions of general practice that are encountered only in general practice. Such information would also be of value to our public health colleagues and even to the top-level administrators who control and govern our destinies.

For all these reasons, and because it is stimulating and educational for the doctor undertaking this work, it is felt that there is a real and continuing need for developing methods of collecting such epidemiological and clinical data from general practice.

If such records are to be developed then it is vital that some unified system of recording and nomenclature be devised, and it would be most appropriate that a conference, or some other steps, be organized at which the various interested bodies could inquire into future possibilities.

Summary

A report is presented of five years' work in a London suburban general practice. The importance of studying epidemiological and clinical data from this field lies in the information that can be obtained on the true patterns of disease as they occur in the community.

The basis of research in general practice and elsewhere is a sound system of record-keeping. In general practice any system has to be adapted to the peculiar features of the work. The methods used are described.

Over the period of five years (1952-6) there was a constant rate of attendance, with an average of 3.3 attendances per patient per year. Females were more frequent attenders by 6:5. The young (7.5 in infants) and the aged (6.1 in those over 70) required most attention. Almost three out of every four patients are seen each year and over the five years 91% of the practice were attended.

The great value of having full radiological and pathological facilities available is stressed. In any year an average of 13.5% of patients are sent directly for investigations, and a further 7.8% are referred for out-patient consultations and 0.7% for emergency admissions.

Respiratory infections of various types were by far the most common group of diseases seen in this practice, with a rate of 30% of the total. The next most frequent groups were digestive disorders (12%), skin disorders (10%), psychoneuroses (8.5%), "rheumatism" (6.5%), and cardiovascular disorders (6%). The age distributions of these groups are noted and their bearing on aetiology and management is discussed.

Of more importance is a study of the natural patterns of certain specific disorders. In frequency, respiratory infections are most important, but the very appreciable incidence of hypertension, peptic ulcers, and migraine is noted, all with an incidence of over 3%. Examination of epidemiological data on age incidence suggests features that might be of some help in elucidating aetiology and rational management of these common conditions. Thus it is probable that there is a peak level of incidence of the acute respiratory infections in childhood at 5-7 followed by a dramatic decline: this questions the usefulness of some of the more drastic remedies employed. "Hypertension" is so frequent and so symptomless that its abnormality is doubtful in many elderly patients. The natural history of the two psychosomatic conditions, migraine and peptic ulcer, suggests that there might be a tendency towards a spontaneous remission with age.

The need for developing the use of general practice records in the country as a whole is apparent, and steps to encourage these in a uniform manner are suggested.

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GONADAL DYSGENESIS: MODERN CONCEPTS

BY

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The syndrome of gonadal dysgenesis ("ovarian agenesis") has stimulated great interest in recent years. Knowledge accruing from the study of this subject has led to far-reaching developments in the understanding of the general field of sexual differentiation.

In the course of the past three years we have studied a number of patients with this condition. Arising from our investigations we wish to report certain observations.

The Concept of Gonadal Dysgenesis

Three main components make up the full syndrome.

1. *Sexual Infantilism*.—Fundamentally this is due to a failure of gonadal development. The gonads are represented by mere white streaks of primitive tissue lying on the posterior aspects of the broad ligaments. Primary amenorrhoea with failure of secondary sex characters is all but invariable. A raised level of follicle-stimulating hormone (F.S.H.) provides an important diagnostic criterion.

2. *Shortness of Stature*.—The majority of patients are between 4 ft. 6 in. and 4 ft. 10 in. (137 and 147 cm.) in height. This conflicts with the tall, eunuchoid stature generally found in cases of prepubertal gonadal failure. This shortness of stature is generally attributed to a distinct genetic anomaly (Albright *et al.*, 1942b).

3. *Associated Congenital Anomalies*.—A multiplicity of anomalies, affecting almost every organ or tissue of the body, have been described. Webbing of the neck, cubitus valgus, and coarctation of the aorta are the most widely known. These malformational anomalies do not all occur together. Individual patients show varying combinations; in fact, cases of proved gonadal dysgenesis have been noted without obvious congenital abnormalities (del Castillo *et al.*, 1947; Grumbach *et al.*, 1955; Greenblatt *et al.*, 1956).

Nuclear Sexing.—The recent recognition of male nuclear patterns in many anatomically female cases of "Turner's syndrome" (Polani *et al.*, 1954) has been explained in the light of Jost and other workers' experiments on animals (Jost, 1953). They have shown the female form to be basic or neuter, and male differentiation to occur only in the presence of functioning testes during embryonic development. This observation led to the adoption of the term "gonadal dysgenesis" in preference to "ovarian agenesis" and suggested that the syndrome was, in fact, a variety of intersexual development. Grumbach *et al.* (1955) have postulated a relationship between gonadal dysgenesis and male pseudohermaphroditism.

Investigations and Reflections

Twenty-seven cases of gonadal dysgenesis have been seen in the course of the past three years at the Endocrine Clinic, Groote Schuur Hospital. Many patients with primary amenorrhoea are seen and treated at other clinics. The number of cases in this series testifies to the frequency of occurrence of gonadal dysgenesis. The salient clinical features of each case are presented in the Table (see next page).