

"level of aspiration"; dark adaptation; Rorschach scores; body build; and measures of "autonomic imbalance". A number of studies by Eysenck and his co-workers are reviewed, each of these lending support to the idea of a scientifically useful dimension of variation implied in the term neuroticism.

Passing on to discuss the relative effects of heredity and environment on neuroticism, Eysenck makes a short critical review of the use of fraternal and identical twins in this context. Although many of his criticisms may be correct, Eysenck's approach leads him to a more effective differentiation between fraternal and identical twins and this is followed by a report of a factorial study of the various dimensions of personality as shown in fraternal and identical twins together with a control group of neurotic children. The group of fraternal twins shows a higher neurotic score on the personality inventory than the identical twins and the latter also appear more inclined to lie. In general, the identical twin group appears to show a wider range of variation in mental stability than the fraternal group (as implied by the separate test scores and by the inferred factor measurements of neuroticism). Providing certain assumptions are made, it is further claimed that about 81% of the variations of neuroticism may be regarded as an inherited characteristic. This is an important conclusion for it is directly opposed to an earlier suggestion by Newman, Freeman, and Holtzinger (1937) that identical twins are not usually more alike than fraternal twins in personality characteristics. Eysenck concludes this chapter with two more "attacks". The first deals with the current fashion to over-emphasize the effects of environment. The second returns to the question of methodology by pointing out that correlation and causation must not be confused with one another and that in testing a theory one should endeavour to make deductions preferably in such a form as to decide conclusively between alternative hypotheses.

The next chapter is concerned with the psychotic dimension. Eysenck brings our knowledge of Kretschmer's position up to date, reviewing his recent contributions in this field. By giving a somewhat different group of tests to a population consisting of 100 normals, 50 manic-depressives, and 50 schizophrenics and then applying the same technique of analysis as those used previously to establish the dimension of neuroticism, the following conclusions were reached: (1) The psychotic states form a continuum with normal mental states. (2) Schizothymia-cyclothymia, put forward by Kretschmer, cannot be regarded as a separate dimension. This leads on to the development of an interesting threefold classification of mental disorders which can be illustrated by taking the average scores for the three groups either on two selected tests or on two hypothetical "tests" which "maximize" the discrimination between the groups. In this, as in the dimension of neuroticism, even if one does not accept this form of "dimensional analysis", the performance on these various tests, which significantly differentiate between the main classes of mental disorder, might serve as valuable aids to teaching some of the main objective symptoms.

Eysenck also discusses at some length the applications of dimensional analysis, drawing on a number of field studies by his colleagues. These studies are concerned with the following areas of investigation: (1) the direction of changes consequent upon pre-frontal leucotomy; (2) the employability of mental defectives; (3) work adjustment of unskilled workers; (4) selection of students and nurses; (5) sense of humour and popularity in teachers. Each of these studies warrants examination in considerably more detail than the information actually presented allows. It does not seem desirable to pick out individual conclusions from each study for presentation here.

The book concludes with a brief essay on the organization of personality, setting out, once more, Eysenck's predilection for atomism. Eysenck then returns to consider the question of personality organization. "Using our experimentally demonstrated three factors of neuroticism, psychoticism, and extraversion-introversion as three axes of a coordinate system, we can now locate a given patient in terms of his exact position within this system." In terms of this system to ask the question, "Is this person psychotic or neurotic?" is as sensible as it would be to ask, "Is this patient intelligent or tall?". Many independent dimensions of variation are necessary effectively to describe a person, and no claim is made that the present three dimensions are the only ones into which personality can be analyzed.

Eysenck ends with a discussion of some of the logical and factual difficulties in the way of rendering objective and scientific the sort of studies he has outlined. These include, above all, the difficulty of reproducing within defined limits any experimental situation. (It is this which, in the reviewer's opinion, is the main difference between the so-called exact sciences and the biological sciences, including psychology. It is a difference which demands that the scientific method must be considered in relation to a particular context.) Eysenck has also come to realize the "even slight changes in the test may produce profound changes in the results". Although conditions may be standardized, the psychological condition of the subject is less under experimental control. Nevertheless, if the evidence is accepted at its face value, the objective procedures put forward can lead to a surprising degree of precision in certain of these dimensions. The detailed analysis of the individual tests in relation to the performance of the individuals who carry them out is a task for the future. However, Eysenck believes that this task should go hand in hand with the work of establishing the main dimensions and refining the methods of measuring variation along these dimensions. So far, it is the second problem which has preoccupied Dr. Eysenck in this volume.

ROLAND HARPER

**Mule Spinners' Cancer.** Second Interim Report of the Joint Advisory Committee of the Cotton Industry. (6d. net.) Published by H.M. Stationery Office.

