Even when it fails to prevent headache, it may reduce the nausea and vomiting caused by ergotamine. A.C.T.H. (25 to 100 mg. by injection) has a similar effect, which is slower in onset but more durable.

4. Miscellaneous

An immense variety of measures has been claimed as beneficial for some patients. In our ignorance of the initiating mechanism in the majority of patients, it is justifiable to try them one by one if better-attested methods have failed. Such are nicotinic acid (25 to 100 mg.), antihistaminic drugs (see above), including dimenhydrinate (50–100 mg. by injection), chlorpromazine (see above), inhalation of oxygen, the injection of procaine in the neighbourhood of the most painful area, nitroglycerin (0.3 mg.), amyl nitrite inhalations, and counter-irritants applied to the scalp. It is probable that the effect of most of these measures may be ascribed to the comforting feeling that something is being done.

5. Ergotamine Tartrate

Ergot remains the most important drug in the treatment of the acute attack.

In a small proportion of cases, ergotamine tartrate tablets, 2 mg., given very early in the attack, and repeated hourly to a limit of 10 mg., may confine the attack to the phase of vasoconstriction, the relatively tolerable phase. The patient is required, and indeed prefers, to remain recumbent in a dark room, preferably alone and free from the fussing of solicitous relations. Unfortunately, the dose needed to abort the pain is too often high enough to cause toxic effects, which to many patients are more unpleasant than an untreated attack. These are nausea, vomiting, muscle cramps, an ineffable feeling of prostration, and sometimes a phobia for the drug itself. These effects may, in some patients, be prevented by the administration (if possible even before the ergotamine) of atropine, dimenhydrinate, or chlorpromazine. Prednisolone may be extremely useful, given by mouth or, if vomiting has begun, by injection, in doses of 5 mg. to 25 mg. Some patients find that dihydroergotamine, of which about double the dose of ergotamine is needed, is better tolerated. Whichever drug is used, an effort should be made to find the minimum dose which will prevent or alleviate the headache without production of side-effects.

Ergotamine tablets are the simplest but least reliable of the preparations available. In such cases, one of the available combinations with caffeine may be tried, as described above. Other patients will require rectal suppositories (2 mg. with or without caffeine), which are often more reliable and produce side-effects in fewer patients. Severe cases usually need parenteral administration, and patients should be taught how to give the injections to themselves. It is remarkable that, though no doctor would think of treating a diabetic without teaching him the technique of injecting insulin, few make the effort when migraine is the complaint. Ergotamine tartrate is supplied in ampoules of 0.25 mg. in 0.5 ml. and may be given subcutaneously by the patient or intravenously by the doctor in emergency. But, if a doctor has to be sent for, the administration is usually too late. Again, the minimal effective dose should be found by trial and error. The dose may be repeated after an hour or two, but not more than 1.5 ml. of ergotamine tartrate or 3 ml. of dihydroergotamine methanesulphonate should be given in a day.

The contraindications to the use of ergot have been given in the description of its prophylactic use. One point should be added: the over-frequent use of ergotamine has been known to increase the frequency of attacks. It should be used as rarely as possible and in the minimal effective dosage.

The very success of ergotamine treatment in a high proportion of patients has its dangers. It is all too easy for the overburdened general practitioner to teach his patient the technique and thereafter to confine his activity to the prescription of further supplies. The disorder needs close supervision if an increase in the frequency of the attacks and the onset of chronic ergot poisoning are to be avoided. Even when the general measures outlined at the beginning of this paper have failed greatly to reduce the frequency and severity of the attacks, they should never be allowed to sink into the background of the doctor's or the patient's mind. Without them drugs are merely props.

REFERENCES

- Graham, J. R. (1956). *Treatment of Migraine*. Boston.
Greene, R., and Dalton, K. (1953). *Brit. med. J.*, 1, 1007.

