

EUGENICS

Plan for Improving Population Drawn by Famed Geneticists

All Could Be Geniuses in World Based on Biology; World Federation Needed; Birth Control Advocated

A PLAN for the improvement of the world's population by scientific methods has been developed as the result of a question put by Science Service to world leaders in science attending the Seventh International Congress of Genetics in Edinburgh, Scotland.

"How could the world's population be improved most effectively genetically?" was the query cabled by Watson Davis, director of Science Service, to leading participants in the Congress.

A group of British scientists answered this difficult problem with a declaration that is virtually a biological blueprint for a better humanity.

The need for better economic and social conditions is stressed.

"Everyone might look upon 'genius', combined of course with stability, as his birthright," is one striking prospect if the suggestions are followed.

Some effective sort of federation of the whole world, based on the common interests of all its peoples, is demanded to remove conditions which make for war and economic exploitation.

The Signers

The scientists signing the joint declaration are:

Dr. F. A. E. Crew, general secretary of the Seventh International Congress of Genetics, and director of the Institute of Animal Genetics, University of Edinburgh.

Dr. C. D. Darlington, who next October becomes director of Britain's famous John Innes Horticultural Institution.

Prof. J. B. S. Haldane, professor of biometry, University College, London, author of various books, including "Heredity and Politics," etc.

Dr. S. C. Harland, British geneticist recently connected with the Instituto Agronomico do Estado, Sao Paulo, Brazil.

Prof. Lancelot T. Hogben, professor of natural history, Marischal College, Aberdeen, author of "Mathematics for the Millions," "Science for the Citizen," etc.

Prof. Julian S. Huxley, secretary of

the Zoological Society of London, author of many science books.

Dr. H. J. Muller, Institute of Animal Genetics, University of Edinburgh, who while professor at the University of Texas won the 1927 American Association for the Advancement of Science prize for artificial production of gene mutations.

Declaring that the question of population improvement is not merely a biological one, the scientists say that the worth of individuals can not be compared without economic and social conditions which provide approximately equal opportunities for all members of society.

A major hindrance to improvement in human heredity is declared to lie in the economic and political conditions which foster antagonism between different peoples, nations and "races."

In order to raise children effectively, parents and particularly mothers must have economic security and such economic, medical, educational and other aids that additional children will not overburden them. Living conditions should be reshaped with the good of the children as one of their main objectives.

Birth control, both positive and negative, is declared a prerequisite to human

improvement. The superstitious attitude toward sex and reproduction now prevalent needs to be replaced by a scientific and social attitude.

In a better ordered world "it would be regarded as an honor and a privilege, if not a duty, for a mother, married or unmarried, to have the best children possible, both in respect to their upbringing and of their genetic endowment." Artificial, though always voluntary, control over the process of parentage, is contemplated in some cases.

The effect of a bettered environment is not passed on by heredity and therefore the next generation can be made better only by some kind of selection.

Conscious selection is recommended to improve those genetic characteristics which make for health, for intelligence, and for those temperamental qualities which favor fellow-feeling and social behavior rather than the personal "success" most esteemed today.

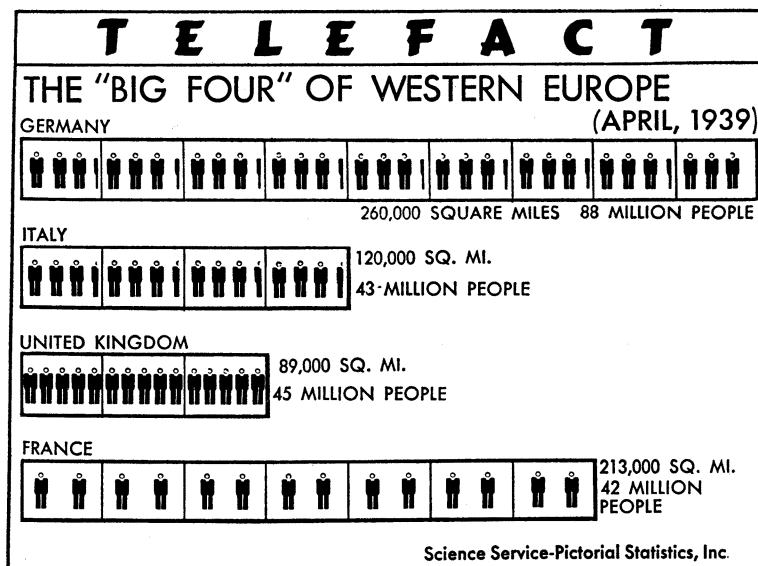
Raising the level of the average of the population nearly to that of the highest now existing is considered possible within a comparatively small number of generations, so far as purely genetic considerations are concerned.

