AN ASTHMA SURVEY IN WALES

(The Research Committee of the Welsh Faculty)

This survey was the first attempt at organized research undertaken by Welsh Faculty of the College of General Practitioners, and served to provide experience in this new research discipline. That there have been errors in planning and execution is appreciated but the results are thought to be worth presenting.

The objects of the investigation were to obtain information on the prevalence of asthma over a large population, and to compare its seasonal, geographic, and age incidence.

There is little in the literature regarding the prevalence of asthma, and it consists in the main of studies of selected populations, and deals largely with the history of asthma rather than with active asthma. Rook (1949), Hitchens (1951), and Grant (1957) have studied the prevalence of asthma in university students. Stocks (1949) and Logan (1953, 1955) have investigated the incidence of active asthma, the former by means of questioning random samples of the population of England and Wales, and the latter from the records of selected general practitioners in England. Asthma has been found to be a significant cause of rejection by the armed forces of the United Kingdom, 1948. Williams and Higgins (1959) have studied asthma in random samples from two large populations, but have not yet published their results.

Method

The investigation took place between 1 November 1956 and 1 November 1957, and only those patients who consulted their doctor with asthma during this period were included in the survey. All members and associates of the faculty were invited to take part, and those who elected to do so were divided into geographical groups, each group having a group co-ordinator. Each doctor was supplied with two cards for each asthma patient; one he gave to the patient who was asked to record the dates on which his asthma was worse; for instance, when he had to use an inhaler. The patient

was asked to bring this card to the doctor each time he saw him. A second card was kept by the doctor who entered on it the episodes which the patient had recorded, dividing them into their appropriate months. Each doctor was asked to assess his practice as primarily either a country, a town, or a mixed practice, and to state the locality, and also the number of patients on his list at the commencement of the investigation.

Twenty five doctors took part in the survey, representing 21 practices. These were divided into six geographical groups—

(*a*) Swansea—Code No. W.
(*b*) Western Area—Code No. H.
(*c*) Cardiff—Code No. P.
(*d*) Monmouth—Code No. B.
(*e*) East Glamorgan—Code No. C.
(*f*) Brecon and District—Code No. M.

Each group was allocated a Code No. as illustrated above. The exact location of the practices involved is shown in the map—(figure 1).

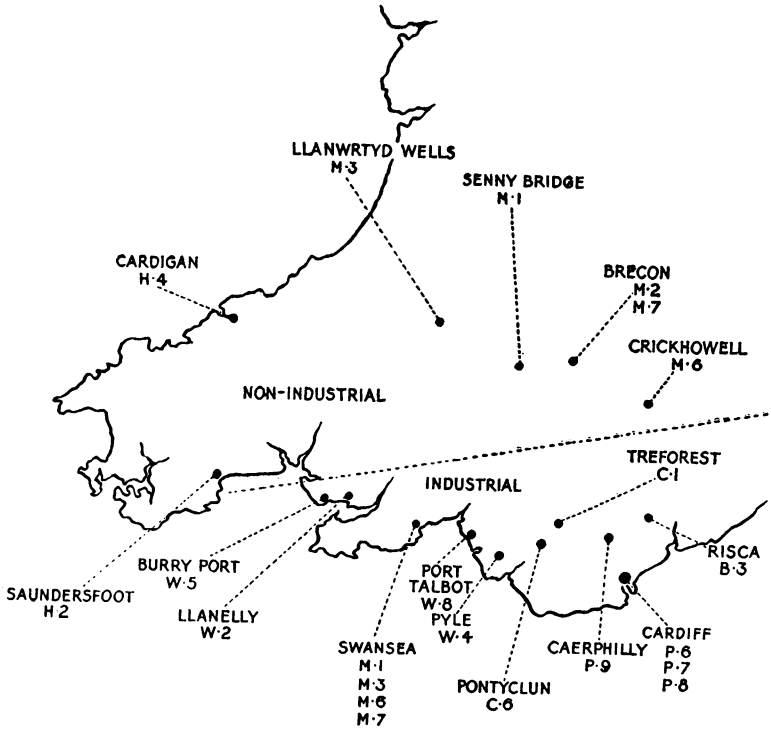

Figure 1.
Location of practices taking part in the survey.

The number of persons at risk in each age group was calculated for each practice by applying the 1951 Census figures for the appropriate area to the total number of patients in the practice concerned. This is illustrated in an example in table I. However, in two practices the doctors were able to state the number of patients in each age group, as this information had been calculated for other reasons.

