dimensions of personality are extroversion-introversion and emotionality-stability. The 'trait-psychology', on which this is based, seems at best dubious, at worst spurious. Nor is there any basis for the idea that 'the main personality dimension implicated in this field is extraversion-introversion'. Such an assertion could only be justified if *all other* 'dimensions' had already been investigated, which is not the case.

Dr. Ingham's contribution makes the important point that self-selection *in* and *out* of jobs may play havoc with industrial surveys of the effects of noise which fail to take account of this factor. For the rest, he notes the absence of evidence that noisy jobs cause more, or more severe, symptoms than quieter ones. His conclusions that 'we cannot exclude the possibility that some older people are more susceptible to noise', and that others 'complain of more symptoms when they work in a noisy environment' may not, however, be regarded as particularly striking.

In a way, the final paper, by Dr. C. W. Kosten, seems to be the most satisfactory in matter and presentation. He deals with a specific question, namely, annoyance due to aircraft noise near airports. He sets out the facts, examines them thoroughly, and formulates a number of helpful practical recommendations.

If anything is shared by the participants, it is the doubt whether extrapolation from laboratory to field conditions is legitimate. Some of them are pessimistic about the possibility of coping with the complex interaction of factors in an actual industrial situation.

The Proceedings should prove of interest not only to experimental psychologists, physiologists, and industrial medical officers, but also to engineers, architects, economists and regional planners. A few papers ought to be printed and made available to a wider readership.

JOHN COHEN

Protection of the Patient in X-ray Diagnosis. ICRP Publication 16. (Pp. iv + 46; £1.25.) Oxford: Pergamon Press. 1970.

This publication is a report prepared by a task group of Committee 3 of the International Commission on Radiological Protection and contains also, as appendices, relevant recommendations from the 1970 Report of ICRP Committee 3 on 'Protection against Ionizing Radiation from External Sources' and the Memorandum published by the British Institute of Radiology in 1964 on the implementation of the Second Report of the Adrian Committee on Radiological Hazards to Patients. There is also a list of 52 references.

The report fully recognizes that it is most desirable that the great and growing service to the individual and the community from medical x-ray diagnostic methods should not unnecessarily be impaired in any way because of possible radiation hazards. At the same time, however, there is need to ensure that the very real advantages of diagnostic radiology are obtained with the minimum of risk to the individual and to future generations. Available evidence suggests that, in some countries, the population exposure from diagnostic radiology could be reduced to a small fraction of present levels without any sacrifice of real benefit and without impeding the continuing development of clinical radiological practice.

The first and third chapters are concerned with the role of education in ensuring that medical personnel, and others involved in radiology, will display sound clinical judgement in determining when individual patients will really benefit from particular x-ray investigations, and will always employ the best techniques involving minimal patient exposure. Basic physical concepts and a brief consideration of the somatic and genetic risks of exposure to ionizing radiation are given in chapter 2, where it is shown that the main risks to consider in relation to diagnostic radiology are possible induction of leukaemia as a result of irradiation of the active bone marrow, long-term genetic damage to the community resulting from gonad exposure, and developmental abnormalities following excessive irradiation of the fetus in the first three months of pregnancy. Chapter 4, comprising the remaining half of the report, deals in some detail with all the technical and physical factors which can influence the magnitude and extent of patient exposure and which therefore require careful attention if that exposure is to be minimized.

This publication should be diligently studied not only by medical radiologists, hospital physicists, and senior radiographers but also by all clinical practitioners who submit their patients for x-ray investigations.

S. K. STEPHENSON

Contemporary Problems in Perception. Edited by A. T. Welford and L. Houssiadis. (Pp. 175; illustrated; £3.00.) London: Taylor and Francis. 1970.

In 1968 a NATO Advanced Study Institute was held in Greece 'to collect some of the current strands of thinking on human perception'. The present collection of papers was the result—first seeing print in the January 1970 number of the journal *Ergonomics*. The publishers have reprinted the collection in hardback form for, as they put it, 'more general circulation' (at an increase of one-third of the journal price).

Thanks to the psychological literature in the English language, many contributors are well known; others from Italy, Turkey, Greece, etc. are less so. In terms of the number of articles, the western Europe/North America ratio is 10 to 3.

There are three main groups of papers. The first deals with general approaches and theories. Welford surveys the work on perceptual selection and integration (an updated and much shortened version of his 'Fundamentals of Skill' Chapter 6); Gregory considers the role of internal models (an interesting paper this . . . but how to give the models more substantial empirical clothes?); Kabrisky and his colleagues consider the computer simulation of the 'identification game', and Vickers presents new evidence for an accumulator model of psychophysical discrimination.