PERSONAL MEDICAL RECORD DISKS

BY

H. J. PARISH, M.D., F.R.C.P.Ed.

Clinical Research Director, Wellcome Research Laboratories, Beckenham, Kent

The need for a personal system of recording diseases contracted, idiosyncrasies and the like, blood group, and all preventive inoculations is often mentioned in medical literature. Such a record should ideally be carried on the person: it should be shown to the doctor on request, and in certain circumstances he should look for it. The availability of the immunization history may obviate unnecessary inoculations, and may be of assistance in making a diagnosis. The record would also ensure speedy identification in cases of accident, sudden coma, or other emergency.

Cards and Other Methods of Recording

Various record cards, commonly made of cardboard, have been issued by certain commercial firms and hospitals, but have the disadvantage that they become dirty and tattered when carried in ordinary wallets or handbags. If such cards are made of plastic material or kept in plastic envelopes (which is seldom done) they should remain clean and intact much longer, and this would be a step in the right direction. An alternative procedure to carrying the records on the person is to put them away in a safe place at home; but this has the drawback that they may not be produced quickly enough to prevent an unnecessary injection of, say, tetanus antitoxic serum (Tet/Ser) for someone who has already been fully immunized with tetanus toxoid (Tet/Vac). All aspects of the prevention of tetanus in injured persons have been discussed by Parish, Laurent, and Moynihan (1957) and by Parish (1958).

Tattooing has also been suggested, mostly facetiously, for the more important inoculations and other records, but this would certainly be impracticable for repeated entries, with dates—for example, reinforcing doses of tetanus toxoid or smallpox vaccine (Var/Vac).

If tattooing, whereby the record is permanently "fixed" to the body, is out of the question, can some system of

recording be devised which would be less likely to get separated from the patient than cards, and also be more durable? A locket containing the necessary information has sometimes been suggested (*South African Medical Journal*, 1958). Another possible solution would be a return to the old wartime identity disk, worn on a bracelet or necklace (Elias-Jones, 1958).

The Three Disk Method

The use of three thin disks (about the size of a florin) of a base metal, on a swivel, is now being investigated. These provide four inner surfaces for notes, and have the merit of being neater and stronger than a locket: a locket clasp does not have to be opened, and there are no hinges to be broken or strained. The information is engraved on the disks, and is readily accessible. There is a hole through the swivel attachment, through which a nylon or other cord or chain can be threaded, for wearing as a locket or pendant.

Fig. 1.—Disks closed.

Alternatively—as, for example, when a schoolboy does not wish to be thought effeminate—the disks can be carried (without any attachment) with a person's money in a pocket, purse, wallet, or handbag. They may also be attached for convenience to a key-ring or incorporated in a wrist bracelet. If desired, the two outer surfaces of the disks may have some ornamentation—for example, a religious emblem or the owner's initials.

The following particulars could usefully be engraved on the disks:

Face 1.—Name, address, date of birth, national insurance number. (In the event of change of address, the single disk concerned could be replaced.)

Face 2.—Blood group, including Rh (top left segment of disk); important idiosyncrasies or diseases from which he might be known to suffer, such as allergy to serum or penicillin, haemophilia, epilepsy, diabetes, porphyria (top right segment of disk); infectious and other diseases contracted, operations.

Face 3.—Injections of toxoids, vaccines, tuberculin, antisera, etc. (Records of injections of tetanus antitoxin and other antisera are obviously important.) The abbreviated titles for serological products proposed by Perry and Parish (1956) and adopted by the *British Pharmacopoeia* 1958 are convenient and readily interpreted in any part of the world. With the increasing prevalence of long-distance travel, this code-scheme should be employed on an international basis.

With regard to the recording of dates, it is considered necessary to include only the year and the month, but

not the day of the month. Thus, 57/5.5.6 would indicate two injections in May and one in June, 1957. The omission of the day leads to a considerable economy of space.

The accompanying photographs illustrate a typical record. It will be seen that only three of the four internal surfaces of the three disks have been used, and that there is still a fourth surface for subsequent records. One entry (Dip/Vac 53/8) calls for special comment. This was a reinforcing dose of diphtheria prophylactic, but the child's record card, from which the information was copied, did not specify the variety of preparation: it was probably P.T.A.P. (Dip/Vac/PTAP).