When the age distribution of these two practices was calculated in the same way as in the other practices, the difference between the figures so obtained approximated so closely to those supplied by these two doctors, that it may be assumed that this method of obtaining the age distribution does not invalidate the conclusions drawn from them; though obviously it is not entirely satisfactory. This difficulty, which arose only after the survey had been completed, illustrates a cardinal point in general-practitioner research: it is essential to have an up-to-date record of the age distribution of any practice that is going to take part in any project.

Only cases of uncomplicated classical asthma were under consideration, and the investigation did not include cases in which an asthmatic picture was part of an underlying predominant clinical condition, such as cardiac and renal asthma. An asthmatic patient was defined as a patient who suffers from recurrent attacks of wheezing and breathlessness, coming on spontaneously.

In a survey involving many doctors, the question of observer error becomes considerable. Our definition of asthma was as clear as we could make it, but when the results in the upper age groups are studied there is seen to be an increasing rate in these age groups in the great majority of cases. This result is at variance with those produced by D. A. Williams and Higgins (1959), but is reproduced in the figures of Logan (1953; 1955) which are subject, however, to the same objection as the present survey. A number of these cases may be in reality cases of chronic bronchitis with spasm. In our opinion it is arguable that cases of chronic bronchitis with marked spasm are in fact cases of infective asthma, and therefore should not be excluded from an asthma survey. All the cases in D. A. Williams' survey were seen personally by one observer who was at great pains to exclude cases of chronic bronchitis. It is difficult to see how observer error can be excluded in this type of general-practitioner research.

The overall rate in this survey (0.8 per cent) is slightly lower than the rate in some other surveys, notably that of D. A. Williams and P. Higgins in the Rhondda and Vale of Glamorgan. In that survey great efforts were made to discover every asthmatic in the population, whereas in this survey only those asthmatics who consulted their

TABLE I

BURRY PORT U.D.C.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Age groups	*Population*			*Percentage of total*			*Estimated population of W.5*			*Number of asthmatics in W.5*			*Percentage of asthmatics in W.5 practice*		
	M.	*F.*	*Persons*	*M.*	*F.*	*Persons*	*M.*	*F.*	*Total*	*M.*	*F.*	*Total*	*M.*	*F.*	*Total*
0 — 4	226	241	467	7·8	8·2	7·9	118	125	243	1	—	1	0·8	—	0·4
5 — 9	205	199	404	7·2	6·6	6·9	108	100	208	1	1	2	0·9	1·0	1·0
10 — 14	201	177	378	7·2	5·9	6·6	108	90	198	1	—	1	0·9	—	0·5
15 — 19	146	163	309	5·2	5·4	5·5	78	82	160	—	1	1	—	1·2	0·6
20 — 29	426	437	863	14·9	14·6	14·7	214	221	435	—	1	1	—	0·5	0·2
30 — 49	937	911	1848	32·9	30·4	31·3	494	452	946	8	3	11	1·6	0·7	1·2
50 — 59	278	388	666	9·9	12·8	11·4	148	195	343	2	2	4	1·4	1·0	1·2
60+	420	483	903	14·9	16·1	15·7	223	243	466	8	4	12	3·6	1·6	2·6
Total	2839	2999	5838	100	100	100	1491	1508	2999	21	12	33	1·2	0·8	1·0

Columns, 1, 2 and 3 from Registrar General's Estimates of Population of England and Wales at 30.6.56.

Columns 4, 5 and 6 percentage of each group in total population.

Columns 7, 8 and 9 number in W.5's practice when percentage age figures in Columns 4, 5 and 6 are applied proportionately to the practice population.

Columns 10, 11 and 12 number of asthmatics in W.5's practice by age groups.

Columns 13, 14 and 15 percentage of asthmatics in W.5's practice by age groups.

doctor in any one year were included, and no attempt was made to include all asthmatics in every practice. Most general practitioners will be aware that they will rarely see every one of their asthmatics in any one year. The similarity between the comparable figures of Stocks (1949) (0.9 per cent) and Logan is striking, and in Logan's figures it is interesting to note that in the same population the rate varied between 0.97 per cent and 0.74 per cent in three consecutive years. In considering a disease such as asthma which is influenced by allergic, infective and psychosomatic factors all of which are variable, it is not surprising that such a variation occurs. It also indicates that any figures showing the incidence of asthma can only

TABLE II

SHOWING BY AGE GROUPS AND PRACTICES, WITH TOTAL FOR TOWN, COUNTRY AND MIXED PRACTICES AND FOR THE TOTAL SURVEY, THE RATE OF ACTIVE ASTHMA PER 100 POPULATION.