The second group of papers is more specific inasmuch as they mostly report results of single experiments ranging in subject from two- and three-dimensional viewing to whiteness constancy and cross-cultural emotional expression.

The third group of papers looks at the relation between perception and action (performance?). Sanders describes

the effects of visual angle on reaction time; W. M. Smith (as opposed to, but in concord with K. U. Smith) discourses on delayed feedback effects, and Easterby considers the design principles which should underlie display symbols.

In terms of quality and standard of reporting, this is a good collection of papers. Some articles are outstanding (Vickers' for example), some others are less so. The level of excitement, however, remains rather moderate and if anyone prefers such a proposition to take on a more relative form let him consider Haber's collection of readings in 'Information-Processing Approaches to Visual Perception'.

Further, despite the claim that discussion is limited to 'perception in the full sense of the term', only visual perception is really considered. Those interested in auditory and combined sense perception will come away largely empty handed—as indeed will those committed as a primary aim to charting the progress of information on its way through the organism. Work on input buffer stores, for instance, known to be active during perception and typical of this approach, is not represented at all. This is surely a lapse as it is one of the more promising of contemporary approaches to perception and, in fact, modifies the traditional relationship between categories such as perception, memory, etc. Indeed the emergence of such new and largely interactive relationships offers perhaps the most promising solution to contemporary problems in perception.

J. B. LONG

Fitting the Task to the Man—An Ergonomic Approach. By E. Grandjean. (Pp. 161; 109 figs; £4.50.) London: Taylor and Francis. 1969.

The term 'ergonomics' was introduced to denote the ecological complex of operator, machine, and working environment. The ergonomist's job is to examine the elements of this complex system with a view to reducing fatigue and stress, increasing efficiency, maximizing output, improving wellbeing, or in short 'to fit the job to the worker'. Obviously, the ergonomist needs to understand the work situation as a whole in its total setting before he proceeds to study its components to see where improvements can be made.

Professor Grandjean's book is concerned with the dissection of the ergonomic situation. Because of the interrelationships of man, machine, and milieu, it perhaps does not matter that his book starts with a section devoted to muscle action and muscular performance and that it only belatedly gives consideration to the operational parameters of the man-machine interface. From this point on, Professor Grandjean deals systematically with the various 'links' in the situation. There is firstly the 'input' to the operator from the machine in the form of visual information displayed by dials, pointers, etc. Next he moves on to the 'output' from the operator in the form of control actions involving a wide variety of control appliances. Here the question of precision, strength, direction, etc. of movements comes under consideration, as does the posture of the operator, and

the disposition of his limbs in relation to the layout of the machine. All these components of the interface are specified in terms of desirable or optimum values of visual and auditory acuity, legibility, muscle strength, calorie cost, spatial requirements, and so on.

Professor Grandjean then goes on to consider the total working environment, particularly in relation to standards of noise, illumination, colour, and thermal comfort. But the ergonomist is not allowed to forget that optimal working arrangements are not everything. Stress is laid on the importance of training, proper sleep, diet, and a toxic-free environment, if advantage is to be taken of the ergonomically organized work situation.

While this is essentially an engineer's book, presenting desirable limits, dimensions, clearances, etc., Professor Grandjean introduces skillfully a useful amount of 'background' information relating to muscle physiology, temperature regulation, auditory and visual function, energy balance, the psychology of skill, vigilance, arousal, and fatigue.

Professor Grandjean would not claim that his book does more than introduce the basic essentials. In practice, the ergonomist has to do much more than work through a checklist. For example, he has to look at the relative costs of alternative actions and of different designs; he may need to try out mock-ups and carry out some 'field' research. Cost effectiveness is an important element in ergonomic analysis. So is system analysis, as, for example, when the ergonomist is faced with a complex chain of operators and equipment linked in a continuous process involving problems of intercommunication and feedback and the question of eliminating some of the operators in favour of automatic controls.

For the full training of the ergonomist, experience of a wide range of case studies is essential. These may range from the elaborate cockpits of airliners, control rooms of power stations, freight and parcel sorting offices, the school, and the home to the design of the microclimates of protective clothing and the handling of household utensils.

J. S. WEINER

NOTICE

René Barthe International Prize 1972

The René Barthe prize is intended to reward recent original work on industrial medicine or industrial hygiene. Papers may be submitted by authors of all nationalities.

This prize, amounting to 5,000 F, is awarded every three years during the course of the International Congress on Occupational Health organized under the auspices of the Permanent Commission and International Association on Occupational Health.

The next prize will be awarded in 1972 on the occasion of the 17th International Congress on Occupational Health.

The rules regarding the prize may be obtained from the Comité du Souvenir du Docteur René Barthe, 5, rue Alfred de Vigny, Paris 8^e, and entries should be submitted to the same address before December 15, 1971.