classifications. But in the absence of a more clearcut relationship than we have at present between schizophrenia subtype and family history, in the absence of families in which schizophrenic illness is distributed according to Mendelian ratios, and in the absence of any established pathogenesis for the disorder it seems a retrograde step to split schizophrenia into pre-Kraepelinian disease entities corresponding to loosely defined clinical classifications. The pathway from genotype to psychiatric symptomatology is complex, and there are enough difficulties in establishing heterogeneity within diseases such as diabetes which are better understood than schizophrenia, so the odds must be stacked against the correctness of such a hypothesis. For some time to come we may not know how far we are confronted in the schizophrenias with clinical diversity in a genetic unity and how far with genetic diversity in clinical unity.

7 van Epen, J. H., Psychiatría, Neurología, Neurochirurgía, 1969, 72, 371.
9 Schultz, B., Zeitschrift für die gesamte Neurologie und Psychiatrie, 1932, 143, 175.
15 Winokur, G., et al., Journal of Nervous and Mental Disease, 1974, 159, 12.

and deepest honey pot. Partly the pressures are intellectual. The creative mathematician, nuclear physicist, cardiac surgeon, or cancer research worker from a small developing country seeks the contacts with stimulating colleagues and the research facilities that generally exist only in a large, rich, advanced nation. For many graduates, however, the explanation for their leaving home is far simpler: they need work. In the words of the American report, "pursuing illusions of prestige and other false goals hanging over from the colonial past, the less developed countries created educational systems largely for the sake of education, essentially unplanned (at least in a sufficiently rational way), and most important, unrelated to the larger goals of national development." In the 1960's the Indian census showed that 10.4% of all scientific and technical personnel were unemployed and 18.6% were employed outside the occupations for which they were trained. India is now producing 600,000 graduates a year—and current estimates suggest that jobs can be found for only half that number.

The most popular areas of study in many former colonial countries remain law and medicine, despite the surplus of unemployed graduates. Yet we constantly hear of the lack of medical services in developing countries: how can they have both a shortage and a surplus of doctors at the same time? The answer lies in the disparity between the expectations of the young graduate and the openings available to him. Modern, technologically-oriented hospitals train doctors who want to work in those hospitals, not tackle the 19th century public health programmes required in the rural areas which still contain 80% of the population of the third world. Any young doctor there leaving the city faces a prospect of a low salary, ill-equipped and understaffed hospitals and clinics, and limited chances for professional advancement; and often this prospect induces demoralization, discontent, and frustration. For many doctors the only chance of practising the sort of medicine they have been taught to esteem lies in emigration to the west.

There are signs, however, that the pattern is beginning to change. The U.S.A., Canada, Australia, and the other established importers of medical graduates from both Europe and the third world are re-examining their own policies, and their intention seems to be to reduce their numbers of medical immigrants. Developing countries are themselves realizing the futility of training doctors for export and are changing medical school curricula to give them more relevance to the needs of their own communities. More interest is being shown in the training of medical auxiliaries—for if they are selected from rural communities and given an essentially practical education they are likely to return to work in the villages. The rest of the world is beginning to learn the lessons of the Chinese system of pyramidal medical care with barefoot doctors as the lowest layer.

This trend will take some time to have any real effect on world-wide medical migration; but the British situation is likely to change very quickly in the coming few months. Next year the General Medical Council is to introduce tests of professional competence and knowledge of English for doctors wanting to enter Britain. This is likely to lead to a big fall in the numbers of doctors coming here from Asia and the Middle East; for Britain has recently been serving as a staging post where would-be emigrants acquired experience, familiarity with Western behaviour, and finally visas and the E.C.F.M.G. before setting off for North America. That era is now coming to an end, and we are likely to notice the shortage of overseas graduates in the less popular specialties.

Another change is also evident. The pace of emigration of

### Brain Drain—the Pattern Changes

Nearly 2,000 years ago the Greeks were complaining of the drain of their best brains to Alexandria and ever since international movement of scientists, doctors, and philosophers has continued to provoke emotional reactions. The U.S.A. has been aware for some time of the ill-feeling generated in developing countries and in Europe by the migration of so many graduates across the Atlantic—when Mr. Kenneth Robinson was Minister of Health in the mid '60s he protested that "he was not prepared to invest thousands of pounds sterling in a medical student only to increase the membership of the American Medical Association." With the characteristic capacity for honest self-examination that is so welcome a feature of American society, The Congress Committee on Foreign Affairs has published the report of its specialist subcommittee on Brain Drain: A Study of the Persistent Issue of International Scientific Mobility. Anyone tempted to make snap judgements about scientific migration would be wiser and less inclined to see an easy solution after reading this report.