	0–4	5–9	10–14	15–19	20–29	30–49	50–59	60+	*Total*	*Practice pop.*
					Town					
P.6 ..	1·9	1·1	1·5	1·2	0·3	0·9	–	–	1·0	2136
W.1 ..	2·8	2·1	0·6	1·4	1·3	0·8	0·5	0·1	1·0	4800
W.6 ..	1·7	–	–	0·8	–	1·1	0·4	0·3	0·6	2100
W.7 ..	–	1·1	0·6	1·2	0·3	0·4	2·4	0·5	0·7	2700
W.8 ..	0·4	1·2	0·4	0·4	0·2	0·2	0·3	0·2	0·4	12200
Av. of town ..	1·4	1·1	0·6	1·0	0·4	0·9	0·7	0·2	0·7	23936
					Country					
M.1 ..	0·7	1·6	1·7	1·6	1·2	1·4	1·0	0·3	1·1	1800
M.2 ..	–	1·6	0·8	–	0·4	0·6	0·5	0·4	0·6	3400
M.3 ..	1·3	–	–	–	0·2	0·2	0·4	1·0	0·5	1500
M.6 ..	0·9	0·6	–	0·5	–	0·3	0·4	–	0·3	2500
C.6 ..	–	1·8	1·3	1·1	0·5	0·8	0·7	1·7	0·9	4750
H.2 ..	0·5	0·3	1·1	1·5	0·5	1·4	1·6	1·3	1·1	5405
H.4 ..	2·3	3·6	–	1·5	1·2	1·1	–	0·2	1·0	2500
Av. of country	0·8	1·4	0·7	0·9	0·6	0·8	0·7	0·7	0·8	21855
					Mixed					
B.3 ..	0·8	1·3	1·0	2·2	1·6	1·0	1·0	1·4	1·2	3113
M.7 ..	–	–	0·8	–	–	0·2	0·8	1·1	0·4	2200
W.2 ..	0·5	–	0·6	–	0·3	0·1	0·7	0·3	0·3	2400
W.4 ..	–	0·7	0·5	0·6	0·7	0·4	–	–	0·4	5400
W.5 ..	0·4	1·0	0·5	0·6	0·2	1·2	1·2	2·6	1·0	3000
C.1 ..	0·5	–	–	0·5	0·3	0·7	0·6	0·6	0·5	2300
P.7 ..	1·0	1·3	–	–	2·6	0·8	0·8	5·4	1·7	1000
P.8 ..	0·8	1·1	1·1	1·5	1·1	0·3	0·6	1·1	0·8	1200
P.9 ..	–	0·7	0·4	–	1·0	0·5	1·3	0·8	0·6	4200
Av. of mixed ..	0·4	0·7	0·6	0·6	0·9	0·6	0·8	1·5	0·8	24813
Av. of all practices	0·8	1·0	0·6	0·8	0·8	0·7	0·7	0·9	0·8	70604

apply to the particular area in which they were collected and for the particular year.

This fact makes it very difficult to draw many firm conclusions regarding actual incidence rate, from these or any figures which are produced from a given population for such a short period of time. It is necessary to follow the incidence over a period of years.

One advantage of this survey which involved a large population spread over a large area would seem to be that any tendency which

TABLE III

SHOWING BY AGE GROUPS AND PRACTICES, WITH TOTALS FOR TOWN, COUNTRY AND MIXED PRACTICES AND FOR THE TOTAL SURVEY, THE RATE OF ACTIVE ASTHMA PER 100 MALE POPULATION.

