

CANCELLATION of the thirty-sixth annual meeting of the American Oil Chemists' Society, which was to have been held in New Orleans on May 9, 10 and 11, has been announced by Dr. Klare S. Markley, president of the society. This action was taken in order to cooperate with the Office of Defense Transportation.

At the annual meeting of the Texas Society of Pathologists in Dallas, which was held on January 28, it was voted unanimously to become affiliated with the Texas Academy of Science, which is in turn affiliated with the American Association for the Advancement of Science.

THE New York Association of Teachers of the Biological Sciences has announced the founding of an annual High School Congress of Biology in memory of the late Paul B. Mann, who left a fund to advance the cause of scientific thinking among high-school students. The first congress will assemble on May 19 at the American Museum of Natural History. Students in the senior high schools are invited to present reports of research work in biology.

A COMMITTEE of representatives of several chemical and pharmaceutical concerns to raise \$500,000 for the enlargement of the library of the New York Academy of Medicine has been organized with Carleton H. Palmer as chairman. The fund would permit construction of a nine-floor addition to the stack room, which would increase the capacity to 374,000 volumes. It would also provide for a new catalogue of 2,800,000 cards, and improved handling, delivery, photographing and bibliographical service.

THE U. S. Public Health Service, in cooperation with the National Foundation for Infantile Paralysis offers graduate fellowships for work in public health

to men and women between the ages of 22 and 40 who are citizens of the United States and who hold a bachelor's degree from a recognized college or university. Fellowships will lead to a master's degree in public health. The twelve months' training period will consist of nine months in the School of Public Health at the University of North Carolina, Yale University or the University of Michigan and three months' field experience in community health education under supervision. Applicants must meet the requirements for admission to the schools of public health. Training in science, sociology, education and psychology, plus experience working with people, are desirable prerequisites. Application forms may be obtained from the Surgeon General, U. S. Public Health Service, Washington 14, D. C., and must be returned not later than June 1.

THE New York Heart Association is making a campaign to raise \$150,000 to be used to develop a competent staff of field workers, to establish new headquarters and to inaugurate new projects. Dr. Edward P. Maynard, Jr., president of the association, has his headquarters at the New York Academy of Medicine.

A GROUP of mineralogists has formed a committee for the restoration of the Liège mineral collection. The council of the Mineralogical Society of America will sponsor the project, and has appointed Dr. Charles Palache, professor of mineralogy, emeritus, of Harvard University, chairman of the Continental Committee, which will coordinate the work of local committees. Funds for the shipment to the University of Liège of the new collection have been provided by the Belgian-American Educational Foundation.

DISCUSSION

THE DEMOGRAPHIC DILEMMA

PROFESSOR MATHER in his discussion of "The Needs of Man"¹ assumes that because the potential resources of the world are sufficient for a considerably larger world population, we need only the proper economic organization to provide the needs of all. His lack of realism in dealing with problems of agriculture and of population growth does little to clarify the demographic problems and only obscures the major issues.

In his book "Enough and to Spare"² Professor Mather states that "the gloomy prediction of Malthus does not now apply and, if present trends continue, never will apply to man." The fact is that most of

the human race is now living in Malthusian equilibrium, with high birth rates nearly balanced by high death rates. Only a relatively small proportion of the world's population has been able to escape the consequences of the Malthusian Law.

The modern Western nations were able to escape excessive population pressure by industrialization, migration and control of the birth rate. Their populations are becoming stabilized in accord with their resources. The transition from a high birth rate and a high death rate culture to a low birth rate and a low death rate culture was made only under exceptionally favorable circumstances. These countries were not densely populated in respect to potential agricultural resources, vast areas of land were open

¹ K. F. Mather, *SCIENCE*, 101: 198-200, 1945.

² K. F. Mather, "Enough and to Spare." New York: Harper and Bros., 1944.

for colonization, and they had no competition in industrial development. Yet during this transition the populations increased several fold before living standards became sufficiently high to insure low birth rates and low death rates.

