of inherited defects in amino-acid metabolism; lack of sufficient nicotinamide or pyridoxine may precipitate mental disturbance or fits, and acute porphyria can be diagnosed as "hysteria."[2] The significance of the last to our historical knowledge of George III was recently discovered by Ida Macalpine and R. Hunter.[3] The accidental discovery of new chemicals which can cause hallucinations (lysergic acid diethylamide, phencyclidine, psilocybin) has renewed interest also in mescaline and in the chemical mechanisms of hallucinogenesis.[4] The importance of the biochemical and physical approach both in the treatment of the mentally ill and in the provision of satisfactory medical education is emphasized by Dr. William Sargant in his Watson Smith lecture published in the *B.M.J.* this week (page 257).

It is true also that the biochemist of today is better equipped than the biochemist of even twenty years ago. He has a wider repertoire of subtle techniques, he can draw on the flood of new discoveries in cell chemistry, tissue metabolism, and human medical biochemistry for his hypothesis, he is more aware of clinical difficulties,[1] and above all his targets are more modest. Instead of setting out to discover the "metabolic error in schizophrenia" (which begs a good many questions straightaway, and is a very hit-or-miss programme of research) he is content to study any abnormality which shows up in psychiatric patients, whether it is the "cause" of the patient's illness or not. Thus abnormalities of magnesium metabolism have been found in alcoholism, of serum and urinary calcium in depression and some other disorders,[5] and of renal control of sodium in some patients with cyclical psychoses.[6] Such abnormalities require explanation, and the explanation is a permanent valid addition to the sum of human physiology, whether it helps psychiatrists or not.

In fact in the end it will help psychiatry. If over 70 years of psychiatric research have taught us anything it is that psychiatrists are faced with complex, difficult problems which they have been trying to solve on too narrow a basis with insufficient information. The human brain is an anatomically complex organ, its normal chemistry very obscure, its relationships with liver and endocrine glands ill understood. We are almost totally ignorant of the actions and fates of the drugs we use in treatment. We know hardly anything of the physical aspects of hunger or sleep or how body weight is regulated. We know virtually nothing about the laws controlling the behaviour of organisms with simpler nervous systems than our own—worms, spiders, insects, molluscs—by chemical means. And we do not know some of the simpler biochemical abnormalities detectable in psychiatric patients because we fail to look for them.

This is the importance of the recent work Dr. D. M. Shaw describes at page 262. It does not alter the diagnosis or treatment of a single patient or explain depression in biochemical terms. But it is widening our metabolic knowledge of these patients; it is posing metabolic problems for solution; and out of this will eventually come some of the wider knowledge which will answer the question how much chemistry can do for psychiatry. At present Dr. Shaw and Dr. A. J. Coppen are almost alone in making these studies at the clinical level, and there is plenty of scope for more research here. Alcoholism in its various aspects—addiction to the alcohol itself, delirium tremens, hallucinosis, paranoia, dementia—ought to be an instructive field in which to study the interaction of biochemical and psychological factors in the production of disorder. For instance, there is the possibility that ethanol in customary doses disturbs transport of potassium. Arteriosclerotic dementia in the elderly, who so often have impaired renal, pulmonary, or cardiac function, runs a fluctuating course which suggests a metabolic factor at work, perhaps changes in blood *p*H or electrolyte shifts. Manic-depressive patients with very frequent attacks may be almost continuously in hospital and offer opportunities for observation of abnormalities of electrolyte or aromatic amino-acid metabolism, and dietary control. Perhaps Dr. Shaw's paper will stimulate others to look beyond the daily routine, to take advantage of these opportunities, and build up some of the fundamental knowledge still lacking in psychological medicine.

[1] Kety, S. S., *Science*, 1959, **129**, 1528, 1590.
[2] Ackner, B., Cooper, J. E., Gray, C. H., and Kelly, M., *J. Psychosom. Res.*, 1962, **6**, 1.
[3] Macalpine, I., and Hunter, R., *Brit. med. J.*, 1966, **1**, 65.
[4] Ibid., 1966, **1**, 1495.
[5] Flach, F. F., *Brit. J. Psychiat*, 1964, **110**, 588.
[6] Crammer, J. L., in *Aspects of Psychiatric Research* (p. 408), ed. D. Richter, J. M. Tanner, Lord Taylor, and O. L. Zangwill, 1962. London.

