

bushel of coal (94 pounds). This claim was disbelieved and a special trial was arranged to take place before a number of competent and impartial engineers and pitmen. When it was held on October 22 and 23, 1835, the results showed the actual duty performed by the engine to be 125,095,713 ft. lb. This is the highest performance of any Cornish pumping engine, and the most remarkable fact about it is that it was rather more than six times as great as the work done by the best of Watt's engines.

The author of the paper explains the developments which led to this striking result. Newcomen of Dartmouth, working on the ideas originated by Papin, produced his atmospheric engine—the first practicable and effective steam engine to be brought into use. In 1720 he erected at Wheal Fortune, Ludgvan, the first engine in the county of Cornwall of which there is authentic record, and its marked success proved it to be suitable for the drainage of Cornish mines. Newcomen was followed by several members of the Hornblower family, to one of whom the invention of the compound engine is due, the first engine of this type being made in 1776 at Penryn. From this time until the expiry of Watt's patent or monopoly in 1800 there was a pause, and then began a new era of progress, one of the early results being the invention by Trevithick of the Cornish boiler, the construction of which has remained unaltered to this day. Its introduction must have contributed greatly to the success of the Cornish

engines which were being installed in the mines in replacement of the much less economical Watt engines.

Doubts continued to be expressed as to the performance of the Cornish engines and one engineer "proved by theoretical principles that the highest possible duty that such engines could do was only 44,000,000". Wicksteed, principal engineer of the London Waterworks, carried out further trials and it was found that, in practice, the Cornish engines and engines were exceeding this figure by more than one hundred per cent. In addition to many other interesting details regarding these engines, the paper gives accounts of their adoption in many parts of the country and abroad, notably for the drainage of the Haarlemmer Meer in Holland. One of these engines has recently been placed in a state of preservation by the orders of the Dutch Government. Many items of special interest to engineers are touched upon, such as Trevithick's intuitive perception of the principles of thermodynamics—a subject on which in his time nothing was experimentally known. In his correspondence with Gilbert, his remarks show how far he had anticipated the principles which were definitely established by Carnot many years later. The author concludes with a plea for the support of the Committee for the Preservation of Cornish Engines so that it will be enabled to preserve for all time some of those splendid engines which still remain as monuments to the Cornish engineers.

Psychological Treatment of Crime

THE report to the Home Office on "The Psychological Treatment of Crime", by Dr. Norwood East and W. H. de B. Hubert deals with an investigation carried out over a period of four years by a retired prison medical officer and prison commissioner, and an assistant physician in the department of Psychological Medicine at St. Thomas's Hospital and psychotherapist at Wormwood Scrubs Prison*.

The selection of cases for treatment depended, in the first place, on prison medical officers, who were invited to send in reports about prisoners whom they considered suitable for psychological treatment. Such reports, together with any relevant information available, were first examined by the senior investigator, and prisoners selected by him were transferred to Wormwood Scrubs. Here each case was first studied by the senior medical officer of the prison, and then by him in consultation with the senior investigator before determining the treatment. This procedure, it is stated, was found effective and satisfactory. Nevertheless, it is possible that the inquiry might have taken a different course had a psychologist been consulted earlier. The individuals chosen were mostly those who had failed, or seemed likely to fail, to respond to ordinary discipline and training, but who yet showed willingness to co-operate with the psychotherapist; no general classification, however, determined the selection of any case, since personal factors were always given careful consideration.

No reason is given for the fact that the experiment was restricted to youths and men, though one of the investigators at least found it necessary to extend his research in one instance to a control group of women prisoners. Among their recommendations, the investigators include the appointment of a woman psychotherapist at a prison for women. Of the interesting facts that emerge in the course of the report are several that point to the need for early diagnosis and guidance; among boys sentenced to detention at a Borstal institution but deemed unlikely to benefit from their experience without previous treatment, there were a surprising number who had been sent to an institutional school on account of misbehaviour in early life. Another group of ex-Borstal boys afterwards committed to prison and recommended for treatment included a number suffering from some psychotic disorder. Prisoners subject to more or less severe symptoms of cyclothymia were often found to have committed their crimes at the time of the mood-swing. Hysteria seems to be the commonest, and obsessional behaviour the rarest, affective disorder among the prisoners.

The report as a whole emphasizes that while such treatment is not suitable for all, yet much might be done for a considerable number by psychiatric treatment and control. The most novel change recommended is the establishment of a special penal institution serving four functions: (1) a clinic and hospital for psychotherapeutic treatment, (2) a psychiatric institution for selected cases, (3) a prisoners' colony, and (4) an observation and treatment centre for difficult adolescents.

* Home Office. Report on the Psychological Treatment of Crime. By Dr. W. Norwood East and W. H. de B. Hubert. Pp. iii + 166. (London: H.M. Stationery Office, 1939.) 2s. 6d. net.