oedema, but that it will protect the patient against the known hazard of hypokalaemia associated with the use of hydrochlorothiazide.

We thank the New Zealand Medical Research Council for making it possible for one of us (R. O. F.) to participate in this trial. Spironolactone ("aldactone") was kindly supplied by Dr. C. Gantt, of G. D. Searle and Company, Chicago, and hydrochlorothiazide ("esidrex") by Dr. A. K. Pittman, of Ciba Laboratories Ltd., England. We are also indebted to Mr. D. A. Fisher for technical assistance.

REFERENCES

- August, T. J., Nelson, D. H., and Thorn, G. W. (1958). *New Engl. J. Med.*, **259**, 917, 967.
- Axelrad, B. J., Cates, J. E., Johnson, B. B., and Luetscher, J. A. (1955). *Brit. med. J.*, **1**, 196.
- Bayliss, R. I. S., Marrack, D., Pirkis, J., Rees, J. R., and Zilva, J. F. (1958). *Lancet*, **1**, 120.
- Birkenfeld, L. W., Leibman, J., O'Meara, M. P., and Edelman, I. S. (1958). *J. clin. Invest.*, **37**, 687.
- Bolté, E., Verdy, M., Marc-Aurele, J., Brouillet, J., Beauregard, P., and Genest, J. (1958). *Canad. med. Ass. J.*, **79**, 881.
- Bonsnes, R. W., and Taussky, H. H. (1945). *J. biol. Chem.*, **158**, 581.
- Buchborn, E. (1959). *Germ. med. Monthly*, **4**, 346.
- Conway, E. J. (1950). *Microdiffusion Analysis and Volumetric Error*, 3rd ed. Lockwood, London.
- Deming, Q. B., and Luetscher, J. A. (1950). *Proc. Soc. exp. Biol. (N.Y.)*, **73**, 171.
- Duncan, L. E., Liddle, G. W., and Bartter, F. C. (1956). *J. clin. Invest.*, **35**, 1299.
- Dyrenfurth, I., Stacey, C. H., Beck, J. C., and Venning, E. H. (1957). *Metabolism*, **6**, 544.
- Gantt, L., and Dyniewicz, J. M. (1959). *Clin. Res.*, **7**, 294.
- Henderson, L. J., and Palmer, W. W. (1914). *J. biol. Chem.*, **17**, 305.
- Kagawa, C. M., Cella, J. A., and Van Arman, C. G. (1957). *Science*, **126**, 1015.
- Kerr, D. N. S., Read, A. E., Haslam, R. M., and Sherlock, S. (1958). *Lancet*, **2**, 1084.
- Liddle, G. W. (1957). *Science*, **126**, 1016.
- (1958). *A.M.A. Arch. intern. Med.*, **102**, 998.
- Luetscher, J. A., and Johnson, B. B. (1954). *J. clin. Invest.*, **33**, 1441.
- Neher, R., and Wettstein, A. (1954). *Experientia (Basel)*, **10**, 456.
- — (1956). *Ibid.*, **12**, 22.
- Ross, E. J., and Bethune, J. E. (1959). *Lancet*, **1**, 127.
- Salassa, R. M., Mattox, V. R., and Power, M. H. (1958). *J. clin. Endocr.*, **18**, 787.
- Singer, B., and Wener, J. (1953). *Amer. Heart J.*, **45**, 795.
- Van Slyke, D. D., and Cullen, G. E. (1917). *J. biol. Chem.*, **30**, 289.
- and Hiller, A. (1947). *Ibid.*, **167**, 107.
- Wolff, H. P., Koczorek, Kh. R., and Buchborn, E. (1957). *Lancet*, **2**, 63.

"At the North London [Miss Buss's school], in addition to regular drill and gymnastics, there were special remedial exercises for girls with crooked spines or other disabilities. An annual medical inspection by a woman doctor was started in 1882, possibly at the instigation of Elizabeth Garrett Anderson, who had become a Governor a few years earlier. . . . The first medical inspection at the North London revealed the alarming facts that only one girl in five measured had a straight spine and three out of eleven normal sight. To take a single example, a girl of 14 'has had rickets and now has attacks of momentary stupor, especially when at all pressed to work. Will gain much from the gymnasium, but must be treated . . . as a child of eleven or twelve.' . . . There was no medical inspection at Cheltenham [Ladies' College] in Miss Beale's lifetime. . . . If a girl showed signs of strain or illness a doctor was immediately called in; but Miss Beale felt that the responsibility belonged to parents and not teachers, and she did not favour the idea of a regular medical inspection." (*How Different from Us—Miss Buss and Miss Beale*, by Josephine Kamm, Bodley Head, 1958.)

