

played back immediately to the participants prior to discussion. It is also hoped that on future courses these types of record, taken at the beginning and end of a course, could be a basis for methods of evaluation.

Joint meetings. A joint meeting was held with a course for teachers in health visiting. On another occasion trainees and secretarial staff attended.

The future

Many lessons were learned from this course, which it is hoped to repeat in a much modified form in the coming academic year. It is proposed to engage members more actively and much earlier, both in the topic-teaching type of presentation and in group work. More time will be allowed for the latter and an earlier definition of objectives in the trainee year will be aimed at. The continuous involvement of educational consultants is vital to the success of the course. Trainees are to be invited to attend when appropriate and there will be more joint meetings with other disciplines (for example: health visitors, secretaries, district nurses). It is also hoped to develop methods of evaluation of the effects of the courses on its participants.

One speaker at the final colloquium gave as his succinct advice to planners of future courses the important lessons:

1. Participation
2. Communication
3. Reduce the total content of the course.

D. J. PRICE.

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AIRS, WATERS AND PLACES

Under the aegis of the Research Committee of the Royal College of General Practitioners a meeting on "Trace Substances and the Health of Man" was held at the Royal College on 14 July 1971 before an assembly of invited guests.

The morning session was opened by DR G. I. WATSON OBE, President, RCGP who presented to the meeting a copy of *The Continuing Work of Hippocrates* which, after being autographed by all those present, would be placed in the college library.

He stressed that we must continue the Hippocratic search for the fact underlying fiction and presented the strange inequality of distribution of chronic diseases in man. This was highlighted by the geographical map of "The Prevalence of Pernicious Anaemia in Great Britain" which was the result of a survey by the College of General Practitioners in 1957 in which 14,000,000 people had been surveyed. He referred to the Tamar Valley Project initiated by Dr Robin Pinsent, the first chairman of the Research Committee of the College and queried what place the College could take in a National Environmental Study Group if such were formed.

He ended by emphasizing that the College has a capacity to monitor a wide range of morbidity and that this was a new research tool which the College had to offer.

DR A. E. MARTIN, medical adviser to the Department for the Environment and the DHSS opened the discussion on "Airs".

He had been the Secretary of the Committee which investigated the mortality and morbidity of the Greater London fog during December 5th to 8th, 1962, and presented statistics to show that the deaths and pollution levels had coincided. The deaths were mainly among the elderly and few young people had been affected. The peaks of smoke pollution, deaths and SO₂ content had coincided. A study had also been done in the winter of 58-59 of the daily variations in morbidity, mortality and pollution. The peaks of morbidity and mortality for the most part coincided with the peaks of smoke and fog. In the winter of 1962 and 1963 there were similar peaks of SO₂ coinciding with peaks of morbidity. In the winter of 1968-69 there were no peaks of pollution and no peaks of mortality or morbidity.

Dr Martin emphasized that this work was on the acute effects of air pollution. There

was no doubt that polluted urban air played a part in the causation of chronic bronchitis but there was no conclusive proof that there is a direct association with lung cancer. There were too many confusing factors such as delay and the different patterns of rural and urban smoking.

Dr Martin then turned to the part played by motor vehicles. Here the main contaminants were carbon monoxide and lead. In Fleet St it had been shown that there was a definite rise of CO in the atmosphere during the day, producing a rise of HbCO in individuals. This was much higher in smokers than non-smokers. This could probably produce some effect on mental alertness and driving ability but this had not been proved in the tests carried out.

Lead was not only taken into the body from motor vehicle exhausts but also in the diet, drinks, and from accidental and industrial exposure: 10.5 per cent of the amount taken by mouth is absorbed. There is an intake of 10–20 microgrammes per day from air in towns and an uptake of 3–6 microG per day. It is uncertain to what extent children are more susceptible than adults but the speaker was confident that no actual harm is being done by the present level of lead in the atmosphere and food. Atmospheric fluorides were then considered. These come mainly from the burning of coal and research has been done on Bedfordshire brickworks, in iron and steel works and in potteries. The maximum possible intake, even absorbing all the fluorides which are inhaled is quite insignificant in comparison with the amount absorbed from the diet.

