

The National Institute of Industrial Psychology.

THE tenth annual Report of the National Institute of Industrial Psychology, as we have already indicated (May 2, p. 679), shows steady development of the work of the Institute, despite the prevalent industrial depression. Among the industrial investigations undertaken by the Institute in 1930 were time studies of the various operations of machine moulding in aluminium works, which have led not only to considerable savings in time but also to improvements in the working conditions, particularly in ventilation. Similar results have attended investigations in a calico dyeing and printing works; whilst studies of packing in a chocolate works led to the design of a new bench which increased output by 10 per cent, and also to the introduction of an improved packing method. Other problems examined relate to internal transport in a cotton doubling mill, and the Institute's investigations have been responsible for improvements in the organisation of such varied types of factories as gas works, engineering works, a potted meat and fish paste factory, radio works, rubber products factory, spinning mill, wireless and cable offices, oil distribution company. During the year, investigations conducted for the railways resulted in valuable recommendations for eliminating accidents in goods shunting and for reducing pilfering and damage to goods.

A feature of the industrial investigations of the Institute during 1930 is, however, the extent to which it has been called upon to apply its experience and methods of vocational selection to the solution of problems concerning personnel. Contributions of this kind have been made in the recruitment of staff for chemical works, cleaning works, the selection of telephone operators for the G.P.O., as well as in the selection of general staff for insurance offices and retail stores. It is thus evident that the value of the research in the field of vocational guidance already carried out by the Institute is now widely recognised, and the account of the Institute's Carnegie experiment, to be published under the title of "Methods of Choosing a Career", should be assured of a wide reading.

Research work is being carried out in this field in association with the Juvenile Employment Department of the Birmingham Education Committee to determine the applicability of the Institute's methods in the Borstal institutions. The Fife Carnegie experi-

ment in vocational guidance has continued in co-operation with the Medical Department of the Fife Education Authority and with the Juvenile Advisory Committee of the Employment Exchange; whilst other members of the research staff are attempting to follow up private vocational guidance cases and to prepare occupational analyses for the use of the vocational guidance section. Some of the research on industrial psychology in progress at the Universities of Cambridge, London, Leeds, Durham (Armstrong College), Edinburgh, Glasgow, Aberdeen, and St. Andrews is itself definitely related to vocational guidance or selection. Examples are the studies of vocational guidance in the Cambridge area carried out by Mrs. Ramsay; of employment psychology at Durham, educational psychology at Leeds; on perseverance and character at King's College, London, and on the testing of printers' apprentices at Edinburgh.

The Institute of Industrial Psychology is itself responsible for research on the nature and measurement of the mental abilities involved in various types of factory assembly operations, on colour discrimination, on daily fluctuations in industrial efficiency, and on occupational prospects for boys, based on a representative group of 500 working boys, employed and unemployed. An investigation conducted by Dr. Pinard elaborated tests for perseveration which have facilitated a division of people into three and not into two classes as required by Jung's theory, and are now being applied for the selection of good leaders. A research on methods of diagnosing social ability, especially the capacity to 'handle' people, has been commenced, and investigations which have led to the elaboration of standardised tests for motor drivers have attracted a considerable amount of interest.

Not the least important feature of the Institute's work is that which it has carried out on behalf of the National Institute for the Blind (more particularly during the past year), its studies of the organisation, working methods, and conditions of various blind workshops. The interest of this work lies not so much in its remarkable effect in increasing efficiency in such workshops, but in the extent to which it assists the blind to become useful and effective members of the community and breaks down the isolation so characteristic of the blind worker.

The Microscope and the Paint Industry.

THE value of the microscope in the study of pigments is being increasingly realised by the British paint industry, also in Germany and elsewhere. It has long been known that chemical analysis alone was quite insufficient for evaluating the true properties of a pigment, but that particle size and shape are, among other things, of very great importance, especially in determining the nature and extent of the reaction, for example, between the pigment and an oil medium like linseed oil.

In a recent article in the *Farben Zeitung* (Mar. 7, 1931), Dr. A. V. Blom describes the results of an examination of red lead by a polariscope with crossed nicols. One of his principal findings was that the reactivity of the red lead with linseed oil depended not only on the size of the particles but also on their shape, and that even particles of the same form varied in this respect. He distinguished at least six different forms and conditions of particle, of which the first is smooth and crystalline, and not readily affected by linseed oil; the second is small and spherical, and the others are more or less oxidised varieties of the first or second. The most recent research in crystal growth

has shown that atoms are most active at their edges and corners; also that crystals are made up of blocks or sections separated from one another by submicroscopic channels. Surface energy is not, therefore, uniformly distributed in a crystal, but varies with its molecular density, and the critical energy increment of the surface reaction may vary considerably in one and the same crystal. In the case of red lead, linseed oil only enters into reaction where it is in direct contact with the lead oxide surface, forming lead soap or linoleate. These soap molecules also occur in many different forms, including the colloidal, in which case they would not be seen between crossed nicols.

It was found that a 100 per cent red lead from which all free lead oxide had been removed by careful and repeated extraction with ammonium acetate solution was changed quantitatively in the course of two years into non-isotropic spherical crystals if it was in contact with pure linoleic acid. In commercial red leads, all these various forms of particles are found in widely differing proportions, causing correspondingly wide differences in the qualities of the red lead.