PAIN

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THIS book is neither a treatise nor a summary, but a collection of papers dealing with those aspects of pain on which current work is most active; a representative cross-section of contemporary research on pain. In a noninvidious sense this represents the current fashion. It may be read profitably as an extension and as the current phase of the work included in the similar volume published in 1935, rather than as a new edition of this.

The experiences which can be collectively termed painful involve many factors, and are all things to all people. To the physiologist pain is a confusing barrage of nerve impulses in an intricate plexus of nervous elements, whose individual functioning even, he is only beginning to understand. The first few chapters deal with the analysis of this mechanism for conduction and coordination of pain-inducing impulses, and with arbitrary and controllable experimental methods for inducing pain on purpose. Not through any fault of the contributors, but because nobody yet knows the answers, one finds no specific interpretation of how a pain ending works, what happens to pain impulses at the synapses of the central nervous system, nor why some impulses in some pathways induce pain, and similar impulses in other pathways induce something else. If this is rather like Hamlet without the Prince, some of the other characters do so competent a job that the deficiency is not obtrusive.

To the suffering patient, on the other hand, the unfortunate but potential reader of the book, pain is chiefly something to be gotten rid of regardless of cause or consequences. The patient is represented in this book only by proxy, his physician appearing with a scientific power of attorney. For purposes of more rational analysis than the casual experience of pain affords, the neurologist breaks the subject down into two main divisions, pain as one among many sensations, like touch or hearing, both the causation and the effects of which must be understood to be adequately dealt with, and pain as an emotional experience of the patient, for whom it is incumbent on his doctor to devise a better pain-killer. When the patient says "My back aches," he may have something wrong with his back, but the ache is certainly in his brain, and the physician must then decide whether he can fix the patient's back, or whether he will be forced to cut off more or less of the patient's head. The middle portion of the book deals with the distribution of pain sources in the body, as an essential preliminary to deciding what to do about it, and with the bodily conditions which arouse pain. Final papers discuss the psychological factors involved in painful experience and the effect of pain in turn on other body functions. More of this material would have rounded out the subject.

Although pain is properly treated as one among many sensations, in one respect it is unique, and this is the factor which determines the approach of this book. While all sensation serves to give information concerning the environment (external or internal), pain is the one sensation whose particular function it is to give warning of threatened or actual damage. Nature has accordingly made this warning effective by the special feature of tying it to a central emotional state which is unpleasant and potentially violent, and to a system of responses which are in general designed to be protective. In view of this, the proper emphasis in dealing with other sensations is on making the sensation more emphatic, or on the more effective utilization of its apparatus. With regard to pain the chief emphasis is on interference with its effectiveness. These circumstances justify the special concern of clinicians with this particular sense, but also raise the question to what extent this normal and salutary response to injury should be interfered with.

The answer which one may infer is threefold. To some extent human intelligence may take over or at least assist in the avoidance of damage without more than a minor warning of its approach, a proposition which still receives little support from the perennial and careless resort to nostrums. Certainly to a greater extent the intelligence of the physician may be relied upon to do this; to the extent at least that once the initial pang has brought the patient under his management, other methods both of estimating the damage and of dealing with it may be more effective as well as more comfortable than to let nature take its course.

The third justification for interfering with pain is that the mechanism is prone to overact, not only to a non-utilitarian extent but actually to do further damage itself. This is illustrated in the discussion of the vicious cycle of itch, whose close relation to pain is noted, where scratching the itch may not only compound the injury but often increases the itch itself. It is more acutely recognized in those chapters dealing with the harmful effects on bodily function of extreme pain, in addition to the obvious conditions where pain, having given warning of danger, further pain can do little to correct it. Perhaps it is in the latter situation that a natural enthusiasm for relieving pain might overreach itself, by removing also the incentive to pro-

tective reaction, and this constitutes the chief urgency for further investigation not only of the pain mechanism itself, but of bodily responses to it.

It is still an open question whether human understanding of pain is sufficiently advanced to justify nature in further evolution, if not toward a happy faculty for self-hypnosis, at least in the direction of atrophy of the pain sense, before her recent experiments toward the increase of intelligence have had a more extensive try-out. This might inspire caution in neurologists who can now so successfully interfere with nature, as well as in readers of their researches who might be encouraged to invoke their more drastic expedients. In most fields of endeavor, technological advances tend to outrun discretion in their employment, and one may anticipate that by the time another volume on pain appears in this series, a section will be appropriate on the results of its abolition.

The discussions which follow each discourse should not be slighted by one who would get the full intimate flavor of the book.

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SOCIETIES AND MEETINGS

THE BRITISH SOCIETY FOR FREEDOM IN SCIENCE

MANY scientists have doubtless been disturbed by the growing tendency in this country to over-emphasize the socially utilitarian aspects of science, with resulting efforts to control and regiment all scientific activity, as exemplified most strikingly perhaps in the original Kilgore Bill. This tendency toward the "totalization" of science has grown to an even greater extent in Great Britain than here and has reached such proportions that a society has recently been formed, The Society for Freedom in Science, to combat the undesirable features of this tendency. The society feels that the time has now come to give as wide publicity as possible to its objects, and to enlist active support from scientists in all free countries, and in particular is desirous of enrolling members among the scientists of this country. The following is a statement of the objects of the society issued by the Committee of the Society for Freedom in Science in May, 1944.

I

Since about 1931 there has developed in Britain a school of thought which attacks the conception of science as a search for truth and denies the right to free research directed solely to that end. Three contentions underlie this movement:

(1) Science had its origin in efforts to satisfy the material needs and desires of ordinary human life.

(2) The legitimate purpose of science is to meet these material needs and desires on an expanding scale.

(3) Scientists can not be left free to choose their own subjects of research, but must submit to central planning so that their work will be specifically devoted to the satisfaction of human material needs and desires.

In this movement pure science is actually derided and compared in value with the solution of crossword puzzles.[1]

[1] J. D. Bernal, "The Social Function of Science." (Routledge, London, 1939). The reference to crossword puzzles is on page 97.

The effect of the movement was already apparent at the Leicester meeting of the British Association in 1933. The association's new outlook was reflected in Sir Frederick Gowland Hopkins's presidential address. As he said himself, "You may feel that throughout this address I have dwelt exclusively on the material benefits of science to the neglect of its cultural value." The movement first began to become really powerful in 1936, when the economist, Sir Josiah Stamp (later Lord Stamp), gave the presidential address to the British Association at Blackpool. For some years it looked as though the case of those who believe in pure science and freedom in science would go by default, through their continued neglect to state their own point of view. Professor J. D. Bernal's book, "The Social Function of Science" (1939), became a keystone of the movement against free science, which allied itself with Marxian politics. Certain scientific journalists joined the movement and spread its propaganda. The Association of Scientific Workers adopted the movement as a part of its policy, and has worked energetically on its behalf ever since, both privately and in public. Much publicity has been given to some of the meetings of the association, and the popular press has reported its deliberations as though they represented the voice of the general body of scientists.

In 1938 the British Association founded a new division, called "The Division for the Social and International Relations of Science," in which the voices of those who are opposed to pure science and to freedom in science have been particularly prominent. At a large and much-publicized meeting held at the Royal Institution, London, in September, 1941, the new movement reached the peak of its intensity. Pure science was repeatedly derided, speaker after speaker asking sarcastically whether applied science were "impure"; and some of the speeches were political and deficient in objective argument. No one was given the opportunity to speak during the three days of the