MULTIPLE SCLEROSIS

A NOTE ON SOCIAL INCIDENCE

BY

HENRY MILLER, M.D., F.R.C.P.

ALAN RIDLEY, M.B., M.R.C.P.

AND

KURT SCHAPIRA, M.B.

From the Neurological Department, Royal Victoria Infirmary, Newcastle upon Tyne

It is an impression commonly held among neurologists that patients with multiple sclerosis tend to be above the average in attractiveness and intelligence, and that there is a relative preponderance of sufferers in the higher-income groups of the population.

One of us (H.M.) must admit to a long-standing suspicion that the condition was proportionately commoner in private than in hospital practice, and was surprised at the result of subjecting this impression to numerical analysis. Amongst 2,193 consecutive new out-patients referred to this department between 1956 and mid-1959 there were 198 cases of multiple sclerosis (9%); 2,203 approximately contemporaneous private consultations yielded only 116 cases (5%). The fallacies of interpreting these figures in terms of social-class prevalence are obvious, and they do little more than confirm the notorious unreliability of "clinical impression."

A survey of multiple sclerosis in Northumberland and Durham furnished material for a more direct assessment of the social incidence of the disease. All 519 general practices in Northumberland and Durham were approached for information about the total number of patients registered in each practice and the number of established cases of multiple sclerosis among them. Information was obtained from 352 practices, covering a total of approximately 1,400,000 patients of all ages; 700 cases were reported in which a diagnosis of multiple sclerosis had been made, almost invariably after consultant reference. Personal neurological examination of these patients reduced the number of authenticated cases to 662, which gives a prevalence rate of 47 per 100,000 of the total population at risk. However, figures drawn from a population of 466,714 under the care of practitioners personally known to us for the scrupulousness with which they keep their medical records and the readiness with which they refer patients for specialist opinion yield a prevalence rate of 59 per 100,000. Any such figure is certain to be an underestimate, if only because of the delay which ensues between the appearance of the initial symptoms and the making of a firm diagnosis; but we believe that the higher figure represents a closer approximation to the true prevalence, and that there are probably no fewer than 1,100 established cases in the whole region, which has a total population of 2,262,292 (1951 census).

The patients yielded by the survey comprised 390 females and 272 males, giving a sex-distribution of 58.9% female and 41.1% male—figures closely comparable with those reported from Northern Ireland by Allison and Millar (1954), whose 644 cases comprised 56.1% females and 43.9% males.

Analysis of Material

The 271 males with multiple sclerosis in this series provide the main material for the present study, since reliable information on social-class distribution of males in Northumberland and Durham over the age of 15 is available (1951 census). We have omitted one male patient in whom the disease began before the age of 15, since such an inclusion would have no comparative validity. The Registrar-General's categorization by social class is expressed in five groups—class I, professional, etc.; class II, intermediate occupations; class III, skilled occupations; class IV, partly skilled occupations; class V, unskilled occupations. The census analysis by occupation does not, however, include the 25,409 males in the two counties who were neither "occupied" nor "retired," and most of these were at school or attending other places of higher education. We have therefore added this number to the census figure, allocating them to the Registrar-General's social classes I, II, and III in the proportions in which these classes were represented in the remainder of the population at risk.

Social classification of the patients was based on their occupation at the time of the onset of the disease, and reliable information was obtained on this score from all the patients seen. In the Table the distribution of these 271 patients among the social classes I to V is shown together with that of the male population at risk, which we take to be aged 15 and over.

The probability of this finding being due to chance is less than one in a thousand. The main contribution to this highly differential social incidence consists in the large number of observed as compared with expected cases in class I, and the obverse finding in class V.

In the case of the 388 female patients (see Table) we have taken as the basis of classification the woman's own occupation at the date of onset of the disease if she was single and working at that time, her husband's occupation if she was married, and the father's occupation in cases of single women who were never employed—for example, because of the onset of the disease. Two females in whom the disease began below the age of 15 were not included in the analysis for reasons given above. No direct information is available about the social class distribution of the female population at risk.