	0–4	5–9	10–14	15–19	20–29	30–49	50–59	60+	*Total*	*Male practice pop.*
					Town					
P.6 ..	4·2	1·6	2·3	2·7	0·7	1·4	–	–	1·8	992
W.1 ..	4·1	3·0	1·2	2·3	1·7	0·7	–	–	1·2	2335
W.6 ..	3·4	–	–	–	–	0·3	–	–	0·4	1020
W.7 ..	–	1·1	–	1·4	0·5	–	2·5	1·1	0·7	1310
W.8 ..	0·6	1·8	0·5	0·6	0·1	0·3	0·3	0·1	0·4	5890
Av. of town ..	2·5	1·5	0·8	1·4	0·6	0·5	0·6	0·2	0·9	11547
					Country					
M.1 ..	–	2·9	1·4	2·7	0·7	1·5	1·0	–	1·2	952
M.2 ..	–	1·4	1·4	–	0·3	0·8	0·5	1·0	0·7	1798
M.3 ..	2·6	–	–	–	–	0·6	–	1·5	0·7	682
M.6 ..	2·0	1·1	–	–	–	0·6	–	–	0·4	1293
C.6 ..	–	2·9	1·8	0·8	0·4	0·8	1·0	2·6	1·2	2237
H.2 ..	0·9	0·5	1·6	2·5	0·6	1·4	0·9	1·4	1·2	2665
H.4 ..	2·3	4·2	–	1·8	0·7	0·6	–	–	0·8	1113
Av. of country	1·1	1·9	1·0	1·1	0·4	0·9	0·5	0·9	0·9	10740
					Mixed					
B.3 ..	0·7	1·7	1·9	2·4	1·8	0·2	0·5	0·8	1·0	1545
M.7 ..	–	–	–	–	–	0·3	1·8	0·5	0·2	1118
W.2 ..	0·9	–	–	–	–	0·3	0·7	0·6	0·3	1188
W.4 ..	–	0·9	0·9	1·1	0·4	0·2	–	–	0·3	2915
W.5 ..	0·8	0·9	0·9	–	–	1·6	1·4	3·6	1·2	1492
C.1 ..	1·0	–	–	–	–	0·4	0·9	1·1	0·5	1090
P.7 ..	2·1	2·6	–	–	1·4	–	–	3·3	1·1	475
P.8 ..	–	2·2	–	3·1	1·2	–	–	2·7	0·9	570
P.9 ..	–	1·3	0·7	–	0·3	0·5	1·5	0·5	0·6	2085
Av. of mixed	0·6	1·1	0·5	0·7	0·6	0·4	0·8	1·5	0·7	11778
Av. of total ..	1·3	1·4	0·7	1·0	0·5	0·6	0·6	1·0	0·8	34065

was consistently reproduced in all the areas is thus free from the above objections.

Geographical Distribution

Although there are large differences in the overall rate between the different areas no general pattern emerges from this survey. In view of the variation in successive years in the same population seen in Logan's figure it seems unjustifiable to draw any conclusions from the difference shown between the various geographical areas.

There was a large difference between the rates for West Glam-

TABLE IV

SHOWING BY AGE GROUPS AND PRACTICES, WITH TOTALS FOR TOWN, COUNTRY AND MIXED PRACTICES AND FOR THE TOTAL SURVEY, THE RATE OF ACTIVE ASTHMA PER 100 FEMALE POPULATION.

	0–4	5–9	10–14	15–19	20–29	30–49	50–59	60+	*Total*	*Female practice pop.*
					Town					
P.6 ..	–	0·5	0·7	–	–	0·5	–	–	0·4	1144
W.1 ..	1·5	1·2	–	0·6	0·9	0·8	1·0	0·2	0·8	2465
W.6 ..	–	–	–	1·4	–	2·2	0·7	0·6	0·8	1080
W.7 ..	–	1·1	1·1	1·1	0·5	0·7	2·3	–	0·7	1390
W.8 ..	0·1	0·7	0·4	0·5	0·3	0·1	0·4	0·3	0·3	6310
Av. of town ..	0·3	0·7	0·4	0·7	0·3	0·9	0·9	0·2	0·6	12389
					Country					
M1. ..	1·5	–	2·0	–	2·0	1·3	1·0	0·5	1·1	848
M.2 ..	–	2·0	–	–	0·5	0·5	0·5	–	0·4	1602
M.3 ..	–	–	–	–	0·3	–	0·7	0·5	0·4	818
M.6 ..	–	–	–	1·3	–	–	0·7	–	0·2	1207
C.6 ..	–	0·6	0·7	1·4	0·7	0·8	0·5	0·9	0·7	2513
H.2 ..	–	–	0·5	0·6	0·5	1·3	2·2	1·0	1·0	2740
H.4 ..	2·2	2·9	–	1·3	1·7	1·5	–	0·3	1·1	1387
Av. of country	0·5	0·8	0·5	0·7	0·8	0·8	0·8	0·5	0·7	11115
					Mixed					
B.3 ..	0·8	0·9	–	2·0	0·9	1·8	1·5	2·8	1·4	1568
M.7 ..	–	–	1·5	–	–	–	–	1·7	0·4	1082
W.2 ..	–	–	1·2	–	0·6	–	0·7	–	0·2	1212
W.4 ..	–	0·5	–	–	1·1	0·5	–	–	0·4	2485
W.5 ..	–	1·0	–	1·2	0·5	0·7	1·0	1·6	0·8	1508
C.1 ..	–	–	–	1·0	0·3	1·0	0·5	–	0·5	1285
P.7 ..	–	–	–	–	3·6	1·4	1·4	6·8	2·3	525
P.8 ..	1·6	–	2·1	–	1·0	0·7	1·2	–	0·8	630
P.9 ..	–	–	–	–	1·6	0·5	1·5	1·2	0·7	2115
Av. of mixed	0·3	0·3	0·5	0·5	1·1	0·7	0·9	1·6	0·83	12410
Av. of all practices	0·4	0·5	0·5	0·6	0·8	0·8	0·8	0·9	0·7	35914

