

Approach to the Frontal Lobe

SIR,—Dr. P. Glees's plea (Jan. 29, p. 193) for co-operation between neurosurgeon and psychiatrist could not be better illustrated than in the problem of prefrontal activity. It is fairly certain that leucotomy by the standard or orbital approach, or by any other approach, is not the final answer to the surgical treatment of mental diseases.

In all neurophysiological research the task of solving a particular problem often draws the attention and interest of many investigators, and the literature of to-day is full of their now discarded claims. A new approach is useful for giving a different line of thought, and its recognized weaknesses and dangers can only give stimulation for further research. The work of Freeman has followed on "older methods" of bilateral section and may possibly lead to further observations and experiments which will ultimately cause rejection or modification of the original. I consider that prefrontal activity can be controlled by regulation of local blood supply and that this procedure in the hands of the neurosurgeon may become the operation of choice.

Whatever method is adopted or is subsequently fashionable, the selection of patients is best left to the psychiatrist, who will have the advantage of observing them for many years afterwards. Too often the experience of the neurosurgeon is limited to the post-operative sequelae. His interest in the patients ceases with their discharge from the ward. Neither is the psychiatrist fully equipped for their accurate study, as he has no knowledge of the exact pathways that have been severed in each case. Only when we have a precise method of interrupting clearly defined pathways will he be able to give a clear interpretation of its value.—I am, etc.,

Leeds.

P. P. NEWMAN.

SIR,—The letter from Dr. P. Glees (Jan. 29, p. 193) is a welcome reminder that we must beware of a complacent attitude, developing in some places, towards the therapeutic exploitation of damage to the frontal lobe. I heartily approve his statement that the newest mode of attack is being introduced while we are still struggling to disentangle the results of present methods.

Reckless "advance" at any price, without evidence to justify it, is to be deplored, especially when it involves damaging a vital organ. "Present knowledge of the frontal lobe," he says, "does not as yet permit of advice being given to the neurosurgeon as to what he should destroy." I agree. But is knowledge all that matters? We must not only disentangle the results, we must, as doctors, disentangle the academic and theoretical from the practical and therapeutic. As Professor Alstead has very recently pointed out, "The growth of sub-departments remote from the hospital ward has favoured research which may contribute little or nothing to the immediate requirements of the sick man. Clinicians are becoming increasingly entangled in techniques."¹

If anything, Dr. Glees has understated his case. Not only are we unable to tell the neurosurgeon exactly where to cut, but he as yet, in the blind procedure, cannot be sure of cutting where we ask. More than this, however, no one dare claim to know the mechanism of the major therapeutic effect of leucotomy. It could be a shock effect. If I now suggest that so far as we can be sure at present the advantages of the approach through the orbit are ease of performance, speed, and the lack of necessity for major anaesthesia, then its trial as an *alternative* to the standard Freeman method is certainly justifiable. I think I am right in saying that there have not yet been reports of the serious physical complications which Dr. Glees lists as possible. If they occur they will be the greatest single contraindication to the new technique. On the other hand, there may be anatomical advantages (or disadvantages), but it will take some time to collect enough information to decide.

In fact, as I am sure Dr. Glees will agree, it will be very long before we know enough about the lobes even for therapeutic purposes. Meanwhile we have to doctor our patients. I think it is in selecting the patients rather than in selecting the cuts that the greatest immediate clinical advance can be made. As a primary objective I should like to see a more careful selection of those patients who will probably benefit

anyway by the blind operation, regardless of just where the cut is made. They will inevitably provide material for studying the effects of slight variations in the incision, and, more important, for even better selection of patients in the future.—I am, etc.,

Runwell, Essex.

P. MACDONALD TOW.

REFERENCE

¹ *Lancet*, 1949, 1, 171.

Mechanism of Memory

SIR,—The number of nerve cells in the human brain and spinal cord is fixed before birth. If any die as a result of injury or disease they cannot be replaced. In this respect grey matter differs from many of the other body cells which are replaced regularly. This deficiency carries obvious physiological disadvantages which have recently been thrown into high relief by the work of Knisely.¹ He has shown that during sickness capillaries tend to become choked with sluggish blood corpuscles for a period long enough to bring about the death of the cells they serve. He hints that patches of brain cells may frequently be lost in this manner.

It may be that the inability to replace brain cells accounts for the fact that the human intelligence reaches a limit of development at the age of 17 or thereabouts. It has occurred to me, however, that without this apparent handicap the evolution of man would probably have been impossible.

The mechanism of memory would seem to reside in certain brain cells which in some way must store the nervous impulses they receive from the sense organs. Now it is reasonable to suppose that if these cells were regularly replaced the impressions stored by them would be lost. In that case long-term memory would be impossible. Without memory there could hardly be coherent speech, and therefore there could be no communication of thought.

It may be, then, that the inability of man to regenerate brain cells has been essential to his evolution. This is admittedly academic speculation, but it may prove of interest to neurologists.—I am, etc.,

Farnham, Surrey.

CHAPMAN PINCHER.

REFERENCE

¹ Knisely, M. H., Bloch, E. H., Eliot, T. S., and Warner, L., *Science*, 1947, 106, 431.

Fluorides and Dental Caries

SIR,—Dr. Alexander MacGregor's letter (Jan. 1, p. 29) admirably summarizes the present position of fluorine in relation to dental caries. But his suggestion that fluorides should not be made available to the public before adequate trials have been performed has its limitations. There cannot be, as he suggests, a similar treatment for fluorides as for penicillin, because fluorides are already available to the public in certain foods and liquids of established use. It is not unreasonable, from the U.S.A. evidence available, to suppose that the proprietary preparations containing fluorides to which he refers are designed to supply about 1 milligram of fluorine a day. From the data¹⁻⁴ on the fluorine content of drinking-water and foods one can obtain an approximate estimate as to how this quantity of fluorine can be taken in a normal manner.

	Average Fluorine Content (parts per million)	Approx. Amount to Supply 1 mg.
Drinking water:		
South Shields	1.4	1.3 pints (738 ml.)
Harrogate	0.6	3 " (1.7 litres)
London (New River) ..	0.35	5 " (2.8 ")
Milk, liquid	0.15	12 " (6.8 ")
Tea, Indian	40 to 60	2-3 " (1.1-1.7 litres) of 2% infusion
Kidney	9	4 oz. (120 g.)
Tinned salmon or sardines	8	4½ oz. (135 g.)
Bone broth	90	½ oz. (15 g.)

The water supplies chosen are comparatively rich in fluorine, since over Britain as a whole there is probably more water drunk with less than 0.3 than more than 0.3 p.p.m.^{1,3} For the foods quoted there is naturally a wide variation, depending on the origin of the material (thus teas are reported to vary from 13 to 180 p.p.m.)⁴ or the method of preparation (for tea and bone broth particularly).

One must agree, therefore, with Dr. MacGregor that the marketing of tablets, etc., containing fluorine is undesirable in