In this instance the highly significant differential social incidence is due to the high ratio of observed to expected cases in classes I and II and to the obverse finding in classes IV and V. Again the probability of this finding being due to chance is less than one in a thousand.

The general correspondence between the male and female patients with multiple sclerosis in the matter of class distribution, except for a marked discrepancy in relation to class IV, is shown in the Table.

Percentage Distribution by Social Class of 271 Male and 388 Female Patients with Multiple Sclerosis in Northumberland and Durham Compared with that of the Male Population at Risk and 112 Further Cases Drawn from Randomly Selected Practices of Doctors in Same Area whose Patients were Not Included in the Initial Survey

Social Class:	I	II	III	IV	V
271 male patients with multiple sclerosis . . .	5	14	56	19	6
388 female patients with multiple sclerosis . . .	4	17	63	11	5
Male population of Northumberland and Durham over 15 years . . .	2	10	53	21	13

Discussion

The figures, like most relating to multiple sclerosis, are suggestive rather than conclusive. The complete coverage of the material at our disposal would favour the validity of the class analysis, and the striking correspondence of the findings in male and female cases indicates the homogeneity of the group of patients with multiple sclerosis as a whole.

We are unimpressed by the suggestion that the relative preponderance of patients in the higher-income groups might be related to the relative hypersensitivity of such patients to neurological symptoms, and by its corollary that an appreciable number of people in classes IV and V may be the subjects of multiple sclerosis without themselves being aware of it. There is no evidence of such a differential threshold under current conditions of medical practice in the United Kingdom, nor that the wealthy seek medical attention more often than the poor.

There is, however, one outstanding weakness in our presentation so far. The 659 patients on which it is based represent a sample constituting about two-thirds of all the cases of multiple sclerosis in the population at risk, and not the total number of cases. We have studied the locations of the 167 general practices in Northumberland and Durham from whom we received no information, and we find no correlation with the differential geographical distribution of social classes within the area. Nevertheless it might be that these 167 practices covered a disproportionate number of patients in social classes IV and V and that the addition to our series of the cases of multiple sclerosis included in these practices might redress the social differential we have demonstrated.

It was thought essential to try to overcome this difficulty by analysis of a sample of patients drawn from this initially excluded population. For this purpose a financial inducement was offered to the principals of a randomly selected group of practices, self-excluded from the main survey, to notify their cases of multiple sclerosis.

Sixty-three general practitioners were approached, and it is of some interest that in 17 of these practices there were no recognized cases of multiple sclerosis: this had sometimes been the reason for the doctor's failure to reply to the original questionnaire. These 63 doctors and their partners were responsible for the medical care of 325,752 patients of all ages, and this group yielded 112 further cases in which a firm diagnosis of multiple sclerosis was established by re-examination—a prevalence rate of 34 per 100,000. Forty-three of these patients were male and 69 female (38 and 62% respectively). The percentage distribution in the five social classes of this random sample of patients was 6, 15, 59, 12, and 8 respectively and is remarkably similar to that of the other groups.

Confirmation of the above findings by similar analysis of case material drawn from other surveys—perhaps especially those which have aimed at the complete coverage of smaller populations—would furnish data demanding integration with any hypothesis dealing with the aetiology of multiple sclerosis. There are a number of "diseases of relative affluence." The higher incidence of paralytic poliomyelitis in the higher-income groups is usually attributed to the lower level of immunizing exposure to the causal virus under sheltered and sanitary living conditions, while there is considerable evidence

that the somewhat analogous social distribution of coronary thrombosis is related to the physical activity of occupation.

We are unaware of any comparable figures in the literature of multiple sclerosis, but the Registrar-General (1958) presents a social analysis of patients dying of this disease which is based on social status at the time of death. No correlation was found between multiple sclerosis and social class among men aged 20-64, but in married women of all ages and in men over 65 there was a steep mortality gradient with a relative predilection for the two highest classes. Our figures relating to social status at the onset of the disease reveal no such sex differentiation, and it has seemed to us that part of the discrepancy between the two groups of figures might be related to the social decline which is often the fate of the family when the husband is affected by the illness and may have to abandon his original occupation. If, on the other hand, it is the wife who develops multiple sclerosis there is no change in her husband's occupation and no consequent decline in her social status. A further factor may be concerned in the social gradient evident in both sexes over the age of 65; prolonged survival is almost certainly favoured by the extra care commonly associated with improved economic circumstances.

