

relations were more readily noticed, leading to absence and symptoms of sickness.

J. E. Karlin presented a paper on telephone research, concerning the habits and complaints of telephone users and their reaction to innovations. In this field such small matters as an instrument a little heavier or lighter than usual may affect the user, and investigation of his likely reaction is attempted before large-scale changes are put in hand. Questionnaires of the 'feed-back' type have been used, but it was stated that obtaining the user's opinion alone is insufficient; observation of his behaviour is also needed. In telephone work this is made easier by the fact that most users regard everything other than the actual receiver and transmitter as a 'black box', and in this region the observer has considerable freedom to make changes. Experiments on abbreviation, by which each partner in a conversation hears only part of the other's speech yet understands what is being said, threw an interesting light on how much we really listen. In trying out new equipment, the user has to be given a fairly long period of test; immediate opinions may be reversed later.

Three papers, by R. Conrad, H. G. Maule and D. Cox, found common ground when considering the position of industrial psychology. Conrad commented on the steadily decreasing number of Industrial Health Research Board reports over a period of years, a decrease which is concurrent with the growth of the techniques of work-study practised in industry. He suggested that a return to more rigid experimental methods would benefit the psychologist in industry, and also more contact between fundamental theory and applied work. Problems in the Armed Forces have given psychologists urgent *ad hoc* questions to solve, and have diverted their attention from basic matters. In the discussion, it was suggested that industry is more interested in immediate problems; the psychologist's is a double task, to provide solutions to these and at the same time to anticipate future demands before industry is aware of them. In reminding the conference of some early work he had done on improving work-methods in laundries, Maule emphasized the point that methods are important not only as a means of getting more work done, but also in affecting the attitude of those who do it. Bad methods cause as much waste through irritation as through sheer physical loss of time and energy, he suggested, and for this reason are often resented by the worker on the job before managers are even aware of them. Arising from this the point was made in discussion that managers often try to limit the application of work-study in the interests of 'flexibility'—a euphemism, it was suggested, for 'room for manoeuvre for bad management'. Whatever the techniques of work-study, its proper application depends on the attitude of management. Cox's paper dealt with the way in which work-study as a technique has been used in industry in too mechanistic a fashion. Findings on the effects of monotony, from as far as twenty-five years back, have suggested that it can reduce output, yet work is often still organized in ways which fail to cut monotony to a minimum. There is need for more exchange between those who carry out work-study in industry and those doing research, both in providing facilities for research and in making use of results.

Sir Frederic Bartlett, in the closing address to the conference, ranged over many topics suggested by

the papers. He compared the classic physiological methods of measuring work with the less exact psychological measures, reflecting that as work is increasingly mechanized the former, dealing with gross energy outputs, will be less in demand. In physically light work involving skill or dexterity, time-and-motion study goes so far, but fails at the point where perceptual skills become important; this is a field in which research has immense possibilities. In training, too, a new approach is needed: the concept of training for a specific job is inadequate in an age where technical advances alter jobs so frequently; what is needed is training which will allow rapid adaptation to change. Adaptation to change, Sir Frederic observed, also brings one to questions of human relations; this remark, coming from so eminent a member, encourages the hope that the Ergonomics Research Society may be spurred on to regard the study of the working environment in a wide sense.

RESEARCH FILM

BULLETIN OF THE RESEARCH FILM COMMITTEE OF THE INTERNATIONAL SCIENTIFIC FILM ASSOCIATION

ALTHOUGH cinematography is increasingly used for research, those workers for whom cinematography is a prime and essential instrument remain relatively few and scattered. The bulletin of the Research Film Committee of the International Scientific Film Association should therefore fulfil a useful purpose. Called *Research Film*, it is edited by Dr. G. Wolf, director of the Göttingen Institut für Film und Bild, and by M. Jean Dragesco. Its contents are variously in English, French and German, while some of the editorial matter is in all three languages.

In the second of the three issues* published up to December 1953, Anthony R. Michaelis reviews the literature of the research film. He notes that, while there are several thousand journal articles on scientific cinematography, there are few books. He descriptively lists some of these books, and gives the results of his survey of journal publications. His figures and graphs show that scientific cinematography dates back to the beginning of cinematography, and that it has been used to a varying extent in a number of countries. There would appear, however, to have been a marked increase in its use since about 1930. In biological cinematography Germany takes a leading place, in medicine Germany and the United States, and in engineering the United States; but Dr. Michaelis's survey is not exhaustive and does not, for example, include Russian literature.

Much the greatest part of this international journal's matter consists of short articles, often illustrated, on apparatus and methods. H. E. Edgerton describes the 1- μ sec. rapatronic camera; S. W. Bowler, single-picture control devices; D. Rebikoff, underwater cinematography; and W. Bohme and J. Nauta, roentgen-cinematography. There are articles by J. Frederic, J. Dragesco, A. J. Pijper and others, and lists of the writings of the scientific cinematographers J. Comandon and Lucien Georges Bull.

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* *Research Film. Le Film de Recherche. Forschungsfilm.* No. 1, pp. 28; No. 2, pp. 40; No. 3, pp. 34. (Dr. G. Wolf, Institut für den Wissenschaftlichen Film, Göttingen.)