Proposed Academy of Social Science for India

The executive committee of the Indian Science Congress has before it a proposal for the institution of a National Academy of Social Sciences, drawn up by the Sub-committee on Science and Social Relations. It is interesting to trace the origin of this sub-committee, which goes back to the Blackpool meeting of the British Association for the Advancement of Science in 1936, where there was much discussion of the social relations of science. In the following year, a few leading science associations took cognizance of this subject. The International Council of Scientific Unions, with its headquarters at Delft, Holland, at its meeting held in April 1937 in London, established a committee on Science and Social Relations, with Prof. F. J. M. Stratton, of Cambridge, as president. This action of European men of science was followed by a resolution passed by the American Association for the Advancement of Science at its meeting in 1937 urging the various scientific organizations of the world to re-undertake examination of the profound changes brought about by science in human society, and thus be in a position to promote "peace among nations and intellectual freedom in order that science may continue to advance and spread more abundantly its benefits to all mankind". In 1938 the British Association at its meeting held at Cambridge brought into being a special Division for the Social and International Relations of Science, with Sir Richard Gregory as its chairman. This division organized a conference on "Science and the New World Order" in London during September 1941. In conjunction with these sister organizations of Europe and America, the Indian Science Congress instituted a Sub-committee on Science and Social Relations at its annual session held in Lahore in January 1939. This Sub-committee has been working for the last three years and its labours have fructified in the above proposal, which in due course will come before the Indian men of science.

The proposed Academy should be a body of high academic standing and professional knowledge, which can take up long-range problems of social well-being of the people of India with which the older societies and associations established along familiar but too general lines in some cases and rather over-specialized lines in others cannot deal without suspicion of religious or political bias. Socio-medical and political subjects, human relations, anthropology, political science, vital statistics, social biology, population problems, sociological research in particular bearing on various Indian communities, are the subjects on which such an Academy can work in collaboration with the Indian Science Congress and half a dozen other institutions already existing in India for some of the above-named specific objects. It can be a living organ in the body politic of India for voicing the collective opinion and focusing the specialized points of view of numerous isolated working bodies on the one problem—how to promote the well-being of the common man.

The Sub-committee has begun a survey of the status of sociological studies in all the Indian universities. Vice-chancellors of many Indian universities have endorsed the proposal about the Academy favourably, and the secretaries of those learned societies that have been approached have announced their readiness to co-operate. Dr. K. Motwani, secretary of the Sub-committee, placed the scheme before Pandit Nehru last July and, in accordance with Pandit Nehru's wishes, the executive committee proposes to appoint a committee of experts to suggest ways and means of bringing this Academy of Social Sciences into being. The matter rests here.

It is too early to outline the exact tasks to which the Academy will address itself. Its chief function will be to explore those avenues through which the contributions of science may be adapted to the life of the individual and the nation without allowing anti-social applications of science, such as have made a shambles of so many countries, ever raising their heads in our midst. Secondly, the Academy should emphasize an integrated, synthetic approach to every problem, pressing into service the contributions of various basic social sciences such as human geography, anthropology, psychology, economics, political science, philosophy and sociology. The bringing into being of a National Academy so constituted may well become a crowning achievement of the Indian Science Congress.

IMMUNITY TO VIRUSES

IN opening a discussion on immunity to viruses in the Section of Comparative Medicine of the Royal Society of Medicine on April 21, Sir John Ledingham said that notwithstanding the immense amount of attention paid in the last twenty years to immunization against virus diseases, Jenner's discovery still remains the touchstone by comparison with which all subsequent efforts in this field must be judged. All attempts at immunization against viruses present the same problem—the preservation in the vaccinating agent of the maximum antigenicity compatible with safety from both immediate and remote sequelæ. The solution of this problem has proved no easy matter and there is still a large field to explore in the exploitation of natural variants of pathogenic viruses of man and animals.

Three fairly general methods were available: (1) the use of the cognate living virus (as in cow pox); (2) the use of completely or partially inactivated living virus; (3) the exploitation of the 'interference phenomenon'. Unfortunately, each virus has to be investigated as a problem in itself, and success with one by a particular method is no guarantee of similar success with others. Cultivation in an unusual host (for example, cow pox in the chick embryo or in tissue culture, rabies in rabbits, yellow fever in tissue culture) may give good antigenic variants; but in the case of vaccinia, there is considerable evidence of loss of antigenicity after prolonged cultivation in eggs. Poliomyelitis virus transferred to the cotton rat, thence to the mouse, and so to the hamster, is so far modified that rhesus monkeys may survive infection with it; such survivors are immune to virulent monkey virus. The value of rabies vaccines is very difficult to assess owing to our ignorance of the probable mortality in untreated cases; according to Webster, the average mortality from rabies among persons bitten by proved rabid dogs, no matter with what vaccine they are treated, is about 0·2 per cent; in man, who is probably relatively insusceptible to rabies, all vaccines appear equally good or equally bad. Webster has therefore devised an improved method of testing rabies vaccines, and has elaborated what he considers an improved vaccine inactivated by ultra-violet light.

The success or failure of partially or completely inactivated viruses seems to depend on the amount of material injected representing a sufficient number of infecting doses of the original virus. Formalized virus vaccines have been found useful for protection against such infections as equine encephalomyelitis and canine distemper; in vaccinia they appear to be useless. In foot and mouth disease and influenza, immunization is complicated by the existence of numerous serological types; and so far in influenza no variant has been found with the necessary combination of negligible virulence and good immunizing power.

