RACIAL THEORIES AND THE GENETIC BASIS FOR DEMOCRACY[1]

By Secretary HENRY A. WALLACE
UNITED STATES DEPARTMENT OF AGRICULTURE

ON this particular anniversary of the birth of Abraham Lincoln it is especially fitting that scientists should gather together. At this meeting and at other meetings throughout the country, men of science are met to rededicate themselves to the principles of liberty on which their profession is based. The cause of liberty and the cause of true science must always be one and the same. For science can not flourish except in an atmosphere of freedom, and freedom can not survive unless there is an honest facing of facts in the scientific spirit of men continually seeking the truth.

Numerically, the workers in the field of science are not a large group. But, as leaders and moulders of thought, they play an exceedingly important part in the life of our nation and of the world. And so I want to pay tribute to the leadership of Professor Boas, who, as chairman of the "Lincoln's Birthday Committee for Democracy and Intellectual Freedom," has done so much to marshal the moral forces of science in this great cause.

The immediate reason for your meeting to-day is the profound shock you have had, and the deep feeling of protest that stirs in you, as you think of the treatment some of your fellow scientists are receiving in other countries.

Men who have made great contributions to human knowledge and culture have been deprived of their positions and their homes, put into concentration camps and driven out of their native lands. Their life work has been reviled.

In those same countries, other men, who call themselves scientists, have been willing to play the game of the dictators by twisting science into a mumbo-jumbo of dangerous nonsense. These men are furnishing pseudo-scientific support for the exaltation of one race and one nation as conquerors.

These things run counter to your whole tradition as scientists. You are not only amazed and shocked and moved to protest against the fate of your fellow scientists abroad. You shudder with the realization that these things have happened in scientifically advanced countries in the modern world—and that they might happen here.

Probably because I myself have been much interested in the field of plant breeding, I have been asked to speak to-day on the subject of "Racial Theories and the Genetic Basis for Democracy."

Claims to racial superiority are not new in the world. Even in such a democratic country as ours, there are some who would claim that the American people are superior to all others. But never before in the world's history has such a conscious and systematic effort been made to inculcate the youth of a nation with ideas of racial superiority as is being made in Germany to-day.

Just what are these ideas? Let me quote from a translation of the "Official Handbook for the Schooling of the Hitler Youth," the organization which includes some 70 per cent. of all the boys and girls in Germany of eligible age.

The handbook discusses the various races found in Germany and other parts of Europe. Concerning what it calls the Nordic race, it says: "Now what distinguishes the Nordic race from all others? It is uncommonly gifted mentally. It is outstanding for truth and energy. Nordic men for the most part possess, even in regard to themselves, a great power of judgment. They incline to be taciturn and cautious. They feel instantly that too loud talking is undignified. They are persistent and stick to a purpose when once they have set themselves to it. Their energy is displayed not only in warfare but also in technology and in scientific research. They are predisposed to leadership by nature."

But here is what the handbook says concerning what it calls the "Western Race," found principally in England and France: "Compared to the Nordic race there are great differences in soul-qualities. The men of the Western race are . . . loquacious. In comparison with the Nordic . . . men they have much less patience . . . They act more by feeling than by reason . . . They are excitable, even passionate. The Western race with all its mental excitability lacks creative power. This race has produced only a few outstanding men."

That is the end of the quotation.

Thus the dictatorial régime in Germany, masquerading its propaganda in pseudo-scientific terms, is teaching the German boys and girls to believe that their race and their nation are superior to all others, and by implication that that nation and that race have a right to dominate all others.

That is the claim. What ground does it have in scientific fact?

We must remember that down through the ages one

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of the most popular political devices has been to blame economic and other troubles on some minority group. But no one can claim with scientific certainty superiority for any race or nation so far as its inborn genetic characteristics are concerned.