Dr Martin then mentioned work being done in Swansea the centre of the non-ferrous industry where there is an area of dereliction where the ground is so toxic that very few things will grow. Analysis of the trace metal content of mosses showed that lead, nickel and chromium were very heavily increased. He pointed out that the next step in research would be volumetric analysis and epidemiological research among the local population. Horse deaths had occurred due to lead and cadmium poisoning. He concluded by mentioning the controversial question as to whether we should fix a standard for air pollution and concluded that it would be misleading to attempt to define a standard for air quality.

DR STUART CARNE, FRCGP, opened the discussion by referring to the research work already being done by general practitioners in the UK. For the first time there was a method of measuring the morbidity of illness as opposed to mortality. Each doctor had a concealed asset in his practice list of patients on which he could make basic morbidity recording studies, and ascertain the level of age, sex, morbidity and nationality in his practice.

He then went on to describe the "Smog" study of the RCGP in a winter of fog followed by freeze-up, in which 100 recording doctors took part and recorded on day sheets episodes of upper and lower respiratory tract infections and whether their patients were smokers or non-smokers. Primarily it was smokers who suffered from the smog but non-smokers who got the worst of the freeze-up. Finance had been the major stumbling block in mounting a large survey. The problem of the non-consulting patient had to be considered and assessed statistically.

PROFESSOR D. B. SMITH, department of Chemistry, Reading University, raised the question as to whether the level of lead and lead alkalis in the body affected mental efficiency. He said there was a gap in our knowledge about lead. What was the lowest level of lead which would affect the body? Garage workers had the highest known level of blood lead; it was not known if morbidity studies had been made on them.

DR G. E. FRENCH of the Occupational Health Unit, Central Middlesex Hospital said there was a wide variability in the lead levels in individual patients.

DR W. O. WILLIAMS, past secretary of the research committee of the RCGP expressed his interest in the Swansea Survey and was sure that family doctors in the area, both College and non-College would have much to offer in such a survey.

MR C. D. REED, lecturer in the Department of Civil Engineering of the University of Liverpool then discussed "Waters". He was a lecturer on water supplies and on civic design. He had set up in the laboratory a scheme whereby purification practices carried on outside could be brought into the laboratory. Scale models were constructed and the efficiency or otherwise of the plants which could be imitated were assessed. A survey of drinking waters from the 50 largest towns was carried out and the water analysed. It was found to be contaminated with herbicides, pesticides and insecticides as well as detergents and normal

contaminants. He listed six insufficiencies in the present approach to the problem of water pollution.

1. Insufficient guidance from Central Government
2. Insufficient scientific and medical research
3. Insufficient monitoring
4. Insufficient purification methods
5. Insufficient advice as to standards
6. Insufficient finance.

He ended by posing the question "How does the state of the water industry today affect the health of the population?" and maintained that there are over 60 symptoms of illness which can be attributed to the water supply. It is hoped to publish Dr Reed's paper in full at a later date.

DR D. L. CROMBIE, director of the RCGP Research Unit in Birmingham opened the discussion with some thoughts on the importance of being able to assess what was safe as opposed to dangerous. The identification of cause and effect was difficult. Identification of resultant morbidity was the problem. This would have to be based on individual observations by small groups of people and what had to be assessed was the contribution to patterns of psychiatric and neurotic ill health. Even with reasonably intensive studies we have at present no unequivocal evidence. He considered that we must approach the problem with the hypothesis that such effects are rare and that general trends of morbidity are little affected by the presence of trace elements.

In the discussion which followed Dr Martin maintained that we must relate the relative risks to the costs of obtaining pure water and that producing a separate drinking water supply was an impossible task. Dr Ffrench raised the point that we must first find out what people needed in water for their health before deciding what were contaminants.

This was followed during lunch by a demonstration of Research Methods by staff of the Research Unit of the RCGP. After lunch the chair was taken by DR W. G. TAIT, chairman, Research Committee, RCGP.

