acceptance of the need to design school furniture to eliminate their ill effects as far as possible. This approach began to gain ground in Britain in the early 1950s as part of the application of the science of ergonomics.

Ergonomics developed when human biological knowledge was first applied to practical problems of work and performance. During the last war it first became recognized that equipment should be designed so that its operation was not only within the limits of human capacity but was indeed optimal for it. Fundamental principles were derived from functional anatomy and body mechanics, physiology, anthropometry, and psychology, and were found to be of wide application in problems not only of military technology but also of everyday living. For example, principles relating to design of seats for office workers and others were set out and incorporated in a series of recommendations. Several large firms re-equipped their offices with furniture to the new dimensions and later reported that the incidence of minor back complaints had declined and that work had speeded up. Comparisons of schoolchildren using furniture to old and new dimensions showed that "disadvantageous" postures were adopted less often with the new.

With modern health and safety regulations and an increasing manager's recognition of the contribution ergonomics can make in industrial well-being there is more than a century's difference in attitude as well as time since Charles Thackrah (1831) wrote "... the people are less thought of than the machinery; the latter is frequently examined to ascertain its capabilities—the former is scarcely ever..." Yet much remains to be done. In industry groups of workers are still commonly engaged in prolonged repetitive tasks, and many absences from work are attributable to minor ailments, particularly backache. In 1962 in the United States 250,000 industrial workers suffered from backache severely enough to be sent home from work, while countless others "sit, squirm and suffer while on the job." Modifications at the workbench can produce marked improvements. In one investigation of women engaged in assembling and soldering components in an electrical engineering firm (who spent 80 to 90% of their working day seated at their workplaces) modification of equipment, paying due attention to posture, successfully eliminated persistent backache in two of the 12 women and produced a general increase in satisfaction with the job.

Ergonomic principles will be used more widely in industrial design only if managements are persuaded that they lead to increased efficiency. Factory doctors have a large part to play in this process. They alone are in a position to provide data, as yet almost non-existent, on the effects of ergonomic modifications on attendance at sick bays. Ultimate proof of ergonomic theories may well come from such clinical data.

E.C.H.O. Virus Infections

Twenty years ago the terms enteric virus or enterovirus were seldom used. Today it is realized that many of the important pathogenic viruses come into this category. Though certain viruses, such as hepatitis and poliomyelitis, were known to be excreted in the alimentary tract, studies were mainly directed to their actions in the liver and central nervous system respectively.

In 1948 G. Dalladore and G. M. Sickles identified a new group of agents from the alimentary tract of two children with mild paralysis. Two main types, A and B, were separated on histopathological grounds, and they were termed Coxsackie viruses from the name of the town from which the first isolations were made. Then the discovery by J. F. Enders and his colleagues that polioviruses could be grown in tissue cultures vastly increased the use of this procedure both for diagnostic virology and for vaccine production. It also emphasized the fact that poliovirus is not wholly neurotropic. As newborn mice and cell cultures came to be used with increasing frequency over the next few years another group of viruses was identified which could be cultivated only in cell cultures. These were termed the E.C.H.O. viruses, or enteric cytopathic human orphan viruses, because they were recovered from the human enteric tract, they caused cytopathic or destructive changes, and, as they had no clear association with disease, they were termed "orphans." Since then the E.C.H.O. viruses have been associated with a number of clinical syndromes, such as aseptic meningoitis and exanthemata, so that they are no longer "orphans." But if the terminal O is removed the word is no longer so euphonious; hence it remains for the time being.

The enteroviruses, like the Enterobacteriaceae, comprise a family of three main groups—polioviruses, Coxsackie viruses, and E.C.H.O. viruses. Like the enterobacteria they consist of numerous serological subtypes, 39 in all, of which there are 26 strains of E.C.H.O. viruses, and again like the enterobacteria they vary in their pathogenicity from type 1 poliovirus, which is responsible for the majoritv of cases of paralytic poliomyelitis in immunized persons, through Coxsackie A7 and E.C.H.O. 9 in an intermediate position, to E.C.H.O. 1 and 2, which seldom cause serious disease.

The E.C.H.O. viruses consist of at least 26 serological types. Certain strains have been more closely associated with clinical disease and with epidemics than others. One of the diseases more commonly thought to be caused by E.C.H.O. viruses is aseptic meningitis. Types 4, 6, 14, and 16 have been identified in patients with this disease; it has been recovered from the cerebrospinal fluid in a substantial number of cases; and a specific rise in neutralizing antibody has been detected. Both sporadic cases and outbreaks have been reported. E.C.H.O. 9 causes aseptic meningitis, and more frequently than with other E.C.H.O. viruses a maculopapular rash also develops. Though usually maculopapular, the rash may be petechial, resembling that of meningococcal septicaemia. It tends to appear first on the face and neck and then spreads to the trunk. Widespread epidemics have been reported in Europe and South America.
Severe disease of the central nervous system may follow infection with several E.C.H.O. viruses, causing ataxia, vertigo, and nystagmus. Undifferentiated febrile illness with or without a rash is commonly seen with types 4, 6, 9, 14, and 16, and sometimes 2, 11, and 18. E.C.H.O. viruses, usually type 18 and occasionally 8, 11, 14, and 20, have also been isolated from cases of infantile gastroenteritis, but the causal relationship is by no means so clear as in the cases of aseptic meningitis. World-wide in distribution, E.C.H.O. virus infections, whether sporadic or epidemic, are commoner in the spring and summer than at other seasons. These viruses can be recovered from the nasopharyngeal secretions and faeces, and it is probable that these are the main source of transmitted infection.

In this week's issue of the B.M.J. Squadron-Leader L. J. German and his colleagues describe at page 742 an outbreak of E.C.H.O. type 5 infection in a maternity unit in Singapore. Sixty-four cases were observed between July and October 1965, of which 56 were among infants. All had a pyrexia of 99–103° F. (37.2–39.4° C.), the onset usually being between the fourth and eighth day of life. A faint pink maculopapular rash was seen in 20 infants, being more pronounced on the limbs and buttocks but present also on the trunk and face. Thirteen infants had loose, offensive stools and four others passed blood and mucus. The eight adults, seven of whom were mothers of the infants, complained of malaise, fever, severe headache, and vomiting. They also developed a rash, which was more persistent than in the infants. E.C.H.O. type 5 virus was detected in 31 cases. All patients recovered, and the outbreak lasted 16 weeks. A similar outbreak was reported by E. W. Hart and his colleagues from a London maternity unit in 1962. The symptoms then were fever, diarrhoea, lymphadenopathy, and an enlarged spleen, but no rashes were observed.

Virological investigations are particularly valuable in such circumstances, for the prognosis of E.C.H.O. virus infections generally is good, and during an outbreak in a maternity home this is comforting news to have. On the other hand, E.C.H.O. viruses can cause serious disease, particularly in the very young, but they do not appear to cause such severe disease in this age group as do Coxsackie B viruses.

Old and Frail

One of the miracles of our time is the increase in the average length of life. In England and Wales, for instance, the expectation of life at birth has risen by 20 years since 1900, from about 50 to about 70 years.1 Eileen M. Brooke2 puts it another way when she says that in 1963 in England and Wales one in every eight persons was aged 65 or more, and if the trend is continued by 1982 the ratio will be one in six. Not only will the ratio of retired to working people be adversely affected, but the number of old people in absolute terms will have reached the formidable total of 7.4 millions in 1982. There will be proportionately fewer persons capable of looking after their aged kin, and for a variety of socio-economic reasons there will probably be fewer still able to do so even if they wished.

Two recent papers, one complementing the other, highlight the present inadequacies for the care of the aged and under-