organ and Cardiff, though it is difficult to find any underlying reason for this in two areas which would appear to have much in common.

If the practices are divided arbitrarily as is shown on the map into mainly industrial and non-industrial areas, the overall rate of asthma is respectively 0.9 per cent and 0.7 per cent. Until there are further studies of the incidence of asthma, it is unjustified to say whether this difference is significant or to try and ascribe a cause for it.

Age and Sex Incidence

In this survey there is an overall higher rate of asthma among male

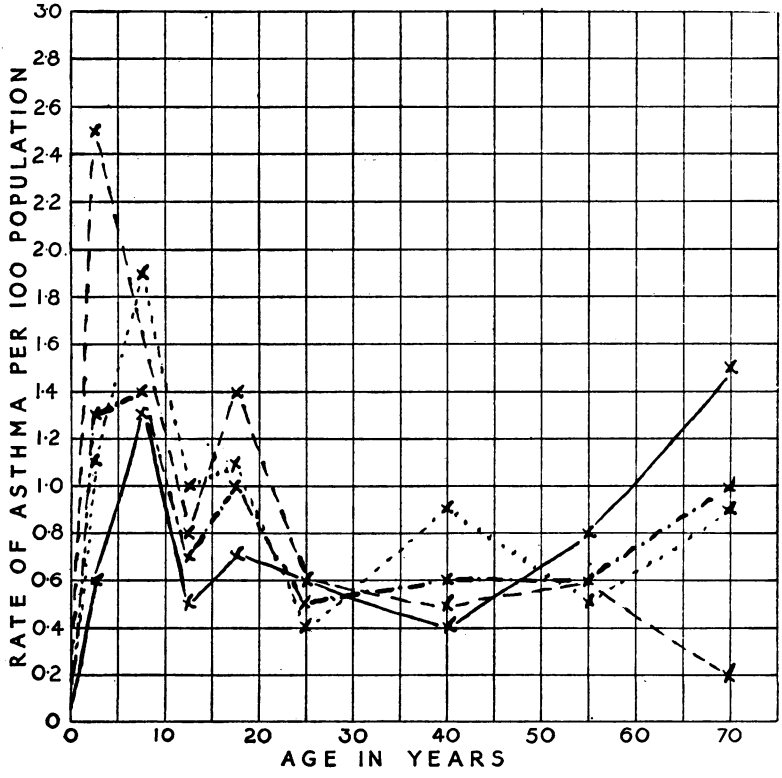

Figure 2.

Graph illustrating the age incidence of asthma in males for town, mixed and country practices and for the total male population.

Total male -.-.-.-.-
Town male ---------
Mixed male ————
Country male .....

subjects. This is applicable to all the geographical areas. Williams and Higgins found a higher rate for males in the Rhondda fach, but in the Vale of Glamorgan the female rate was higher. Among university students at Cambridge and Wales, there was a higher female rate of asthma. Logan's figures show a higher rate for females in one year and a higher rate for males in the two succeeding years, though the difference between the female and male rates is very small.

It is generally accepted that before puberty boys develop asthma more commonly than girls, and this is amply demonstrated in the accompanying graphs (figures 2 and 3), though the high incidence in the male population is seen to continue past puberty to the late teens and early 20 year age groups. If asthma can be prevented from causing permanent respiratory damage, there is every reasonable chance that the young male will grow out of it.