Acute Non-specific Pericarditis

The fact that nineteen cases of acute non-specific pericarditis have been reported in this issue of the *B.M.J.* from one English district general hospital shows that this interesting condition is far from rare. The cases described by Dr. Anthony Martin (p. 279) are all typical examples of it, and, as usual, the patients all recovered, even though four presented with very severe chest pain and shock. The electrocardiographic changes in this form of pericarditis help to distinguish it from cardiac infarction, and other characteristic signs and symptoms were discussed in these columns last year.[1] Nevertheless, many cases are probably still wrongly diagnosed as infarcts despite characteristic E.C.G. signs and the absence of enzyme changes. Some of these patients may be placed in danger of haemopericardium if they are given anticoagulants.

A keener awareness of the possibility of acute non-specific pericarditis should reveal many more cases and may in the end lead to a fuller understanding of its causation. Virus infection undoubtedly accounts for some cases, but probably for none in the present series. R. W. Strachan[2] has listed eighteen conditions which may be associated with pericarditis, ranging from mumps to systemic lupus erythematosus, so it may well have a variety of causes, but a strong suspicion remains that there is a disease of distinct aetiology and that it may be an autoimmune condition. J. Robinson and W. W. Brigden[3] have shown that heart antibodies increase after mitral valvotomy, and that when they reach their peak the post-commissurotomy syndrome, which closely resembles acute non-specific pericarditis, will develop in some cases. The pericarditis which may follow a cardiac infarction, described by W. Dressler[4] and by C. Davidson, M. F. Oliver, and R. F. Robertson,[5] probably belongs to the same group of disorders that may follow injury to the heart. Further research is clearly indicated.

[1] *Brit. med. J.*, 1965, **2**, 60.
[2] Strachan, R. W., *Scot. med. J.*, 1963, **8**, 402.
[3] Robinson, J., and Brigden, W. W., *Brit. med. J.*, 1963, **2**, 706.
[4] Dressler, W., *Arch. intern. Med.*, 1959, **103**, 28.
[5] Davidson, C., Oliver, M. F., and Robertson, R. F., *Brit. med. J.*, 1961, **2**, 535.
[6] Liu, H. Y., and Garcia, R., *Amer. Heart J.*, 1965, **69**, 677.
[7] Krook, H., *Acta med. scand.*, 1954, **148**, 201.

It might be thought unprofitable to concentrate on a disease which has such an excellent prognosis, but it must be remembered that deaths have occurred[6] and that pericardial constriction may be a late result.[7] Moreover, it is clearly necessary for the future guidance and happiness of the patient to be able to distinguish between acute non-specific pericarditis and cardiac infarction, and it seems from Dr. Martin's quickly gathered collection either that this is not being done over the country as a whole or that a small epidemic of the disease was taking place in Orpington.

Voluntary Help

Fortunately the complementary impulses of charity and self-help have not altogether given way to limp reliance on the Welfare State. Donations are still readily given for many research purposes and to help make the lives of crippled and sick people more endurable. At the same time large numbers of people are insuring against having to rely simply on what the Health Service provides if they fall ill. In the present state of the country these would seem to be trends that need encouraging.

The latest report[1] of that old-established charity, the King Edward's Hospital Fund for London, shows what an immense amount it is doing for the improvement of the hospital services in the Greater London area. And, as the report says, "the Fund enjoys a sound working relationship with the Ministry of Health," as well as being able to "undertake projects which a Government department answerable to the Treasury might find embarrassing." Some of the grants made in 1965, the year covered by the report, are substantial—for instance, £12,000 each to the West Middlesex Hospital and the Brook Hospital, Woolwich, for the establishment of medical centres. An important purpose of such centres is to enable the hospital doctors and the general practitioners in the area to work together more closely. Altogether in the last three years the Fund has donated £90,000 for this purpose. Other gifts include £11,000 for a patients' social centre at Runwell (Psychiatric) Hospital in Essex, £10,000 to Bexley Hospital towards the cost of a rehabilitation centre in the form of a workshop, and £10,000 to Broadmoor Hospital towards the building of a hostel for patients' visitors—to mention only the largest schemes of this kind. Many other gifts ranging from under £100 to over £5,000 have been made to advance the welfare of patients, their relatives, and in some cases the nurses looking after them. In addition grants are commonly given to improve facilities for treatment.