PROFESSOR H. V. WARREN, department of geology, University of British Columbia spoke on "Places". He said he spoke as a geographer and geologist mixed up in food supplies. He was interested in the range of trace elements in vegetables collected from various places—such trace elements as lead, molybdenum, cobalt copper and arsenic. He distinguished between contamination and pollution. From samples of food which people were eating geologists and geographers could define unusual areas of mineral elements. Cadmium and mercury had been found in fish in Vancouver. Vegetables had been tested grown in places as far apart as Birmingham, Liverpool, Leeds, Teesside, Vancouver and Toronto. Results had been surprising. There was more zinc in Birmingham vegetables than anywhere else. There was most cadmium, not beside a zinc mine but near a copper smelter. Some vegetables seemed to reverse the normal concentration in the earth surfaces.

He wished to know whether there was any correlation between disease levels and the levels of the various trace elements in plants. Were certain elements harmful? Animals were already dying of disease caused by arsenic and other substances. We had to look at the whole picture, of which his work on trace elements in plants was only one part.

DR ROBIN PINSENT, research adviser, RCGP opened the discussion. He gave a review of the research methods in use in general practice and of the College's involvement in the work of Professor Warren and the late Dr Allen Price. He referred to the Tamar Valley studies of the RCGP and emphasized that we had to concentrate our resources on areas where our environmental scientists tell us there can be trouble. He emphasized the need for an organization to study this problem which went beyond the boundaries of medicine or any of the other sciences. There was need for more frequent exchanges of ideas and cross fertilization across the borders. Perhaps an annual gathering such as this, devoted to trace elements, was the answer.

DR E. I. HAMILTON of the National Radiological Protection Board, Sutton, Surrey emphasized the need to establish a baseline of the concentration of trace elements in man. It followed the concentration of trace elements in the earth's crust, with some exceptions. DR R. A. YORKE, honorary secretary, Merseyside and North Wales Faculty, RCGP, said that

in a survey of five representative areas in Liverpool a high concentration of trace elements had been found. PROFESSOR MELVYN HOWE, department of geography, University of Strathclyde pointed out that vegetables are not necessarily eaten where they are grown and there is a wide variation of eating habits throughout a country. PROFESSOR BRYCE SMITH said that natural levels are not necessarily harmless and a speaker pointed out that regional and seasonal variations must be taken into account in any serious survey.

DR I. THORNTON of the department of geology, Imperial College, London who had a geochemical atlas in preparation, raised the point of molybdenum level in some samples which PROFESSOR WARREN had shown. Was there an underlying earth reason for these high molybdenum levels? Professor Warren concurred. Professor Bryce Smith asked whether Dr Hamilton could see a causal relationship between the concentration in man and the concentration in vegetables. Dr Hamilton accepted that sources of food varied in different parts of the country but data suggested there was a direct relationship. Even strangers moving into an area will take on after five years the characteristics of the mineral concentrations of their environment.

DR G. KAZANTZIS of the department of medicine, Middlesex Hospital emphasized the importance of the need for study of tissue concentrations. There was difficulty in obtaining suitable tissue and metabolism could be altered by disease or by toxicity from the minerals. A speaker from the Medical Research Council raised the question of fluorosis in cattle. The main symptom was usually lameness. There was no good correlation between the level in bone and the urine excretion, if the surface contamination was low. Dr G. I. Watson postulated a possible relationship between multiple sclerosis and lead plus an unknown factor. Multiple sclerosis had a patchy distribution with clusters of morbidity.

DR E. WILKES, MBE, Baslow, general practitioner and lecturer to the University of Sheffield then spoke on "Practices", based on his practice in the Peak District. He had discovered a cluster of multiple sclerosis cases in his practice, with an incidence of 20 cases in 4,000 patients, he tested their immediate environments for trace elements and the lead levels were found to be raised. Lettuces raised in the gardens of multiple sclerosis sufferers had higher lead levels than those grown in the gardens of normal people.

He reviewed the relationship of iodine to Derbyshire neck and showed that this condition was still evident especially in isolated areas. He described a review of his practice for goitre which he had carried out and discussed the discovered cases. He then discussed the relationship of chest disease to smoking and the effect on life expectancy and emphasized from his practice examples of the importance of observation by general practitioners. DR T. S. EIMERL, SMO, Department of Health and Social Security congratulated Dr Wilkes on his paper and described the part the DHSS could play in supporting units and individuals. He said reimbursement schemes were available for research staff and encouraged the non-medical members of the audience to co-operate with general practitioners in such studies.