Mule spinners' cancer is still a problem in the spinning area of Lancashire. Although the number of mule spinners has decreased from 48,000 in 1926 to 22,000

at the present time, the number of notified cases is still more than 20 each year. To a certain extent ring spinning is replacing mule spinning, but it is the opinion of many authorities in the trade that the mule will never be superseded completely by the ring. The problem is therefore going to remain for some considerable time.

The first interim report of the Joint Advisory Committee was published in 1945. That report recommended, among other things, that oils used for the lubrication of mule spindles should conform to a specification commonly called the "Twort" specification, which was related to the specific refractivity of spindle oils, until such time as non-carcinogenic oils became available.

The present report discusses the application of technical white oils to mule spindle lubrication. These oils, which are water-white mineral oils closely related to medicinal paraffin, have been drastically refined with sulphuric acid so that all the unsaturated polycyclic hydrocarbons among which the carcinogens occur have been removed. In addition tests carried out by the Shirley Institute at the request of the Joint Advisory Committee have shown that they are just as efficient lubricants as the spindle oils normally used, and a specification for these oils has been set out based on colour and viscosity. The Committee says that although the specification may appear to some to be too simple to be effective, it is the most conclusive test of drastic refining which they have been able to accept. It is, for example, so sensitive in the range proposed that the addition of 0.5% of an ordinary spindle oil to one of these oils would bring it outside the specification. This is an improvement on the Twort specification which could be satisfied by mixing two different oils, neither of which conformed to the specification.

The Joint Standing Committee considered that the practice of blending mineral oils with fatty oils with the object of improving the lubricity of the former was not necessary, and they recommended that oils used for mule spindle lubrication should conform with the specification given above. The reason for this recommendation is that a blended oil is not capable of being tested by the method proposed. They also endorsed the recommendations in the 1945 report; first that there should be periodic medical examinations of all persons engaged in mule spinning, and second that suitable devices to prevent the splashing of oils from mule spindles should be provided.

The committee is aware that the Medical Research Council and the Institute of Petroleum are conducting a large scale investigation into the question of cancer and oil, but feel justified in making this interim recommendation until more information is available.

R. MURRAY

**Rosenau. Preventive Medicine and Hygiene.** 7th edition, edited by Kenneth F. Maxcy. (Pp. XV+ 1,462; illustrated. £5 5s.) New York: Appleton-Century-Crofts, Inc. 1951.

The last edition of Rosenau appeared in 1935. A new edition of the greatest textbook of preventive medicine is an important event especially when the new

editor is so distinguished a man as the Professor of Epidemiology at Johns Hopkins School of Hygiene. Professor Maxcy has worked with a first-rate group of collaborators and the resulting text has the distinction and the scientific qualities which one would expect from its editor and his colleagues. The book can indeed be regarded as a statement of the teaching of the Johns Hopkins School.

Most of the text has been rewritten and recast in this edition; nevertheless the broad statement which the book conveys is very much within Rosenau's original frame of reference. The editor has probably paid a price for maintaining this original framework. Rosenau's first edition in 1913 had a more revolutionary approach to the subject for its day and age than this edition has for today. In his foreword written in 1913 Rosenau remarked that "preventive medicine has become a basic factor in sociology". Yet the latest edition deals slenderly with topics of medical sociology and the implementation of policies outside the fields of infectious disease and environmental control. Only a sixth of the text is devoted to personal health services and public health organization, with practically nothing at all on medical care. Some of the landmarks of the original Rosenau are missing, and one reader at least regrets the disappearance of Rosenau's well tried teaching expedient of the sanitary survey.

It is, however, churlish to criticize the book for not being something which its editor never intended it to be. The last sections of the book are those concerned with the epidemiology and prevention of infectious diseases. We owe a debt of gratitude to Professor Maxcy for providing such a complete treatise on the epidemiology of the school of Wade Hampton Frost. The breadth of discussion and the scientific balance of the section on the communicable diseases makes it invidious to pick out any one chapter for special comment. The statement on epidemiological methodology is a classic of its kind and well supported by Densen's chapters on statistical methods. The section on food sanitation and the sanitary control of water supplies, sewage and refuse disposal are strong outlines of the policy which follows from the epidemiological teaching.

The original edition of Rosenau had 24 pages on industrial hygiene and diseases of occupation. The present edition has a section of over 100 pages with chapters on occupational diseases, the general health of the working population, work and fatigue, and policies for the promotion of industrial medicine and hygiene. This section is contributed by Dr. Anna Baetjer who is also responsible for chapters on temperature, radiation (including atomic radiation), the effects of high and low barometric pressures, noise, atmospheric pollution, and resuscitation. Dr. Baetjer gives a lucid review of the mass of contemporary American research in these fields.

The book is well produced and illustrated, meticulously indexed, and carefully referenced. Everyone who takes preventive medicine seriously should have it. But it is very expensive.





## Mule Spinners' Cancer

R. Murray

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