condition known to impair the effect of the liver principle may be present. Infective processes are of particular importance in this respect. The most frequent is chronic infection of the urinary tract, which should always be excluded. Myxoedema and advanced arteriosclerosis are additional causes of an unsatisfactory response to liver.

Maintenance Treatment

When a normal blood picture has been restored the task of maintenance treatment is to preserve it. It is important to have exact criteria by which to judge normality, and the aim should be to keep the red blood cell count above 4,500,000 c.mm., the haemoglobin level above 90% (Haldane), and the mean corpuscular volume below $100 \mu^3$. Adequate control is possible only by means of regular examinations of the blood, and these should be made at least once in three months. At most clinics undertaking the treatment of pernicious anaemia a count once a month is the routine. The dosage required and the interval between injections vary with the patient; in the great majority 3-4 ml. of a refined extract or 40 μ g. of vitamin B₁₂ once a month will maintain a normal blood picture. If nervous symptoms are present it is advisable to give this quantity once a week for six months to a year. In any patient the dose should be increased if there is complaint of paraesthesia or sore tongue.

At the onset it is advisable to warn patients that they will require injections at regular intervals of a month for the rest of their days.

Complications of Liver Treatment

The only complication of parenteral injection of liver extracts is the occasional development of hypersensitivity. A small proportion of patients will complain, after a period, of collapse, sweating, vomiting, palpitation, skin rashes, or asthma immediately following an injection. When such symptoms appear parenteral injections of all liver extracts must be stopped, because hypersensitivity is seldom limited to one proprietary brand. Oral treatment with proteolysed liver or desiccated hog's stomach may be substituted. In some cases desensitization to liver extract is worth consideration; but the alternative, which will probably prove most satisfactory, is to continue with parenteral injections of vitamin B₁₂, to which no such reactions occur.

Adjuvant Treatment

It is rare to encounter patients in whom any symptoms, other than nervous, remain after effective liver treatment. The exceptions are those in whom some dyspepsia persists: in these, dilute hydrochloric acid (*B.P.*) in doses of 15-30 min. (0.9-1.8 ml.) three times a day in water or fruit juice is usually successful in relieving symptoms. Medication with iron is quite unnecessary unless a complicating iron-deficiency exists.

It should be noted that carcinoma of the stomach is at least three times as common in patients with pernicious anaemia as in the general population. The appearance of dyspeptic symptoms, loss of weight, or hypochromic anaemia should always arouse this suspicion. A radiological examination of the stomach once a year is a wise precaution.

Physiotherapy, and sometimes the assistance of the orthopaedic surgeon, will be needed in the treatment of patients with subacute combined degeneration of the spinal cord. It is usually found that symptoms and signs referable to peripheral neuritis improve rapidly, and usually vanish within two years of starting liver treatment. Damage to the cord becomes arrested, but little improvement is to be anticipated.

INCIDENCE AND TREATMENT OF NEUROSIS IN INDUSTRY

BY

T. M. LING, D.M., M.R.C.P.

Medical Director

J. A. PURSER, M.B., B.S., M.R.C.P.

Boots Lecturer in Occupational Health

AND

E. W. REES, M.R.C.S., L.R.C.P., D.P.M.

Senior Physician

Roffey Park Rehabilitation Centre, Horsham, Sussex

It is becoming increasingly recognized that psychiatric and psychosomatic conditions comprise many of the recurring and chronic forms of illness, but their occupational aspects are still insufficiently appreciated. Characteristically, these disorders incapacitate rather than kill, so that morbidity statistics should provide the basic source of information. Unfortunately, emphasis in the past has been placed on mortality rather than morbidity as a criterion of national health, so that relevant figures are lacking. This paper is designed to bring some aspects of industrial neurosis to the general notice and to suggest measures for dealing with the problem.

The incidence of neurosis among working groups of the population has been investigated from time to time by different workers. Culpin and Smith (1930) examined 1,000 people, including factory, clerical, technical, and administrative workers, by means of a planned interview and specific psychological tests. They found the incidence of nervous symptoms or emotional maladjustment was not confined to any one group, sex, or age. Approximately 16% had serious emotional difficulties and a further 20% had minor difficulties. Comparable figures were found by Halliday (1935), Bashford (1940), Collier (1943), Stocks (1945), and Wyatt (1945). Figures of the incidence of neurosis in the Services are in general conformity with these findings. More recently, Russell Fraser *et al.* (1947) carried out a survey on a sample of 3,000 male and female workers employed in 13 light and medium engineering factories situated mainly in the Birmingham region. They showed that 9.1% of the men and 13% of the women had suffered from definite and disabling neurotic illness, and a further 19% of the men and 23% of the women from minor forms of neurosis during the course of six months. Neurotic illness caused between one-quarter and one-third of all absence from work due to ill-health.