Indeed no nation in Europe is a greater mixture of tribes and breeds than the Germans. This is of course nothing against them, but it makes absurd the claims of superior stock. The word Aryan as used by scientists and not by dictators means the people of the Caucasian race who speak one or another of the Indo-European languages. (Any one can look it up in his dictionary.) Jews are of course Aryans, so are Hindus, so are Germans and French and English and most Americans. The dictators' misuse of the word Aryan is pure scientific faking.

Two thousand years ago there was nothing about the ancestors of the modern English or Germans to indicate either scientific, artistic, inventive or philosophic ability. Neither their traditions nor their economic opportunities permitted development along these lines. No scientist can say to-day with any certainty that many of the so-called backward races and nations do not have inborn genetic capacity which might flower unusually in the sciences, the arts or philosophy, provided only economic conditions and social institutions permitted.

When I was a small boy, George Carver, a Negro who is now a chemist at Tuskegee Institute, was a good friend of my father's at the Iowa State College. Carver at that time was specializing in botany, and he would take me along on some of his botanizing trips. It was he who first introduced me to the mysteries of botany and plant fertilization. Later on I was to have an intimate acquaintance with plants myself, because I spent a good many years breeding corn. Perhaps that was partly because this scientist, who belonged to another race, had deepened my appreciation of plants in a way I could never forget.

Carver was born in slavery, and to this day he does not definitely know his own age. In his work as a chemist in the South, he correctly sensed the coming interest in the industrial use of the products of the farm—a field of research which our government is now pushing. I mention Carver simply because he is one example of a truth of which we who meet here to-day are deeply convinced: Superior ability is not the exclusive possession of any one race or any one class. It may arise anywhere, provided men are given the right opportunities.

It is the fashion in certain quarters to sneer at those so-called "poor whites," who suffer from poor education and bad diet and who live in tumble-down cabins without mattresses. And yet I wonder if any scientist would care to claim that 100,000 children taken at birth from these families would rank any lower in inborn ability than 100,000 children taken at birth from the wealthiest one per cent. of the parents of the United States. If both groups were given the same food, housing, education and cultural traditions, would they not turn out to have about equal mental and moral traits on the average? If 100,000 German babies were raised under the same conditions as 100,000 Hindu babies or 100,000 Jewish babies, would there be any particular difference? No such experiments have been made or are likely to be made and so no absolutely scientific answer can be given. But when I raise such a question, I mean to imply that every race, every nation and people from every economic group of society are a great genetic mixture. There is far greater variability between the heredity of individuals within the groups than between the groups. There may be a certain amount of stability of type with regard to skin and eyes and hair, but with regard to mental and emotional characteristics there is very little evidence of genetic uniformity for any race or nation. There may be a great deal of uniformity with respect to traditions but not with respect to complex hereditary characters.

In all this I do not mean to say that heredity does not work with human beings just as truly as it does with plants and animals. Nor do I mean to deny that a master breeder living for a thousand years might do extraordinary things in the way of fixing human types of unusual longevity, resistance to disease, musical ability or any one of a number of characteristics. A master breeder who had a dictator's control for several generations might be able to fix a standard blue-eyed, long-headed, fair-haired type of the most approved Nordic specifications. But from our studies in livestock breeding we know that the more complex characteristics are usually altogether separate from such superficial characteristics as skin, hair or eye color. The color of a cow's hair, for instance, has nothing to do with her ability to produce milk and there is no reason to think that the color of a man's hair has anything to do with his ability to produce ideas. And so it is quite possible that the master breeder, being concerned primarily with physical appearance, would find he had produced a group of blonde morons—useful to him mainly as a superior type of cannon fodder.

On the whole, it seems probable that nowhere in the world in the next couple of centuries will a genuinely scientific attempt, in the sense understood by the plant or animal breeder, be made to breed for superior types of human beings. The different races and nations will continue to be conglomerates with a vast variability of mental and emotional qualities and the other abilities which make for leadership and genius.

Here in the United States, our own population is a blend of many races. Men and women of many races

have built our science, our literature and our art—our finance, our industry and our government. The noblest chapters in our history have been those filled with struggle against tyrannical denial of freedom.

