responsibility is increased his job may become more of a strain.

What kind of strains are imposed upon the worker? First, there is the nervous strain caused by the need of unremitting attention to signals of varying perceptability, often separated by long intervals. The less the physical activity of such a worker and the greater the number of indicators to be watched, the more the nervous tension to which he will be exposed. In these circumstances particular importance will be attached to working conditions, such as temperature, sound-proofing, lighting, and the position of the operator and the machines. By preventing the operator from communicating with others, automated work tends to isolate him both physically and mentally. This feeling of isolation may be heightened by the background noise made by the machines.

In addition to its direct effects upon the workers' mental health, automation will undoubtedly have indirect social consequences. Families may, for example, be affected by the increased mobility of labour. The most serious difficulties indirectly affecting mental health are, however, liable to arise in connexion with the organization of the work itself. If automation calls for more shift work (as appears likely), this will certainly be opposed by the workers and their families.

Automation may provide certain satisfactions; for example, in an entirely automated plant, each operator becomes more or less his own master; the gap lessens between the factory worker and the office worker, and changes of occupation in middle age should be easier.

Efforts to mitigate the harmful effects of automation on mental health should be based on information and education. Education will be all the more effective if it is directed primarily towards those in key positions, that is to say, managers, engineers, trade-union leaders and the medical profession, particularly works doctors.

EMPLOYMENT OF WOMEN IN BRITAIN

THE Institute of Personnel Management has published under the title "Working Wives" a survey of facts and opinions concerning the gainful employment of married women in Britain carried out in co-operation with Mass Observation, Ltd., by Viola Klein during the autumn months of 1957, when out of 12,820,000 married women in Great Britain nearly 4 million were gainfully employed (Occasional Papers, No. 15. Pp. 63. London: Institute of Personnel Management, 1960. 7*s*. 6*d*.). Thus, in about one out of every three households the wife contributes by her earnings to the family income, but the apparent steep rise in the employment of married women since 1951 is due to the Population Census seriously underrating the number of married women in employment, particularly part-time. The outstanding impression gained by the survey is that women's lives to-day are dominated as much as ever by their role—actual or expected—as wives and mothers, and all other occupations are subordinated to their responsibility for home and family. The growth in the number of married women going out to work is due to the smaller size of their families and the general reduction in housework through the modernization of household techniques, combined with a striving to improve their standards of living. It is not widely assumed that married women should have jobs, although among the more highly educated single women in the sample nearly one third wished to continue their careers after marriage; this is nearly double the percentage in the next occupational group of women willing to continue in employment not merely temporary. The taking up of employment by married women appears to result from unforeseen though not unforeseeable circumstances, and men appear to be less conservative in their outlook in these matters than they are usually assumed to be.

Slightly more than one half the married women in employment have part-time jobs, which may be in the region of 4–30 hr. per week. The sample also showed that two-thirds of the women in part-time employment are engaged in unskilled or semi-skilled work, and that shorthand typing is the occupation least likely to offer any scope for the married woman who wishes to supplement her income by part-time employment. In some smaller occupational groups, such as teachers, nurses, social workers, a shortage of trained staff has opened the doors to part-time employees, and though the problems involved have not yet received the attention they deserve, more opportunities may well be offered here in the future for married women to combine a career with having a family. Women, in fact, it is concluded, are an essential and distinctive part of our man-power resources.

EXPLORATIONS OF THE GALÁPAGOS ISLANDS

THE Galápagos Islands have recently attracted widespread attention as a result of the Darwin centenary and the measures at present being taken to preserve and study their flora and fauna. The Galápagos Islands have been one of the principal fields of endeavour of the California Academy of Sciences since its first expedition there during 1905–6, and its collections from the archipelago are unsurpassed. It is therefore appropriate that the Academy should publish a short history of the islands by the late Joseph Richard Slevin, for more than fifty-three years associated with its Department of Herpetology, and a member of the original expedition, who for half a century maintained an active interest in the islands and published a number of scientific and popular papers about them (Occasional Papers of the California Academy of Sciences. No. 25: The Galápagos Islands: a History of their Exploration. By Joseph Richard Slevin. Pp. x+150. San Francisco: California Academy of Sciences, 1959).