Prevention of Neurosis in Industry

Clearly the incidence of neurosis in industry is influenced by working environment, both physical and psychological, so it is essential that both doctors and industrial management should have a satisfactory understanding of these problems. Evidence of the need for training at this level is shown in a recent report of a committee set up by the Minister of Education. The suggested syllabus of training includes such subjects as personnel selection, placement, health, welfare, and safety; general psychology and psychiatry; the measurement of intelligence, attainments, and special aptitudes; social psychology, including the human factor in industrial relations, rehabilitation, individual and group morale, and the psychological basis of morale.

Stewart (1948) points out that it is not clear who is to provide teaching of this type, which is preventive work in the sphere of mental health. A beginning has been made in the resident training department at Roffey Park, where already 540 works managers and supervisors and 122 doctors have received teaching in human relations in industry in the past two years. It is to be hoped that, in the future, postgraduate departments of occupational health and social medicine will interest themselves in this important field. Psychiatry should give a lead and not leave these biological problems to be elucidated by laymen. An important field of prevention obviously lies in the factory, and this is largely a matter of the health of groups of people. In effect, the problem is not dissimilar to the situation found in the war, where, as J. R. Rees pointed out, happy ships and good regiments had a low incidence of neurosis, while unhappy ships and poor regiments engendered a sense of insecurity that led to neurotic breakdown or various forms of antisocial behaviour.

A hundred years ago this country was faced with serious epidemics of disease, a high infant mortality rate, and a high death rate among low-income groups—interrelated problems produced by rapid urbanization and industrialization. To-day the country is faced with a similar challenge in the field of mental health, and once again emphasis must be placed on prevention and public education rather than *ad hoc* treatment of the casualties.

Out-patient Departments

Since the publication of the Blacker Report in 1946 there has been a substantial increase in psychiatric clinics, an increase greatly accelerated since July, 1948. Thus in the four Metropolitan regions there are now 137 out-patient clinics, which are doing much to decrease neurotic illness. Nevertheless, in an industrialized society, whose prospects of survival as an independent power depend on national productivity, it is surprising that so few systematic attempts are made by medical schools to provide an understanding of industrial conditions for those who will be doing out-patient work. Here again Service example, with its introductory courses for all doctors, seems far ahead of civilian practice.

In-patient Treatment

As in other branches of medicine, in-patient facilities are necessary for cases needing intensive treatment, especially if this involves rehabilitation after a spell of sickness absence. A number of neurosis centres were established by the Services during the war, with the emphasis on early return to duty where possible and making full use of various social techniques in addition to individual treatment. Comparable facilities for industrial neurosis cases were non-existent before the war and are still much below current needs.

For the long-standing unemployed case, a 100-bed in-patient unit was established at Sutton Neurosis Centre in 1947, and is dealing with a difficult problem with vision and courage. Selected patients go out to part-time work in neighbouring factories and shops, thus helping to bridge the gap between hospital and work. Roffey Park at Horsham, with accommodation for 120 patients of either sex, provides treatment and resettlement facilities for early cases of neurosis in which employment seems a relevant factor. Special emphasis is placed on the morale-structure of the whole centre in the belief that this is an important therapeutic weapon, perhaps the best form of treatment for many psychosomatic conditions when the individuals

have become "desocialized." Neurosis is characterized by a failure to adjust to the environment, and the restoration of this adjustment is essential for recovery. This morale-structure can be built up, given time and considerable thought, and it involves active participation by those involved. This is helped by the layout of the centre, and more particularly by the joint participation encouraged in all activities. The patients have their own elected committee and meet weekly to offer suggestions, elect representatives, and plan leisure-time activities. The daily routine includes practical occupational therapy in workshops or gardens, directed towards the welfare of the group, together with graded physical training. The whole emphasis is towards return to work, and the staff's regular contacts with industrial medical officers and personnel managers attending refresher courses give practical help in this connexion. The D.R.O. spends one day a week in the centre in co-operation with the medical staff and the industrial psychologist to secure suitable placement.

Not least of the centre's functions is the assessment of those cases unlikely to benefit from short-term treatment and advising upon their appropriate disposal. Psychotherapy is directed along eclectic lines and purposely kept at a fairly superficial level. Emphasis is placed upon the elucidation of relatively recent factors which have prevented the patient's successful adaptation to life and thus brought him under medical care. "Talking out" of problems, "counselling" techniques, and narco-analysis are extensively employed. Electric convulsion therapy, modified insulin therapy, and other physical methods of treatment are utilized where necessary. The average duration of treatment is from six to eight weeks, and this period is rarely exceeded, thereby minimizing the loss of confidence which prolonged stay in hospital may engender. On the patient's discharge the doctor referring the case receives a report in which detailed recommendations upon placement and future handling form an essential feature.

Treatment of the individual without appropriate modification of his environment is often only of transitory value, and this modification can be carried out only when there is mutual understanding between the industry and the hospital. A happy relationship has been built up over the last five years between Roffey Park and over 150 industrial organizations, and this is augmented by the fact that many of these companies send members of their staff on training courses in human relations to Roffey, where the preventive aspect of these problems is stressed.