In considering grants to make to hospitals in the Health Service the Fund looks for "an element of experiment when deciding between the merits of the many applications it receives," though sometimes they are given "to hasten essential improvements." And the report adds, "While the rate of building new hospitals remains slow, the demand for grants will grow as existing buildings age and deteriorate." Thus the Fund deserves all the support it can get at a time when public as well as private retrenchment is decreed. Moreover, in providing ideas and standards other than those of public utility it can act as a constant stimulus to the betterment of the Health Service.

[1] *Sixty-ninth Annual Report, 1965*, 1966. King Edward's Hospital Fund for London, 14 Palace Court, London W.2.

Diagnosis of Variola Minor

The mild variety of smallpox, variola minor, appeared in England this year at least as early as 18 February. It is characteristic of the disease that the correct diagnosis was first established only in April,[1] by which time, as subsequent inquiries disclosed, at least 22 people had had the disease or were still suffering from it. The man who fell ill on 18 February was a professional photographer, who helped to establish his eventual diagnosis by taking his own photograph while the rash was fully developed. Twenty-nine cases of smallpox from the west Midlands and north Staffordshire were admitted to the Birmingham regional smallpox hospital between 29 April and 29 June, when it was closed, as all the patients had been discharged and the infection had apparently been brought under control. A preliminary account of this outbreak has already been published.[2] But by this time cases had been discovered in Monmouthshire, in Salford, Lancashire, and in Solihull, Warwickshire, though none was immediately diagnosed as smallpox. In every one of these outbreaks a diagnosis of chicken-pox had to be revised after an interval of days or weeks when it became clear that the infection was really smallpox. No connexion between any of these different outbreaks has so far been established, and the sources of infection remain unknown.

Variola minor was endemic in England between 1923 and 1934[3]; nearly 15,000 cases were notified in 1927.[4] One reason for this was that the disease was so mild, comparable in severity with chicken-pox, with a mortality of less than 3 per 1,000, that it was easily and often misdiagnosed. Great care will be needed to see that it does not become endemic again. Provided the diagnosis is made in good time, spread can be effectively prevented by efficient control measures—isolation of the patient, disinfection of his home, vaccination, and surveillance of contacts.[5]

The first and most important step in the diagnosis of smallpox is to think of it as a possibility whenever one is confronted with an unusual or atypical rash—or indeed any case of chicken-pox. Some illustrations to show characteristic features of variola minor and chicken-pox are reproduced at page 288. In the patient with a well-developed rash the diagnosis is easy. If vesicular or pustular lesions are still present on the seventh or eighth day of the rash as the predominant element, with scabbing only just beginning, it can hardly be chicken-pox. But early in the course of the disease, or in the mild case with scanty rash, or in the patient whose response to infection has been modified by vaccination, the diagnosis is often far from easy, and may be impossible on clinical grounds alone. Some pointers to the diagnosis follow.

First, the prodromal illness lasts one to six days, usually two to three. Nearly all patients with variola minor report a febrile influenza-like illness, with some or all of these symptoms: headache, vomiting, pains in the limbs, backache, and shivering. Often all these symptoms are present, but the absence of one of them—for example, backache—does not exclude the diagnosis of smallpox.

Secondly, the distribution of the rash should be noted. It usually appears first on the face, sometimes on the arms or hands. Even when it is very scanty the lesions are more numerous on the head and limbs than on the trunk, the front of the trunk being especially spared. In smallpox, as opposed to chicken-pox, the axillae and popliteal spaces are said to be spared, but this is only relatively true, and pocks are often found in these sites, though less densely than on