Professor Warren emphasized the important rôle that conferences such as the Missouri Conference and this played in creating an appropriate climate of opinion. DR P. BURKINSHAW of the Environmental Radiation Research Unit, Leeds, wondered whether the high incidence of multiple sclerosis was related to a genetic constitution. Dr Wilkes said none of his cases were related.

DR HARGREAVES of Mawnam, nr Falmouth said that a 1930 survey and a repeat in 1951 showed that goitre had disappeared in his practice.

Dr Kazantzis postulated ways in which the RCGP could help further research into these problems. It could try and relate ill health in practice to the industrial background including anaemia in children, lead pollution, mesothelioma and asbestosis and stressed the need for the proper education of the general practitioner in this type of observation.

Dr Martin emphasized the importance of general practitioner observation and the important part that hospital laboratories could play. Dr Pinsent suggested the research possibilities of an analysis of house dust from poor and old housing, newer housing and flats. It was generally agreed that exploratory and exchange meetings such as this were valuable and should be held at intervals.

Conclusions

All forms of life modify their context. Man is a dynamic element in his own environment.

The word "Ecology" first appeared in the English language in 1873. Today less than a century later the impact of our race upon the environment has so increased in force that the world has changed in essence.

Today we have been looking at one aspect of our house-keeping, the effect of the house dust which previous generations have tried to sweep into the corners and under the carpet. With the population explosion, the carcinoma of planless urbanism, the new geological deposits of sewage and garbage, surely no creature other than man has managed to foul his nest in such a short time.

From Dr Martin we had considerable evidence that air, when polluted grossly, causes disease mortality and morbidity. On an equal analogy the contamination of water so tellingly demonstrated by Mr Reed produces mortality and morbidity as yet unknown.

As Professor Warren has said, our soil contamination produces death and disease in other animals. It is reasonable to suppose it does so also in human beings.

How are we to link cause and effect? Only by a careful ongoing and continuous study of morbidity, in the areas where contamination can definitely be proven, and by comparison of its pattern with the pattern of morbidity of the rest of the country and the world. What conditions appear to be involved? Surely respiratory diseases, psychiatric and neurotic and neurological disease, cardiovascular diseases, congenital disorders and the whole realm of oncology.

The next step must be to complement causational research with careful studies into the effect on morbidity. For this finance and governmental help is required. "Play for more than you can afford to lose, and you will learn the Game" said Winston Spencer Churchill. "And as we lengthen and elaborate the chain of technology that intervenes between us and the natural world, we forget that we become steadily more vulnerable to even the slightest failure in that chain."

PAUL B. SEARS

Correspondence

ASH

Sir,

I am writing not only as President of the Royal College of General Practitioners but as a Council member of ASH (Action on Smoking and Health Ltd.) to tell you of the progress made by this charitable organization.

You will remember that ASH was established in January 1971 on the initiative of the Royal College of Physicians, following the publication of their second Report on Smoking and Health, with the objects of uniting all bodies interested in preventing or reducing the smoking of cigarettes, of spreading information about the dangers of smoking and of carrying out research on how to help people to stop smoking.

ASH is now well established and has received initial support from the Department of Health and Social Security. It has set up a number of working committees, has held a conference and has plans for a number of important projects. It needs further support, however, both in the forms of members and of financial aid.

If your readers are sympathetic to the aims of ASH, I hope they will consider becoming members

of this association and possibly also sending a contribution to its funds. I feel it is most important to get ASH firmly established. Correspondence should be addressed to The Director General, Action on Smoking and Health Ltd., 11 St. Andrew's Place, Regent's Park, London, NW1 4LB.

G. I. WATSON.

Peaslake,
Guildford.

Oral contraception study

Sir,

Doctors who are taking part in the Oral Contraception Study of the Royal College of General Practitioners have received a news letter from the recorder, Dr Kay.

He says: "The analyses of morbidity while confirming most of the expected differences between Takers and Controls have also shown that the magnitude of these differences is less than anticipated. It is even more encouraging that no new important side effect of the Pill has emerged, although 25,000 women-years experience of the oral contraceptives is now available for analysis.