Criticisms of the U.S.A. and Canada as voracious recipients of trained manpower have often ignored the pressures pushing scientists and doctors out of their own countries. It is not simply a matter of greedy bees being attracted to the largest

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7 van Epen, J. H., Psychiatría, Neurología, Neurochirurgía, 1969, 72, 371.
9 Schultz, B., Zeitschrift für die gesamte Neurologie und Psychiatrie, 1932, 143, 175.
15 Winokur, G., et al., Journal of Nervous and Mental Disease, 1974, 159, 12.
British graduates seems to be rising—within the last few months five university medical staff (three of them professors) who have been regular scientific advisers to the *B.M.J.* have left Britain for good, and inquiries at the B.M.A. overseas bureau are running at more than five times the level of 1973. In many branches of science, and medicine is one of them, university staff travel so widely that they are on good terms with their colleagues in most parts of the world. Via the grapevine information is available quickly and accurately about employment prospects in almost any country, and each year a few British graduates decide that their career prospects would be better in another country or they are attracted to the way of life there. For most academics and clinicians, however, the attractions have not been enough to justify transplanting themselves and their families to a foreign style of living. In contrast to the situation in India or Korea, satisfying work has been readily available in Britain.

The signs suggest that that situation has changed. The upsurge of interest in emigration is surely due to the frustrations so many doctors are meeting in their day-to-day work. Budgets have been cut back so hard, and staff are so short in many areas, that administrative problems are beginning to overshadow all else. Disputes about private practice or levels of pay are less important than the facilities available for doing a good job. Once the academic is kept from satisfaction at his bench, or the clinician from treating his patients, by financial or administrative problems they will begin to look around for a place where they can get on again with the work they enjoy.

Where is our evidence? There is very little available; but the morale of academic and hospital staff seems lower than for many years. Perhaps the glib-marchants have finally convinced the mass of the population that Europe is in a progressive decline; but for the educated, professional man his job is the central feature of his life—as the American report stresses time and again, quoting with approval Albert Camus: "Without work all life goes rotten. But when work is soulless, life stifles and dies."

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**Byssinosis: Compensation or Prevention?**

Working conditions have improved since the first three decades of the century, when a consistent excess in mortality was observed among blowing and carding room operatives, but byssinosis remains remarkably prevalent in today's textile industry. Carding engines have been fitted with exhaust systems to remove cotton trash, but with low grade cottons and higher carding speeds they are inefficient in capturing the very fine particles of vegetable dust that cause byssinosis. Recently published prevalence surveys of cotton mills processing coarse cotton, in both the U.S.A. and Britain, report that the prevalence of byssinosis (including workers with occasional Monday chest tightness) varies among carding room operatives from 20% to 50%, among spinners from 5% to 20%, among winders from 10% to 20%, and in some mills occurs among weavers as well. The Department of Health has recently announced an amendment to The National Insurance (Industrial Injuries) (Prescribed Diseases) Regulations which extends coverage for byssinosis. This was done by reducing from ten years to five the minimum period of exposure to cotton or flax dust, by extending coverage to those working in spinning, winding, and beaming processes, and by removing the condition that the "loss of faculty" be permanent, thus including those with earlier stages of the disease. The amendment is a long overdue recognition of observations reported in 1967 and, if prevalence studies in the cotton textile industry may be used as a guide, will sharply increase the number compensated from the latest available rate (1972) of 48 per year. Desirable as it may be to provide compensation for occupationally acquired disability, the danger in this amendment is that it may delude those responsible for working conditions in the textile industry that the problem is somehow being dealt with. This could not be further from the truth.

Determination of the dose-response relationship between byssinosis prevalence and fine dust concentration has provided a reasonable target for environmental control of workroom particulate levels. Because some cases may still be expected to occur at and below recommended target concentrations it is generally recognized that pre-employment examinations and medical surveillance are also required to prevent irreversible airways obstruction. Based on these data, cotton dust standards have been formulated in the U.S.A. and Britain. Neither standard is enforceable by law, though in the U.S.A. a previous threshold limit value based on total cotton dust is in effect under the Occupational Safety and Health Act. Studies of textile machine ventilation have shown that the relatively low dust levels recommended are technically feasible. The economic feasibility of installing these systems and of initiating and maintaining medical surveillance in an industry with a traditionally low profit margin remains a greater issue, yet there are no available data on the cost of adopting the recommended schemes. Is it in fact not possible to conduct an effective medical surveillance programme that would conserve manpower and prevent disease? Is the cost of improved exhaust ventilation and segregation of dusty processes so high? Clearly, elimination of vegetable dust or its detoxification at the picking or ginning stage would provide the most efficient and economical means of prevention. Three studies of the effects of washing and steaming cotton on respiratory symptoms and dust levels have been reported within the last year. Through these efforts appear to have fallen short of the mark, this approach to prevention is sound, and efforts should continue to find such a long range solution. A cleaner picking process would be an obvious step in this direction. No basic solution is, however, on the horizon.

We are therefore left with a static situation in which dust levels in most mills exceed recommended concentrations, the prevalence of respiratory symptoms among workers remains high, and the steady stream of those compensated for irreversible lung damage continues. But is compensation to be the means by which modern industrial societies should recognize and justify occupational disease and disability? Is prevention just a concept, the price of which is too high? Surely the time has come for serious inroads into prevention of byssinosis, and for the new Health and Safety Commission to recommend the application of standards for further dust control and medical surveillance.