A decision has not yet been reached on the most suitable metal or other material for the manufacture of the disks. The first samples of gilded base metal were provided by Messrs. A. Walker and Son, Jewellers and Silversmiths, 31, High Street, Bromley, Kent. The engraving is very legible, and the disks are wearing well. Research is in progress on other types of metal or light plastic material, and also on other and simpler methods of engraving. At present, it is uncertain who should organize and be responsible for the transfer from cards to disks, and how often this should be done. Perhaps the onus should rest primarily on public health departments, in collaboration with the schools, although the co-operation of hospitals and private practitioners is also important. At the time of school entry, when a child first becomes separated from its parents, the need for record disks first becomes apparent.

With modern developments in photography, all personal medical records could readily and cheaply be reproduced in convenient size, as a safeguard against loss of disks or record card.

How Record Disks Would Help

In a case recorded in Canada (Toogood, 1958) a young girl developed tetanus after a wound. Tetanus antitoxin was not given prophylactically because the mother said that tetanus toxoid immunization had been carried out. "On checking on the available records it was eventually possible to establish the fact that a primary course of tetanus toxoid immunization had, in fact, been refused by the child's grandmother at a time when the child was not resident in the parents' home, and that she therefore was a non-immunized individual." Fortunately the girl recovered.

Dr. Laurent has informed me of two cases where the lack of documentary evidence of previous inoculations might have led to serious consequences. A girl of 13 was admitted to Hither Green Hospital with mild tetanus and a verbal history that she had been previously immunized with "triple vaccine." As the disease was already established, she was given tetanus antitoxin and not toxoid. It transpired later that the doctor had immunized her with diphtheria-pertussis vaccine, without any tetanus toxoid as alleged. A scar over one knee elicited a history of her having had an operation at another hospital following a street accident three years previously; the mother did not know whether or not tetanus antitoxin had been given at that time. Six days later it was confirmed that she had indeed received tetanus antitoxin. Fortunately this patient was given therapeutic tetanus antitoxin

FIG. 2.—Obverse faces of disks.

FIG. 3.—Reverse faces of disks.

intramuscularly before an intravenous dose. She made a complete recovery from the infection, but had an attack of serum sickness.

A member of the hospital domestic staff stated that she was sure that she had been vaccinated against smallpox and, as evidence of this, showed a small circular scar over one deltoid. On further inquiry, it was found that this was a scar of a B.C.G. vaccination and that she had never been vaccinated against smallpox; she thought the two procedures were the same.

These examples could easily be multiplied. Statements made by patients or relatives are of doubtful reliability, and are therefore often disregarded by the doctor, who plays for safety—for example, by giving tetanus antitoxin to accident cases that are already actively immune.

Conclusion

The record disks described are an improvement on the card system of recording essential information about immunization, etc. While some disks would certainly be lost, others would be carried on the person and have a long, effective, and useful life.

The method is adaptable. The disks can be made of many different types of material from gold to base gun-metal, or some variety of plastic. They may be worn round the neck, on a nylon cord; they may also be incorporated in a locket or a wrist bracelet; they may be carried on a key-ring, or with a person's money, either loose in the pocket or in a purse or wallet.

A mechanism whereby engraving can be done without too much inconvenience and expense is desirable, although, of course, the latest information may be recorded on duplicate record cards till a suitable opportunity for etching occurs.

My thanks are due to Dr. L. J. M. Laurent for illustrative examples of the need for records, and to Mr. E. A. Jones for the photographs.

REFERENCES

- Elias-Jones, T. F. (1958). *Lancet*, 1, 1132.
 Parish, H. J. (1958). *Antisera, Toxoids, Vaccines, and Tuberculin in Prophylaxis and Treatment*, 4th ed. Livingstone, Edinburgh and London.
 — Laurent, L. J. M., and Moynihan, N. H. (1957). *Brit. med. J.*, 1, 639.
 Perry, W. L. M., and Parish, H. J. (1956). *Ibid.*, 2, 38.
 S. Afr. med. J., 1958, 32, 720.
 Toogood, J. H. (1958). *Canad. med. Ass. J.*, 79, 772.