Can the Eastern nations make this transition without analogous growth; or, if not, can they support two to four times their present populations at sufficiently high standards to effect a stabilized population? The experience of Japan indicates that they can not. Between 1870 and 1940 the population of Japan increased from about 30 millions to more than 70 millions and is still growing rapidly. "If the same situation is to occur in the great overcrowded regions of the Asiatic mainland, the race between the expansion of economic opportunity and the accelerated population growth produced by mortality control would seem to be hopeless."³

Most of Asia is densely populated in relation to agricultural resources. Professor Mather believes that the Asiatic mainland could support much larger populations because Java is able to maintain a larger number of inhabitants per acre of arable soil. But Java is a region of heavy rainfall and exceptionally fertile soil and her people live little above subsistence levels. The problem is not one of mere subsistence, but the maintenance of a reasonably high standard of living which is essential for the control of the birth rate.

In suggesting mass migration from Asia to Australia and Africa, Professor Mather seems to assume that this solution would be effective if political and socio-economic obstacles could be overcome. The annual excess of births over deaths in India alone is 5 million. If 5 million Indians were moved to Australia each year that country would have all the people it could adequately support in less than five years. Such mass migration would not relieve population pressure in India, and unless the emigrants were absorbed at a relatively high standard of living they would soon create severe population pressure in Australia because of their high birth rates. In the words of Dr. Notestein³ "emigration will not check growth in the most important areas of population pressure [India, China, Java, Egypt] at the present stage of their demographic evolution. It would be unfortunate to waste the open spaces of the world in a fashion that could only intensify future problems of adjustment."

Industrialization and emigration could relieve population pressure only to the extent that such measures would result in a reduction in the birth rate. In the words of Dr. W. S. Thompson, "There can be no rational hope of a decent life for all mankind if birth rates remain at more than about one-third of the

physiological maximum in any considerable part of the world's population."⁴ If birth rates in India could be maintained at present levels and death rates maintained at English levels there would be more than 10 billion Indians at the end of another 100 years—five times the present population of the world and three times the number that the entire world could adequately support.

In his book² Professor Mather maintains that declining birth rates are a natural consequence of man's evolution and "are due as much to physical factors of the human body as to mental attitudes toward the bearing and rearing of children." He concludes that the Oriental peoples are now entering this evolutionary stage and that declining birth rates will automatically follow. There is no biological evidence to support such a conclusion. Low birth rates of the Western nations are due to the practice of contraception, aided by increased age of marriage and the practice of abortion, and to practically nothing else.⁵

People of all lands who live at little more than subsistence levels breed with no consideration of economic or social consequences. There is some evidence that the Orientals may accept contraception at lower economic levels than do the people of the Western world, but they too have taboos and traditions which will check the diffusion of birth control patterns.

The necessary industrial and demographic evolution can not be achieved without assistance, but the modern Western nations can not promote such evolution simultaneously in all the backward areas of the world. The dominant powers will come out of this war with their own problems of reconstruction, and only the United States will have her industries intact. Aid should be concentrated where there is reasonable hope for success. Many of our good neighbors to the south are growing rapidly and should be industrialized while there is still ample room for the inevitable expansion of population during the transition. The Philippine Islands also should have a high priority. India is the last country which should be included because there is so little hope for success.

It serves no useful purpose to overestimate the world's resources, our ability to increase agricultural production and our capacity to modernize the entire world. There is no justification for denying the validity of the Malthusian Law and no excuse for misrepresenting the biological factors in the control of the birth rate. Optimism based largely upon pious hopes can lead only to greater difficulties in the solution of demographic problems.

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³ F. W. Notestein, *et al.*, "Demographic Studies of Selected Areas of Rapid Growth." New York: Milbank Memorial Fund. 1944.

⁴ W. S. Thompson, "Plenty of People." Lancaster, Pa.: The Jaques Cattell Press. 1944.

⁵ R. Pearl, "The Natural History of Population." New York: The Oxford Press. 1939.