Selection of Cases

Cases are referred by full-time industrial medical officers and by out-patient psychiatrists, and the majority of patients live in the Metropolitan hospital regions. Selection of suitable material for such treatment is highly important, but—it is necessary to be clear—selection for what? Should preference be given to the mild case that may well recover spontaneously or to the really difficult case that is a major problem to the community and that may well prove intractable? Should the skilled man with a good work record have priority over the unskilled man with a poor work record? Should apparently unemployable cases be admitted at all?

These are highly relevant problems that are shared with sanatoria and other special hospitals, and the answer involves various ethical and economic questions. It is pertinent, in these days of shortages of skilled man-power and of money, to inquire whether the individual is more important than the community. Clearly, during the war

the individual was subordinated to the community, and in the Services emphasis was placed on employability. Again, priorities change. To-day industrial medical officers state that much time is lost and man-power wasted through patients having to wait many months for admission for hernia operations which will restore the man to full working capacity, probably for life. In the hospital world hernias have a low priority, as they are non-fatal and uninteresting, which is one of the reasons for the long waiting period.

Again, should hospital doctors and social workers devote considerable time to rehabilitation and resettlement, or should they leave these biological subjects to be undertaken by the Ministry of Labour, whose staff, of necessity, lack the clinical experience for work of this type? It would appear that these medico-social problems will become of increasing importance as the Health Service settles down and economists start asking what the community is receiving in exchange for the very substantial outlay.

At Roffey Park the admission rate is approximately 900 cases a year, those being selected who present serious occupational problems in the form of obvious maladjustment or long absence from work but who appear to have fundamentally good personalities. In general, the cases referred by industrial medical officers have better basic personalities than those referred by hospital psychiatrists. This is probably because the former are more concerned about those who have a good work record. It may be of interest to compare the work record, as judged by the medical staff, of those patients coming direct from industrial medical officers with that of those from other sources.

	Industrial M.O.		Other Sources
Good work record	.. 64% (54 cases)	..	26% (111 cases)
Average work record	.. 28% (24 ")	..	46% (195 ")
Poor work record	.. 8% (7 ")	..	28% (116 ")

These differences would appear to be significant. Curran and Guttman (1943) have also emphasized the importance of a good work record as evidence of temperamental stability.

Results of Treatment

To determine accurately the end-results of treatment in medicine is never easy, and it is especially difficult in morbid disorders where the alternatives of life or death are not relevant. Ross (1936), in a series of 1,186 patients, found 45% recoveries and 25% much improved when followed up one year after discharge. Knight (1941), combining experience at the Menninger Clinic with the results of various analytic institutions, analysed a composite series of almost 1,000 cases and found that 63% of the psychoneurotics had apparently recovered or had very much improved. Slater (1943) reported an improvement rate of 60 to 70% in his cases of war neurosis. Lewis (1943) reviewed the social and economic effects of neurosis in a series of 120 soldiers discharged from the Army on account of neurotic illness and subsequently treated in a neurosis centre. He found that 15 were unemployed and that 39 were socially unsatisfactory otherwise than in their occupations.

The after-effects of treatment of cases at Roffey Park seems to be of interest and has been analysed for 1948, the postal follow-up system being used. Individual follow-up by a social worker is impracticable owing to lack of staff and to high cost. All patients who leave hospital are followed up by letter at six-monthly, yearly, and two-yearly intervals, in which they are asked to comment

on their state of health and working capacity. Adequate information was obtained regarding 512 patients, all of whom had been discharged between six and twelve months. The results were: much improved, 33.8% (173 cases); improved, 44.7% (229 cases); unimproved, 21.5% (110 cases).

It is difficult to determine occupational capacity from written replies from individual patients, therefore the follow-up reports of 85 cases which were obtained direct from full-time industrial medical officers of certain firms are of particular value. Clinically, these cases were recorded by the industrial medical officers as follows: Much improved and working full time, 54.1% (46 cases); improved and working full time, 37.7% (32 cases); unimproved or had left the company, 8.2% (7 cases).

In 28% of the cases in which follow-up inquiries were made we received no reply. Obviously some of these ex-patients are unlikely to be well, but some who are now well wish to forget their nervous illnesses and will not answer, as they desire to sever contact with the hospital. The same situation arises in connexion with the follow-up of ex-sanatoria patients. It is to be hoped that, in the future, social workers will be available to carry out personal follow-ups on random samples of all hospital populations and also survey their adjustment to work.

One of the important lessons learnt at Roffey Park is the necessity that hospital out-patient staffs, both general and psychiatric, should have a better understanding of the occupational problems of their neighbouring industries. If this understanding existed—and there is reason to believe that there is a closer link in provincial centres than in London—there would be fewer instances of requests for "light work" and other indeterminate recommendations, and there would be a better appreciation of the social responsibilities of contemporary medicine.

Summary

A review of recent trends in morbidity is given and reference is made to the interrelationships of psychosomatic conditions and the working environment.

A description of treatment and some follow-up results of 512 cases at Roffey Park are reported.

The necessity for a comprehensive preventive programme is reviewed, and it is emphasized that all doctors should have an understanding of the occupational background of their patients.

This paper would not have been possible without the co-operation of a considerable number of full-time industrial medical officers, to whom our thanks are due.

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