

airways in the adult cannot always be excluded by routine clinical examination or by simple spirometric tests of ventilatory capacity. In bronchitic patients with little disability it might seem unnecessary to embark on the more complex investigations needed to establish the diagnosis. But diseases of the distal airways are usually progressive and can even lead to disruption of the alveoli, especially if there is a well-developed collateral ventilation to the obstructed units of lung tissue.¹ Discovery of the peripheral lesion at an early stage could be helpful in prognosis, in the recognition of certain environmental hazards to the lung, and perhaps in preventing ultimate disability by treatment. Simpler methods are needed for the diagnosis of narrowing of the peripheral airways. Exercise may actually disguise the fault by improving the distribution of ventilation,¹¹ but rapid respirations at rest can bring to light an abnormality of function not evident during quiet breathing.¹⁰ Perhaps a practicable diagnostic test for detecting narrowing of the distal airways will eventually be evolved from measurements made at fast respiratory rates in resting patients.

- ¹ Hogg, J. C., Williams, J., Richardson, J. B., Macklem, P. T., and Thuribeck, W. M., *New England Journal of Medicine*, 1970, 282, 1283.
- ² Macklin, C. C., *Archives of Pathology*, 1936, 21, 202.
- ³ Weibel, E. R., *Morphometry of the Human Lung*. New York, Academic Press, 1963.
- ⁴ Macklem, P. T., and Mead, J., *Journal of Applied Physiology*, 1967, 22, 395.
- ⁵ Brown, R., Woolcock, A. J., Vincent, N. J., and Macklem, P. T., *Journal of Applied Physiology*, 1969, 27, 328.
- ⁶ Bates, D. V., et al., *Medical Services Journal Canada*, 1966, 22, 5.
- ⁷ Anthonisen, N. R., Bass, H., Oriol, A., Place, R. E. G., and Bates, D. V., *Clinical Science*, 1968, 35, 495.
- ⁸ Gaziano, D., Seaton, A., and Ogilvie, C., *British Medical Journal*, 1970, 2, 330.
- ⁹ Levine, G., Housley, E., MacLeod, P., and Macklem, P. T., *New England Journal of Medicine*, 1970, 282, 1277.
- ¹⁰ Woolcock, A. J., Vincent, N. J., and Macklem, P. T., *Journal of Clinical Investigation*, 1969, 48, 1097.
- ¹¹ Jones, N. L., *Clinical Science*, 1966, 31, 39.

Causalgia

"Causalgia" originally denoted a burning quality in pain.¹ Later it was used to describe a painful syndrome commonly found in wartime traumatic casualties.²⁻⁴ Though the severity of the pain may be variable, its description always includes a burning, scalding, searing, or hot quality. The cause of the distressing symptoms is usually an incomplete lesion of a peripheral nerve in an arm or leg. Causalgia can also follow injury to the plexuses. The pain may be spontaneous but may be aggravated or precipitated by touch or movement. The limb may show typical skin changes with tightness, redness, and sweating. If the pain is severe enough to prevent the full use of the limb trophic changes appear in the skin and nails, and the bones become osteoporotic.

The essential lesion in causalgia is thought to be damage to the sympathetic fibres along the nerve; possibly an abnormal synapse may develop between afferent sympathetic and afferent somatic fibres at the site of injury.⁵⁻⁷ The most effective treatment is sympathectomy or sympathetic block. Preganglionic sympathectomy is the most effective operation for the relief of the pain.²

A less well recognized form of causalgia, not so disabling but with similar pain, may be encountered in peacetime.⁸⁻⁹ Recently F. P. Wirth and R. B. Rutherford⁹ reported 32 such examples of "minor causalgia" taken from the records of the Johns Hopkins Hospital. The main symptom was again burning pain, with increased sensitivity to touch or pressure in some cases. Symptoms affected the leg in 23 and the arm in 9. The cause of the pain was variable; a nearby fracture in

10, surgery in 5, sprains in 4, crush injury in 4, and a miscellaneous variety in the remaining 9. Twenty-seven of the patients were treated by sympathectomy, while in four others sympathetic block was sufficient to give lasting relief. Twenty-four obtained relief from sympathectomy, and in most the improvement was maintained.