This investigation was carried out with the financial support of the North-East Multiple Sclerosis Trust and the Board of Governors of the Royal Victoria Infirmary, to both of which we are grateful. We also thank Professor J. N. Morris, of the Medical Research Council's Social Medicine Research Unit, for his helpful criticism and advice.

REFERENCES

- Allison, R. S., and Millar, J. H. D. (1954). *Ulster med. J.*, 23, Suppl. 2.
Registrar-General (1958). *Decennial Supplement, England and Wales, 1951. Occupational Mortality*, Part 2, vol. 1. H.M.S.O., London.

TEACHING OF PSYCHIATRY AT NATIONAL TAIWAN UNIVERSITY

BY

TSUNG-YI LIN, M.D.

Professor of Psychiatry, National Taiwan University

The introduction of modern psychiatry to Taiwan—a society with traditional Chinese culture and social institutions on the one hand and the transitional uneasiness arising out of rapid industrialization and modernization on the other—called for special consideration and careful planning. Psychiatry had held almost no position in medicine and public health in the 50 years since the introduction of modern medicine; this was regretted, but was regarded as not entirely a disadvantage at the inception of a mental health programme, because there would be no need to revise or abolish obsolete or undesirable practices and regulations, or to retrain the personnel.

As a first step, census surveys of a sample population in three communities—rural, small town, and urban—were carried out from 1946 to 1948; they yielded a clear picture of the prevalence of mental disorder and its relationship to social factors (Lin, 1953). This became the basis of the mental health programme.

Given the lack of trained psychiatric personnel of any category, the magnitude of mental health problems revealed by the surveys constituted a special challenge when it came to formulating and implementing a long-term programme. To this end an intensification of the undergraduate teaching of psychiatry was designed and became the central focus of the activities of the Department of Neurology and Psychiatry of the National Taiwan University Medical College in the first ten years of its establishment.

The reasons for this decision were: (a) The training of specialized personnel alone never catches up with the needs of the community. Properly trained general physicians should be able to handle mild psychiatric problems. (b) Since the surveys revealed that over 95% of patients lived at home, one questions the wisdom of erecting gigantic mental hospitals as the major policy of the mental health programme. Home care and rehabilitation programmes should be the main emphasis, and therefore local practitioners should be trained in this respect. (c) The public health services which were originally developed for combating organic, especially communicable, diseases should be regarded as prospective resources for community mental health programmes. (d) For the sound development of psychiatry as a specialty in medicine, the attraction of young, intelligent, and properly motivated graduates is essential.

In summary, instead of concentrating on training specialists to meet the psychiatric problems, emphasis was to be laid upon the integration of psychiatry into the medical curriculum for training medical students in understanding and forwarding the mental health programme.

The character of the medical curriculum is difficult to change, particularly so when it has to do with psychiatry. It was due to a combination of the following circumstances that it was possible to remodel the teaching of psychiatry at the National Taiwan University Medical College. In 1953 and 1954 the medical curriculum of the university underwent drastic revision; to increase efficiency the "block system" of teaching was adopted, and teaching hours were redistributed in accordance with modern medical trends. The recommendations regarding psychiatry of the two advisers on medical education* came as a surprise, both to the non-psychiatric faculty and to the psychiatry department, because in the place of 64 hours of lectures on psychiatry for the whole medical curriculum 16 hours were to be given as a course in medical psychology and 14 hours for neuro-psychiatric diagnostics in preclinical years; each student was to have clerkship training for nine full weeks—a total of 300 hours in clinical psychiatry—and, moreover, half of the students were to spend six to seven weeks as interns in the final year. This intensification of psychiatric teaching was naturally regarded by the other departments as an invasion, and certainly presented a formidable task to the understaffed Department of Neurology and Psychiatry.

The timely publication of the report of the Ithaca Conference (American Psychiatric Association, 1952) made this seemingly impossible teaching load both a challenge to take its share of responsibility in medical education and an opportunity to forward the advance of psychiatry.

*Dr. H. Brown, Dean of the School of Public Health, Columbia University, and Dr. W. C. Davison, Dean of Duke University Medical School, were I.C.A. medical education consultants in Taiwan in 1953 and 1954.