Much more research in human genetics and in medicine, psychology, chemistry and the social sciences is advocated, with the improvement of the inner constitution of man as the central theme.

Text of Declaration

THE COMPLETE text of the statement on how the world's population can be improved genetically is as follows:

The question "how could the world's



population be improved most effectively genetically" raises far broader problems than the purely biological ones, problems which the biologist unavoidably encounters as soon as he tries to get the principles of his own special field put into practice. For the effective genetic improvement of mankind is dependent upon major changes in social conditions, and correlative changes in human attitudes.

Equal Opportunities

1. In the first place there can be no valid basis for estimating and comparing the intrinsic worth of different individuals without economic and social conditions which provide approximately equal opportunities for all members of society instead of stratifying them from birth into classes with widely different privileges.

World Federation

2. The second major hindrance to genetic improvement lies in the economic and political conditions which foster antagonism between different peoples, nations and "races." The removal of race prejudices and of the unscientific doctrine that good or bad genes are the monopoly of particular peoples or of persons with features of a given kind will not be possible, however, before the conditions which make for war and economic exploitation have been eliminated. This requires some effective sort of federation of the whole world, based on the common interests of all its peoples.

Children's Welfare

3. Thirdly, it cannot be expected that the raising of children will be influenced actively by considerations of the worth of future generations unless parents in general have a very considerable economic security and unless they are extended such adequate economic, medical, educational and other aids in the bearing and rearing of each additional child that the having of more children does not overburden either of them. As the woman is more especially affected by child bearing and rearing she must be given special protection to ensure that her reproductive duties do not interfere too greatly with her opportunities to participate in the life and work of the community at large. These objects cannot be achieved unless there is an organization of production primarily for the benefit of consumer and worker, unless the conditions of employment are adapted to the needs of parents and especially of mothers, and unless dwellings, towns and community services gen-

erally are reshaped with the good of children as one of their main objectives.

Birth Control Needed

4. A fourth prerequisite for effective genetic improvement is the legalization, the universal dissemination, and the further development through scientific investigation, of ever more efficacious means of birth control, both negative and positive, that can be put into effect at all stages of the reproductive process—as by voluntary temporary or permanent sterilization, contraception, abortion (as a third line of defense), control of fertility and of the sexual cycle, artificial insemination, etc.

Along with all this the development of social consciousness and responsibility in regard to the production of children is required, and this cannot be expected to be operative unless the above mentioned economic and social conditions for its fulfillment are present and unless the superstitious attitude towards sex and reproduction now prevalent has been replaced by a scientific and social attitude.

This will result in its being regarded as an honor and a privilege, if not a duty, for a mother, married or unmarried, or for a couple, to have the best children possible, both in respect of their upbringing and of their genetic endowment, even where the latter would mean an artificial—though always voluntary—control over the process of parentage.

More Knowledge

5. Before people in general, or the state which is supposed to represent them, can be relied upon to adopt rational policies for the guidance of their reproduction, there will have to be, fifthly, a far wider spread of knowledge of biological principles and of recognition of the truth that both environment and heredity constitute dominating and inescapable complementary factors in human well-being, but factors both of which are under the potential control of man and admit of unlimited but interdependent progress.

Betterment of environmental conditions enhances the opportunities for genetic betterment in the ways above indicated. But it must also be understood that the effect of the bettered environment is not a direct one on the germ cells and that the Lamarckian doctrine is fallacious, according to which the children of parents who have had better opportunities for physical and mental development inherit these improvements, biologically, and according to which, in consequence, the dominant classes and

peoples would have become genetically superior to the underprivileged ones.

Conscious Selection

The intrinsic (genetic) characteristics of any generation can be better than those of the preceding generation only as a result of some kind of *selection*, i.e., by those persons of the preceding generation who had a better genetic equipment having produced more offspring, on the whole, than the rest, either through conscious choice, or as an automatic result of the way in which they lived. Under modern civilized conditions such selection is far less likely to be automatic than under primitive conditions, hence some kind of conscious guidance of selection is called for. To make this possible, however, the population must first appreciate the force of the above biological principles, and the social value which a wisely guided selection would have.

Health, Brains, Temperament

6. Sixthly, conscious selection required, in addition, an agreed direction or directions for selection to take, and these directions cannot be social ones, that is, for the good of mankind at large, unless social motives predominate in society. This in turn implies its socialized organization. The most important genetic objectives, from a social point of view, are the improvement of those genetic characteristics which make (a) for health, (b) for the complex called intelligence and (c) for those temperamental qualities which favor fellow-feeling and social behavior rather than those (today most esteemed by many) which make for personal "success," as success is usually understood at present.