I am convinced, as a result of my study of genetics, that there is nothing in science to interfere with what might be called a genetic basis for democracy. The seed bed of the great leaders of the future, as of those of the past, is in the rank and file of the people.

Environment, of course, will continue to be very important. Because of superior opportunities an undue proportion of our great leaders may perhaps come from the wealthier five per cent. If there is somewhat greater diffusion of opportunity and wealth—if the children of all classes get enough to eat and good schooling—if all children are given an opportunity to realize to the full their inborn faculties to serve the general welfare, we may expect genius to sprout more evenly from all economic classes of society. In a study of human genetics recently made by the National Resources Committee, it was found that among given racial groups, intelligence ratings varied with the environment. Intelligence quotient ratings generally seem to be more a matter of education and upbringing than of heredity.

Just as a favorable environment is needed to help the development of great leaders and great scientists, so a good environment is essential to preserve our liberty. The imperative need is for us to ask ourselves under what conditions our liberty can be lost. Under what conditions do men of the ruthless dictator type rise to power in a modern nation? Under what conditions do they persuade a whole people to accept a philosophy, and to follow a line of action, that violates many of the finest achievements of humanity and exalts many of the worst? Under what conditions are great numbers of men willing to surrender all hope of individual freedom and become ciphers of the state? Under what conditions will the scientist deny the truth and pervert his science to serve the slogans of tyranny? And again, how can those conditions be prevented from occurring in our country?

In seeking to answer these questions honestly, we shall inevitably come upon certain truths that are not flattering to us. We shall find in our own country some of the conditions that have made possible what we see abroad. The seeds of these conditions exist here. It is not enough simply to hope that these conditions will not reach such extremes here as they have in some other countries. We must see to it that they do not.

When a political system fails to give large numbers of men the freedom it has promised, then they are willing to hand over their destiny to another political system. When the existing machinery of peace fails to give them any hope of national prosperity or national dignity, they are ready to try the hazard of war. When education fails to teach them the true nature of things, they will believe fantastic tales of devils and magic. When their normal life fails to give them anything but monotony and drabness, they are easily led to express themselves in unhealthy or cruel ways, as by mob violence. And when science fails to furnish effective leadership, men will exalt demagogs, and science will have to bow down to them or keep silent.

The ironic fact is that the economic maladjustments of the present day which threaten our democracy and the freedom of science are in large part due to the changes wrought by science. In a democracy, every individual according to his station in life and according to his capacity should have opportunity for joyous service of the general welfare. Scientists, by their discoveries and inventions—which in countless ways have enriched our lives—have at the same time, without intending to do so, helped to break down this kind of democracy. Quite without intention, they have helped to replace it with an industrial system in which a small number of individuals make the decisions and the great majority have no feeling that they are taking part according to their capacity on equal terms in a common enterprise. Quite without intention they have helped to build an industrial system in which the security of an earlier day has been replaced with the hazard of unemployment. During 1931 and 1932, many scientists, accustomed to working quietly in their laboratories and with little thought for their own economic security, suddenly found their salaries cut in half or their jobs completely gone. Yes, scientists now know that in their own self-defense their methods in the deepest and most spiritual sense must eventually serve the general welfare in the economic and social world.

And so to-day, on the 130th anniversary of the birth of Abraham Lincoln, it is especially encouraging that science is facing the facts concerning the long-run effects of its own past achievements. It is encouraging that science at last is working actively for economic security and is coming actively to the defense of "government of the people, by the people, for the people."

Democracy—and that term includes free science—must apply itself to meeting the *material* need of men for work, for income, for goods, for health, for security, and to meeting their *spiritual* need for dignity, for knowledge, for self-expression, for adventure and for reverence. *And it must succeed.* The danger that it will be overthrown in favor of some other system is in direct proportion to its failure to meet these needs. We may talk all we like about the beauties of democracy, the ideals of democracy, the rightness of democracy. In the long run, democracy or any other political system will be measured by its deeds, not its words.