The difference between major and minor causalgia may be simply that of degree. Certainly when 310 subjects³ with peripheral nerve injuries were questioned closely 19% had symptoms of major causalgia and 8% had transient symptoms of minor causalgia. In another report of 160 cases¹⁰ minor causalgia occurred in 14%. The disparity between the cause and the severity of the symptoms in minor causalgia raises certain difficulties. The diagnosis may not be obvious at first, and neurological disease may be suspected. Multiple sclerosis, syringomyelia, tabes, post-herpetic neuralgia, or thalamic pain may mimic the same symptoms. The paucity of physical signs may raise the suspicion of psychoneurosis or hysteria, and any question of compensation will only complicate the problem further. However, and perhaps surprisingly, in Wirth and Rutherford's report⁹ all 6 cases of the 32 where compensation was known to have been implicated were relieved by sympathectomy. Where symptoms are suggestive and there is a possible predisposing cause such as an injury then paravertebral sympathetic block is probably the most reliable diagnostic test.

¹Mitchell, S. W., Morehouse, G. R., and Keen, W. W., *Gunshot Wounds and Other Injuries of Nerves*. Philadelphia, Lippincott, 1864.

²Rasmussen, T. B., and Freedman, H., *Journal of Neurosurgery*, 1946, 3, 165.

³Echlin, F., Owens, F. M., jun., and Wells, W. L., *Archives of Neurology and Psychiatry*, 1949, 62, 183.

⁴Porter, E. L., and Taylor, A. N., *Journal of Neurophysiology*, 1945, 8, 289.

⁵Doupe, J., Cullen, C. H., and Chance, G. Q., *Journal of Neurology and Psychiatry*, 1944, 7, 33.

⁶Barnes, R., *Medical Research Council Special Report Series*, 1954, No. 282, p. 156.

⁷White, J. C., and Sweet, W. H., *Pain and the Neurosurgeon*, p. 87. Springfield, Ill., Thomas, 1969.

⁸Homans, J., *New England Journal of Medicine*, 1940, 222, 870.

⁹Wirth, F. P., and Rutherford, R. B., *Archives of Surgery*, 1970, 100, 633.

¹⁰Nathan, P. W., *Brain*, 1947, 70, 145.

Sickness and Job Satisfaction

Sickness benefit may seem barely adequate to the off-sick breadwinner trying to maintain a family. However, the total annual cost of such benefits—now running at around £380 million—when added to estimated gross income lost to the community as a result of the more than 300 million days lost from sickness makes a sum rather larger than the annual cost of the N.H.S.

It is notoriously difficult to make realistic estimates of the cost of a particular social phenomenon, but the Office of Health Economics in its latest pamphlet *Off-Sick*¹ has attempted to do so, while at the same time assembling a useful array of information on sickness absence. The absolute level of sickness absence cannot be accurately estimated, but the official statistics do show trends from which changes in the pattern of sickness absence can be deduced. A particular omission from the figures is the non-recording of periods of three days or less, which nevertheless are common. Sickness absence, particularly short-term spells, is bound to disrupt industry. Recent strikes where a small handful of men have thrown out of work whole industries demonstrate clearly the fine equilibrium of an advanced economy. So it is not surprising that short but frequent spells off by workers or the unexpected sickness of one or two key people can have a serious effect

on a firm. Though time lost through sickness does not achieve the publicity given to time lost through strikes it accounts for perhaps 30 times as many lost days as strikes do.

Absence due to sickness is rising steadily in Britain, but this is not necessarily another symptom of our industrial malaise. The increase lags behind—thankfully for a change—that observed in some other Western industrial countries such as Holland and Sweden. The O.H.E. pamphlet suggests that the increase may be related to greater affluence and lower sickness thresholds, and possibly a greater professional and public acceptance of neuroses as respectable reasons for stopping away from work, though the rise in the diagnosis of neuroses is partially offset by a fall in other diseases—for instance, tuberculosis—as a cause of absence.

Job satisfaction is the factor which the O.H.E. sees as particularly significant. It is, furthermore, one that is probably more susceptible to control than individual health, childhood neuroses, or domestic circumstances, which are other relevant and obvious influences shown in recent studies. Thus, as the pamphlet suggests—and this has been referred to in these columns before²—“one of the keys to the minimization of sickness absence, particularly short-term absence, is in the hands of management.” The possibility that the incidence of unofficial strikes may also be related to dissatisfaction with work as well as with levels of pay suggests that some urgent wide-scale studies on job satisfaction are needed. They would not be easy to conduct, but if the results of unofficial strikes and of sickness absence on the country's economy are as serious as is often suggested it would be well worth the money and effort required to carry them out effectively.