This publication gives a description of the islands, their geology, climate, and fauna, but it is mainly

concerned with their history. An immense amount of literary research has gone into it, and the author has ransacked the archives of America and Europe to bring together the information that he has skilfully welded into a fascinating account of the islands from their discovery to the present day. He has consulted the original log-books of the early explorers, official reports from naval officers of many nationalities engaged on surveying, and the letters and logs of whalers and tortoise-oil hunters. There can be few records of visits to the islands that he has not seen, and his illustrations range from reproductions of Cowley's drawings made in 1684 to photographs of many interesting nineteenth-century ships that worked there, and of living giant tortoises and of the devastation of broken carapaces left by the oil hunters. The paper concludes with a notice of all the scientific expeditions that have been at the Galápagos, sections on the giant tortoises and the preservation of the fauna, and a select bibliography. Slevin could have wished for no better monument.

L. Harrison Matthews

THE AUSTRALIAN DEFENCE STANDARDS LABORATORIES

THE annual report of the Defence Standards Laboratories of the Department of Supply, Australian Defence Scientific Service, for the year ended June 30 1959, the staff of which numbered 621 at the end of the year, compared with 637 at July 1, 1958, includes lists of senior and professional staff, papers published, and committees on which the Laboratories' staff have served*. The Laboratories, besides providing a scientific advisory service to those concerned with development, manufacture, inspecting, procurement, storage and use of defence material, have a recognized function of research, both in relation to their scientific advisory function and in advising and assisting the defence services on the development of new and improved materials, methods and equipment. The range of the Laboratories' activities may be illustrated by mentioning a few of the investigations on which some notes are given in the report.

In chemistry these include studies of the pore structure and other physical characteristics of brown coal and copra charcoals, the oxidation of phosphorus in the decomposition of cast iron by acid, determination of minute amounts of ammonia by Nessler's reagent and of small amounts of tin, and of the dyeing of textiles. In metallurgy the study of chromium and chromium base high-temperature alloys continued, as well as of the production of pure chromium, the processing, properties and structure of chromium and chromium alloys and also on titanium alloys. In physics, further experience was gained in the technique of electron spin resonance, the use of X-ray diffraction in studying the structural changes in the ageing of titanium–chromium alloys, and on the stabilization of a.c.-line voltages. A stable electric arc was developed, and further work carried out on precise load measurement and the determination of gamma-ray source strengths. Miscellaneous work included improvements in electrophotography such as improved particulate photoconductor coatings of acceptance to charge on the surface, uniformity, sensitivity and spectral response, and the study of thin selenium films for xerography.

* Commonwealth of Australia. Annual Report of the Defence Standards Laboratories for the year ended 30th June, 1959. Pp. iv+75. (Maribyrnong, Vic.: Defence Standards Laboratories, 1959.)

HETEROGENEITY OF LECITHINS LABELLED WITH PHOSPHORUS-32

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SINCE the first use of phosphorus-32 in 1937 [1] for the study of phospholipid metabolism an immense amount of work has been done using this isotope; but in every case the results have been limited by the analytical methods used to separate the very complicated mixture of naturally occurring phospholipids. In the early work, for example, lecithin was isolated as the ethanol-soluble material, but this was far from pure. In more recent years the use of chromatography on alumina[2,3] or silicic acid[2] has yielded lecithins which analysed correctly in that the molar ratio of phosphorus : choline : fatty acid plus fatty aldehyde was equal to 1 : 1 : 2. In addition mild alkaline hydrolysis[4,5] of lecithin has been shown to yield glyceryl–phosphoryl–choline, which could be isolated and purified by paper chromatography. The use of these procedures enabled the mean specific radioactivity to be determined but took no account of the possible effects of the different fatty acids and fatty aldehydes that were present. Because of the absence of methods for fractionating the lecithins it has had to be assumed that any variation between lecithins was not large enough to invalidate comparisons of the specific radioactivities between the lecithins and other phospholipids. The following experiment shows that quite large variations in specific radioactivity can exist between different lecithins.

A rat (310 gm.) was injected intravenously with 0·8 mc. of labelled sodium dihydrogen phosphate in 0·1 *M* sodium chloride and 0·001 *M* sodium dihydrogen phosphate and killed after 90 min. The liver lipids were extracted, dinitrophenylated and methylated as described by me[6], and then divided at − 18° into an acetone-soluble and an -insoluble fraction. The acetone-insoluble materials were free of dinitrophenyl-containing lipids, and countercurrent distribution (120 transfers) in carbon tetrachloride–chloroform–methylene chloride–methanol–