The survival and the strength of American democracy are proof that it has succeeded by its deeds thus far. But we all know it contains the seeds of failure. I for one will not be confident of the continued survival of American democracy if millions of unskilled workers and their families are condemned to be reliefers all their lives, with no place in our industrial system. I will not be confident of the survival of democracy if economic crises every few years continue to put fear into the hearts of millions of skilled and professional workers. I will not be confident of the survival of democracy if half our people must continue to be below the line of decent nutrition, while only one tenth succeed in reaching really good nutritional standards. I will not be confident of the survival of democracy if most of our children, which means most of our future citizens, continue to be reared in surroundings where poverty is highest and education is lowest.

These are the conditions that made possible what we are now witnessing in certain large areas of the world. They are the seeds of danger to democracy. Given a healthy, vigorous, educated people, dignified by work, sharing the resources of a rich country and sure that their political and economic system is amply meeting their needs—given this, I think we can laugh at any threat to American democracy. But democracy must continue to deliver the goods.

And so, let us dedicate ourselves anew to our democratic body of faith—to the promotion of a stable but ascending general welfare by increasing the productivity of the people and by adopting price, wage and other policies which distribute income more evenly among the people but which do not diminish the incentive to increased production of needed goods. Let us dedicate ourselves anew to the belief that there are extraordinary possibilities in both man and nature which have not yet been realized, and which can be made manifest only if the individualistic yet cooperative genius of democratic institutions is preserved. Let us dedicate ourselves anew to making it possible for those who are gifted in art, science and religion to approach the unknown with true reverence, and not under the compulsion of producing immediate results for the glorification of one man, one group, one race or one nation.

Are we as scientists doing all we can to make democracy succeed? Are we using our science vigorously and impartially, to bring greatly increased health, wealth, security and education to all the people of the United States? The fate of democracy and of scientific freedom will depend less on what we may say than on how unreservedly we dedicate ourselves to these deeds.

OBITUARY

THOMAS WINGATE TODD

January 15, 1885—December 28, 1938

IN 1937 there appeared a volume which expressed its purpose "to promote the welfare of the child in the interest of the Nation to the end that physical and mental health, in their fullness, may be added to the ideals of Loyalty, Honor and Service." The book so dedicated, the first of a series, was the "Atlas of Skeletal Maturation (Hand)," by T. Wingate Todd and his associates. In inscription the volume epitomized goal, and in content exemplified a scientific approach. It marked a milestone in bringing human anatomy from the study of charnel house material to the study of the living population.

Trained in the Hunterian tradition that an anatomist must know vertebrate and mammalian as well as human morphology, Dr. Todd was grounded in the comparative approach. To this was added the Egyptology of Sir Grafton Eliott Smith and the human paleontology of Sir Arthur Keith. With this background Dr. Todd built at Western Reserve University a laboratory of anatomy unique in the world: 3,000 skulls and skeletons of the Mammalia; 600 skulls and skeletons of anthropoids; 3,300 human skulls and skeletons, for each of which sex, age and stock (race) was known, and for each of which literally hundreds of anthropometric measurements were available. It was from this comparative and human material that Dr. Todd drew for his many contributions.

Physical anthropology owes to him the insistence that the study of man's body be based on carefully documented material and that it must turn from static problems of evolutionary stage to the dynamic march of unfolding pattern. From the skeletal material he learned those age criteria later to be applied to growth studies: appearance of centers of ossification, calcification of the teeth, union of epiphyses, age-changes in the pubic symphysis and on the articular ends of long bones, suture-closure and age-changes in vascularity and texture, particularly of the flat bones of the skeleton. The measurement of the human body was clarified by his studies of the reliability of locating bony landmarks as related to subcutaneous tissue thickness. He made possible a more accurate transition from craniometry to cephalometry, from osteometry to somatometry: measurement of the dead was for him valid only in so far as it contributed to a more precise measurement of the living.

Human anatomy was to Dr. Todd *living anatomy.* In pursuance of this theme he taught his first- and