The B.M.A. has consistently supported the setting up of a national occupational health service and was disappointed because the Government's establishment recently of the Employment Medical Advisory Service was seen as only a small step towards a comprehensive scheme. Obviously better co-operation between N.H.S. doctors, especially general practitioners, and occupational health doctors is urgently needed to assist the individual patient as well as the national economy. Integration of the N.H.S. should also help. Whether the large-scale expansion of individual occupational health services, with the transfer of some preventive medicine and family doctoring to the factory as suggested by the O.H.E., is a realistic solution is debatable. Apart from the special place which the general practitioner holds in medical care in Britain, a large number of people work in small firms or scattered units which could not hope to provide the facilities necessary for an effective service. Furthermore, the conurbations with their worsening commuter problems present special difficulties in the continuity of health care. The risks of overlaps and gaps in such a firm-orientated scheme, even with an integrated health service, would outweigh any advantages it might produce.

However, the O.H.E.'s pamphlet deserves to be read by doctors, management, and Government, and it should prompt some informed discussion of sickness absence. Perhaps the National Health Service itself could show the way by providing a comprehensive occupational health service for its staff, and the Civil Service, as a large and well documented work force is a ready-made guinea pig for a large-scale study of why people go off sick. The Government has a double interest in the problem as employer and because of its role in the economy. It is also well placed to take the lead in developing research and initiating pilot experiments.

Atrial Myxoma

Myxomas are the commonest cardiac tumours, accounting for about half the total. Slow-growing and benign, these gelatinous growths usually arise from the interatrial septum in the region of the fossa ovalis. In most cases they are pedunculated. They occur twice as commonly in the left atrium as in the right, slightly more often in women, and usually in the fourth, fifth, or sixth decades.

The clinical picture can mimic many diseases, but effort dyspnoea is a frequent symptom, and the patient usually gives a history of constitutional disturbance which often extends for many months previously. Features include loss of weight, fatigue, low-grade fever, joint pain, polyneuritis, anaemia, anorexia, nausea, and palpitations. Further clinical features are related to embolism or to obstruction, though both are rare in the case of right-sided tumours; it is possible that many pulmonary emboli are silent and not diagnosed. When obstruction is a feature the patient presents with a history of sudden syncopal attacks, probably caused by the pedunculated tumour moving to block blood flow through the tricuspid valve. This movement of myxomata in the right atrium has led to the use of the term “the wrecking ball,” by analogy with the iron ball used to destroy old buildings.^{1 2}

On clinical examination a patient with a right atrial myxoma has tachycardia, prominent venous pulsation in the neck, and a systolic murmur maximal to the left of the lower sternal edge, increasing during respiration and frequently not extending throughout systole. In addition there may be a soft diastolic murmur with presystolic accentuation, and a right-sided third heart sound is often present. These signs are frequently variable, and in several reported cases the intensity of the murmurs has varied between examinations.^{3 4} J. B. Hickie, H. Gibson, and H. M. Windsor² reported a widely split first heart sound in one patient; an early systolic sound, varying in intensity, heard at the lower left sternal border has been described by several authors and named “systolic tumour sound” by C. E. Martin and colleagues.³ G. Kaufmann and colleagues⁵ also noted the wide splitting of the first heart sound and considered that right and left atrial myxomas could be distinguished on the basis of the second heart sound; the two components tended to fuse when the tumour was on the right side and to be widely separated with left atrial myxoma.

Laboratory investigations show an elevated sedimentation rate and high serum globulin levels. This general disturbance has been attributed to necrosis of the tumour itself⁶ or to an autoimmune response.⁷

Electrocardiographic changes are variable and arrhythmias are uncommon. The P waves are often prominent and right bundle branch block is commonly seen. The chest radiograph often shows enlargement of the right atrium, and calcification of the tumour is sometimes a striking finding.^{8 9} Cardiac catheterization shows evidence of tricuspid incompetence, some elevation of pulmonary arterial pressure, and occasionally a small left to right shunt.¹⁰ Venous angiography is diagnostic, and G. C. Oliver and G. A. K. Missen⁸ comment that a diagnosis of Ebstein's anomaly should never be made until right atrial myxoma has been excluded by angiography.

The importance of a correct diagnosis is emphasized by the excellent results obtained from surgical excision of the tumour.^{2 7 9} Since right atrial myxomata can be completely

¹ Office of Health Economics, *Off-Sick*. London, 1971.

² *British Medical Journal*, 1970, 3, 192.