Very little use has so far been made of the 'interference phenomenon', wherein inoculation with two viruses is followed by the development of lesions due to one of them, but by the acquisition of immunity to both. A good example is the immunity produced in fowls against fowl pox by the simultaneous inoculation of large amounts of pigeon pox and traces of fowl pox virus. Peltier in Senegal has recently inoculated a large number of natives with a mixed 'vaccine' consisting of vaccine lymph and active neurotropic yellow fever virus. Only the lesions of vaccinia appeared, and the natives were apparently immune to both yellow fever and smallpox.

Even though some virus infections (for example, fowl pox, psittacosis) give rise to little antibody response in the host, it seems clear that a humoral mechanism is the main factor in immunity, for chorioallantoic grafts of skin from fowls immune to fowl pox are as susceptible to fowl pox as grafts from non-immune fowls. When regrafted on to immune fowls and thereby bathed in the fluids of the insusceptible host, they can no longer be infected with fowl pox virus. It is not yet certain whether a high titre of circulating antibody following vaccination betokens immunity to influenza virus.

The study of virus reservoirs might give many hints in the quest for effective immunizing agents. Healthy vampire bats can carry rabies virus, many species of birds carry psittacosis and psittacosis-like viruses, fowls, horses and other mammals can carry equine encephalomyelitis and St. Louis encephalitis, while the virus of lymphocytic choriomeningitis has been isolated from wild house-mice. Under normal conditions the virus remains latent; variations in the weather, the presence of biting insects and appropriate hosts might lead to conditions in which man becomes infected.

Very important advances have been and are being made in attempts to substitute inactivated for active virus; with further developments in recovering viruses from tissues and in methods of inactivation, we may hope to ensure the preservation of antigenicity necessary for effective immunization.

Mr. J. T. Edwards pointed out that measures for the control of rinderpest necessarily differ in different countries. In India, where the native cattle are relatively immune to the disease, greater risks can be taken than in England where all the cattle are susceptible. Four methods of conferring immunity are available: (1) Injection of hyper-immune or convalescent serum (cattle or buffalo). The immunity so produced is immediate, but lasts only nine days, and is liable to produce an unjustified feeling of security, as the infection will remain latent in the herd until the effect of the serum wears off, when infection will flare up again. (2) The serum and virus method gives lifelong immunity, but is expensive and risky; unless both serum and virus are effective, it is of little value. (3) Little progress was made with inactivated virus until it was discovered that most of the virus is in lymphocytes, and that vaccination with extracts of tonsils, lymph glands and lungs of infected animals, killed at the height of the fever and inactivated with 0·7–1 per cent of formalin, gives good immunity. The procedure is safe but expensive, and the duration of immunity very variable. Calves lose their immunity early, older animals may remain immune for two years. (4) Passage of rinderpest virus in goats reduces the virulence for cattle in about eighty passages, and vaccination with this modified virus gives excellent immunity, appearing 2–3 days after inoculation. The method is effective, safe and cheap.

Dealing with swine fever, Mr. T. M. Doyle said that in immunization against this disease, virus followed immediately by serum is effective but expensive, and great difficulty has been experienced in obtaining constant products. Crystal violet vaccine, though not so efficacious, is much more uniform and comparatively easily reproducible. Infective blood is incubated for 14 days at 37° C. with disodium phosphate and 1 : 1000 crystal violet; 1 : 2000 crystal violet, though it has the advantage of not producing any precipitate in the vaccine, is not sufficiently bacteriostatic. Under laboratory conditions immunity lasts for more than twelve months. In field trials excellent results have been obtained so long as pigs were vaccinated *after* weaning; pigs vaccinated before weaning developed only slight immunity.

Dr. C. H. Andrewes remarked that bacteriophages might show the 'interference phenomenon'; coliphages, for example, might inhibit one another, even though one is inactivated with ultra-violet light. Might not interference account for immunity in vaccination against small-pox and rabies? Dr. D. Maclean directed attention to the difficulty of producing immunity to vaccinia unless a vesicle develops —even though deep lesions and local adenitis occur. Dr. C. L. Oakley mentioned the corresponding observation in influenza; if mice are immunized with formolized virus intraperitoneally, they are immune only to the homologous strain, and possess significant antibody to that strain only. When, however, they have intranasal inoculation with living virus, they are immune to all strains if the immunizing dose has produced a lesion in the lung; their antibody is still only to the homologous strain. If the immunizing dose has not produced a lesion, the mice have neither immunity nor antibody.

OBITUARIES

Sir Edwin John Butler, C.M.G., C.I.E., F.R.S.

EDWIN JOHN BUTLER was born on August 13, 1874, in County Clare, Ireland, and was educated at Queen's College (now the University College), Cork. He was senior scholar in 1896. In 1898 he took the M.B. (Hons.) at the Royal University, Ireland, but never practised. During 1899 and 1900 he held a travelling scholarship and worked at Paris, Freiburg, Antibes, and Kew. In 1901 he arrived at Calcutta as the first cryptogamic botanist to the Government of India; in 1902 was transferred to Dehra Dun, and in 1905 as Imperial mycologist to Pusa, the site of the new Agricultural Research Institute. In 1919 he became the joint director, and in 1920 agricultura