OEDEMA AND ITS CONTROL

[FROM A SPECIAL CORRESPONDENT]

The clinical effects of electrolyte disturbances were discussed at a conference held at the Royal College of Physicians in London on February 27 and 28. This was the second of a series of symposia arranged by the College for its members and fellows who are engaged in consulting medicine or pathology, and the proceedings of this one are soon to be published in full. Topics for discussion covered physiology of electrolytes, body "spaces" and practical techniques, factors that control electrolyte balance, and clinical conditions such as diabetic ketosis, gastro-intestinal diseases, and renal disorders, which may induce electrolyte abnormalities. The opening speakers, as the President, Professor ROBERT PLATT, pointed out, were all actively engaged in investigating the topic they introduced, and this allowed spirited discussion and from time to time healthy hypothetical speculation.

Volume Receptors

One session was devoted to oedema and its control. Professor G. M. BULL pointed out that despite its many different aetiologies the ultimate cause for the collection of excess fluid in the body was increased renal tubular activity leading to retention of sodium, chloride, and water. The osmolarity of the body fluids was largely controlled by retention or excretion of water, and this was effected by the osmoreceptors; these, when bathed by a hypertonic solution, stimulated the neurohypophysis to excrete increased amounts of antidiuretic hormone, with consequent retention of water by the kidney. Conversely, any tendency to hypotonicity was countered by diminished secretion of antidiuretic hormone and elimination of water. What still remained to be explained was the mechanism for regulating the total volume of fluid in the body, because the infusion of isotonic fluid, which had no effect on the osmoreceptors, was promptly followed by a diuresis to restore the extra-cellular volume of fluid to normal.

Professor Bull then developed his hypothesis that the control of the amount of fluid in the body was dependent on volume receptors: these, by various humoral mechanisms, such as regulating the secretion of aldosterone by the adrenal cortex and thus influencing the renal tubular reabsorption of sodium, and perhaps also by neural mechanisms, controlled the renal elimination of salt and water. The finding that sequestration of fluid in the legs by the application of cuffs to the thighs led to retention of fluid suggested that the volume receptors were located in the vascular compartment, and this was in keeping with the observation that fluid was retained when a normal subject stood up after lying down. The volume receptors did not seem to be influenced directly by the cardiac output, because oedema developed in heart failure with a high output, as occurred in pulmonary heart disease. Nor was there evidence that the volume receptors were influenced by changes in the oxygen or carbon dioxide content of the blood. There was, however, some early experimental work to suggest that the volume receptors were located in low-pressure areas of the circulation, such as the auricles, and that they were activated by pulsatile, rather than static, pressure changes.

More experimental work is needed to prove this hypothesis, which would begin to explain why the kidneys retain salt and water in such widely diverse conditions as hepatic cirrhosis, in which as a result of hypoalbuminaemia and increased portal venous pressure fluid is sequestered in the peritoneal cavity, and cardiac failure due to mitral stenosis.

Diuretics

Dr. A. G. SPENCER then discussed diuretics, and emphasized three principles governing their use. First, they provided only symptomatic treatment, and treatment of the underlying disease responsible for the oedema must not be neglected. Secondly, diuretics were effective only when renal blood flow and glomerular filtration rate were adequate. Thirdly, they might induce electrolyte disturbances.

Digitalis and theophylline exerted their diuretic effect largely by increasing the glomerular filtration rate through improvement in the cardiac output, and so providing more sodium for excretion by the tubules. Mersalyl and chlorothiazide inhibited reabsorption of sodium and chloride, and the resultant diuresis was an osmotic consequence of this. Urea induced a diuresis by osmosis without primarily influencing sodium reabsorption. Carbonic anhydrase inhibitors, such as acetazolamide, increased the excretion of bicarbonate and hence sodium and potassium, but they were self-limiting in their short-lived effect. Antagonists of aldosterone were of considerable scientific interest, but their relatively weak effect when given alone suggested that aldosterone was not so all-important in enhancing sodium retention by the renal tubules as some had supposed. Professor F. T. G. PRUNTY pointed out later that, even if not a powerful diuretic, "spiro lactone"