A more widespread understanding of biological principles will bring with it the realization that much more than the prevention of genetic deterioration is to be sought for and that the raising of the level of the average of the population nearly to that of the highest now existing in isolated individuals, in regard to physical well-being, intelligence and temperamental qualities, is an achievement that would—so far as purely genetic considerations are concerned—be physically possible within a comparatively small number of generations.

Genius As Birthright

Thus everyone might look upon "genius," combined of course with stability, as his birthright. And, as the course of evolution shows, this would represent no final stage at all, but only

an earnest of still further progress in the future.

More Research Needed

The effectiveness of such progress, however, would demand increasingly extensive and intensive research in human genetics and in the numerous fields of investigation correlated therewith. This would involve the cooperation of specialists in various branches of medicine, psychology, chemistry and, not least, the social sciences, with the improvement of the inner constitution of man himself as their central theme. The organization of the human body is marvellously intricate and the study of its genetics is beset with special difficulties which require the prosecution of research in this field to be on a much vaster scale, as well as

more exact and analytical, than hitherto contemplated. This can, however, come about when men's minds are turned from war and hate and the struggle for the elementary means of subsistence to larger aims, pursued in common.

The day when economic reconstruction will reach the stage where such human forces will be released is not yet, but it is the task of this generation to prepare for it, and all steps along the way will represent a gain, not only for the possibilities of the ultimate genetic improvement of man, to a degree seldom dreamed of hitherto, but at the same time, more directly, for human mastery over those more immediate evils which are so threatening our modern civilization.

Science News Letter, August 26, 1939



FOR PROTECTION

This spool, made of porcelain wound with copper wire and coated with zinc oxide, was developed by Westinghouse to protect transformers against electrical failures.

PHYSICS

Only Radiation From Sunspots Causes Ionization of F₂ Layer

Only in the Center of the Solar Disturbances Is The Temperature High Enough To Produce Effects

THE IONIZATION produced in F₂ reflecting layer, 150 miles and more above the surface of the earth, is caused by intense radiation that comes from the regions around sunspots, Dr. Fred L. Mohler of the National Bureau of Standards suggests. (*Science*, Aug. 11)

By studying the reflections of short-wave radio signals reflected off the F₂ layer and correlating them with sunspot numbers, very good agreement has been found, Dr. Mohler explains.

Dr. Mohler has been seeking an explanation for this correlation and believes he has found it in studies of the wavelength of the light rays emitted by the sun's flaming surface. The rays from the

disk of the sun as a whole, intense though they are, do not have enough energy (are not of short enough wavelength) to produce the amount of ionization found in the F₂ layer.

Only in the center of the sunspots, or flocculi with which they are associated, is the solar temperature high enough to produce radiation sufficient to give the observed effects. While the normal temperature of the sun's disk is 6,000 degrees absolute, only one per cent of the whole disk needs to have a temperature of 7,500 degrees to account for the close correlation of sunspot activity and ionization in the F₂ layer.

Science News Letter, August 26, 1939

ENGINEERING

"Spool" Spots Hydrochloric Gas in Huge Transformers

A SMALL spool made of porcelain, copper wire and common zinc oxide is the newest guardian for huge power transformers invented by a 26-

year-old chemist at the laboratories of the Westinghouse Electric and Manufacturing Company.

Emerson Venable is the young scien-

tist who has developed this new detector for corrosive, hydrochloric acid.

This acid is created when the newest type of transformers develop short circuits. These transformers no longer contain oil, as formerly, but now owe their insulation properties to a non-inflammable liquid known as inerteen. When an electric arc burns in inerteen, as in a short circuit, hydrochloric gas forms.

The new advance of Chemist Venable is a spool of porcelain on which are wound two copper wires carrying current and separated from one another by zinc oxide which provides electrical insulation. Zinc oxide, Chemist Venable has found, is especially susceptible to the fumes of hydrochloric acid.

As the acid attacks the zinc oxide its insulation properties quickly disappear and current "shorts" across the copper wires at this spot. This intentional short circuit trips a relay and throws off the huge current in the transformer.

Previous best protection for transformers was the use of a small diaphragm which broke when hydrochloric gas was created and built up ten pounds of pressure. The new device will detect as little as one ten-thousandth of a pound of hydrochloric acid.

Dr. Charles F. Hill, Westinghouse division manager on insulation, and J. C. Ford, section engineer, suggested the problem which has now been solved.

Science News Letter, August 26, 1939