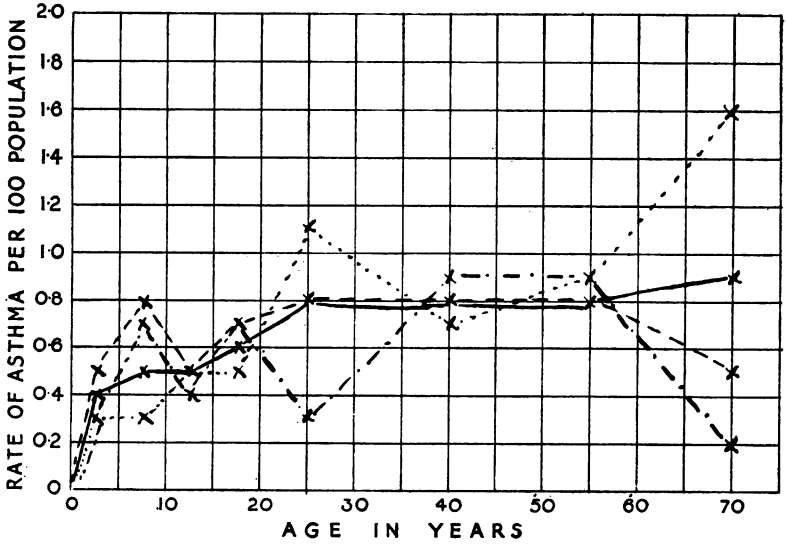

Figure 3.

Graph illustrating the age incidence of asthma in females for town, mixed and country practices and for the total female population.

Total female ————
Town female -.-.-.-.-
Mixed female - - - - - - - - -
Country female .....

The female curve of distribution in general shows a gradually rising incidence with no consistent peaks. A rise in the female incidence in the menopausal age group is not consistently shown, though this has been a generally accepted fact heretofore. This

pattern of age and sex distribution is also shown in Logan's figures.

Seasonal Incidence

The results of this part of the investigation were not satisfactory, as too much was left to the patients' co-operation. In fact, only 6 doctors found it possible to complete this section, and the results are shown in table V.

TABLE V

SHOWING FOR EACH PRACTICE IN EACH MONTH THE NUMBER OF ATTACKS OF ASTHMA WITH THE NUMBER OF CASES OF ASTHMA INVOLVED.

Code	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Total*	*No. of cases*
B.3 ..	9	7	12	14	12	7	7	9	12	10	2	9	101	23
M.3 ..	6	6	6	5	5	6	6	5	6	6	7	6	70	8
W.2 ..	7	5	5	6	5	5	7	7	5	5	6	6	69	7
W.7 ..	10	15	9	12	12	9	11	10	10	13	8	11	130	19
W.6 ..	3	4	4	3	6	8	8	4	6	5	6	3	60	13
P.6 ..	8	7	7	7	6	9	5	6	6	7	8	8	84	11
Total	43	45	43	47	46	44	44	41	45	46	37	43	514	81

Summary

In a first attempt at organized research by the Welsh Faculty of the College of General Practitioners, 25 doctors recorded all cases of asthma occurring in their practices between 1 November, 1956 and 1 November 1957.

The definition of asthma agreed on was:

" A patient who suffered from recurrent attacks of wheezing and breathlessness, coming on spontaneously ".

The incidence of active asthma in the populations served by the doctors taking part in the survey is recorded and shown graphically according to age, sex and practice location. The literature of comparable surveys is reviewed.

The overall incidence of asthma in this survey is 0.8 per cent.

The known variation in sex incidence is confirmed.

No conclusions can be drawn from the incidence in the differing geographical areas.

The risks of observer error in general practitioner research and

the absolute necessity of an up-to-date age and sex register are stressed.

The Research Committee

Chairman:
Dr N. E. Melling

Hon. Secretary:
Dr R. Harvard Davis

Dr W. O. Williams
Dr D. Kyle
Dr M. F. Churcher
Dr J. N. M. Parry

The following doctors took part in the survey:

G. Clarke
S. Copp
M. F. Churcher
C. M. Fenn
R. Griffiths
T. R. Griffiths
M. Harris
R. C. Humphreys
D. Isaac
W. H. Kerr
D. Kyle
D. L. Lees
N. E. Melling
G. J. Moses
G. Murray-Jones
R. J. Phillips
M. H. Rapport
A. M. Revie
T. H. Richards
T. R. Waddell
M. T. Wade
W. O. Williams

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The General Practitioner Research Group. D. WHEATLEY, M.D., *The Practitioner* (April 1960), **184**, 500.

An independent organization has been set up by a number of general practitioners who are interested in trying out new drugs under general practice conditions. These doctors now number more than 60 and have undertaken 19 major clinical trials. There is a considerable demand for their services, and new members are sought. Details may be had from the director of the group, Dr D. Wheatley, of 270 Staines Road, Twickenham, Middlesex.

The College has been informed by the group of their activities.