PROBLEMS ARISING FROM PREFRONTAL LEUCOTOMY.*

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IN 1936 Moniz reported his first results with prefrontal leucotomy. This new treatment of mental illness was elaborated by Freeman and Watts, who published their results in 1942. Numerous papers, read at the Royal Medico-Psychological Association meeting of 1943, at the Psychiatry Section of the Royal Society of Medicine (1946) and the Report of the Board of Control (1947), set forth the indications for this operation, extol its possibility as an instrument of research, and assess the results achieved. The purpose of this paper is to consider some of the problems, as yet controversial, which await solution before the true value of leucotomy can be assessed. It is based on a survey of the relevant literature compared with the leucotomy case material (over 240 cases) of this hospital. Although some overlapping is unavoidable, the problems can be grouped under four main headings: (1) clinical; (2) neuropathological and physiological; (3) psychopathological and personality; and (4) sociological and ethical.

1. *Clinical.*

As frequently happens, a new and confusing terminology has arisen in connection with this procedure, and different authors speak of lobotomy and leucotomy. Lobotomy, as performed by Freeman and Watts (1942) in America and McKissock (1943) in this country, results in a section of four quadrants of prefrontal white matter. Leucotomy, in the words of Knight (1943), "is a division of the central core of white matter within the frontal lobes with a minimum disturbance of the cortex and sub-cortical tissues" (usually two quadrants are sectioned); but this term may well be applied to any section of the frontal white matter irrespective of its size and site.

Neurosurgeons vary in their choice of instrument. Watts uses a periosteal elevator; Crombie (1941) uses an expanding wire leucotome, for which he claims that there is less likelihood of damaging vessels; Willway (1943) employs a narrow paper knife, while Radley Smith (1946) favours a rotating blade. It follows from this lack of standardisation of technique and instruments that comparison of results of series of cases done by different surgeons is unreliable. Furthermore, the level and extent of the cut varies not only with different surgeons, but with each individual surgeon on his own case-material, as was shown by Meyer and Beck (1945). The extent and localisation of the operation is a matter of personal choice. Frank's (1946) cases were operated upon at a rostral level, whilst Dax and Radley Smith (1946) prefer a more posterior cut and use in this plane, either singly or in combination, a high, middle, and low vertical and/or a horizontal section. The variability of the cut leads to cases with similar symptomatology giving different postoperative results, and raises the question, which cases should have a more extensive brain

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damage and which a less? The problem which arises in connection with the operative technique follows from:

(*a*) Use of different instruments.
(*b*) Different extent of the cut.
(*c*) Different level of the cut, which may be due to (1) deliberate choice, (2) a natural consequence of a blind operation.

Strauss and Russell Brain (1945) have pointed out that leucotomy is directed not towards disease entities but symptoms, and as many disease entities give rise to a similar symptomatology there is a lack of homogeneity in the material selected. Accepting that certain symptoms can be relieved by leucotomy, if we could lay down certain criteria for operation such as duration of illness, age, prepsychotic personality, some measure of control of selection could be reached. As yet this is not so. Diverse views are presented as to the significance of duration of illness: some authorities (Fleming, 1943) select early cases and use leucotomy as the method of choice; others choose only cases with considerable duration (3-8 years) of illness; a third group operate only on patients who remain refractory to all previous treatments (Frank, 1946). So far as the age factor is concerned such an eminent authority as Stanley Cobb (1946) has advocated that leucotomy should be performed only on the psychoses of the latter half of life. Respecting this viewpoint, one cannot be but distressed on reading Freeman's (1947) report of repeated operations having been performed on a child of 6 years; the results of the infliction of a serious cerebral damage on a developing brain, with all that this entails, can hardly be foreseen and must raise grave doubts in the minds of conservative workers as to the wisdom of the procedure. Some authors stress the importance of good prepsychotic personality, but when chronic schizophrenics are the subjects this criterion has of necessity to be neglected.

Another clinical problem arises in the assessment of results. Some authors classify their results as good, bad or poor. Others speak of social or institutional recovery. One doubts whether either of these vague qualitative groupings that forbid standardisation will further our knowledge; the first criteria, unless defined, based on an individual subjective impression, are of limited value for scientific analysis. Presentation of cases as socially recovered demands a more detailed account of the patient's occupation and intellectual activities prior to operation, for obviously a social recovery for a builder's labourer and a professional man are two entirely different entities. Hence a report of 60 social recoveries out of 100 cases operated upon may be misleading; indeed it is questionable whether sufficient consideration has been given to what is implied in the use of the term social recovery to justify its use (vide infra). Evaluation of institutional improvement or recovery depends on the standard set by the hospital in question. Some might be content to regard a transfer from a very refractory to a less refractory ward as an institutional recovery, a result that has been less kindly referred to as changing a complaining and troublesome patient into a contented drone, whilst more exact workers would prefer to reserve the term for patients who following an operation can be moved to an open villa, granted parole and usefully employed