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RACE AND PROGRESS[1]

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PERMIT me to call your attention to the scientific aspects of a problem that has been for a long time agitating our country and which, on account of its social and economic implications, has given rise to strong emotional reactions and has led to varied types of legislation. I refer to the problems due to the intermingling of racial types.

If we wish to reach a reasonable attitude, it is necessary to separate clearly the biological and psychological aspects from the social and economic implications of this problem. Furthermore, the social motivation of what is happening must be looked at not from the narrow point of view of our present conditions but from a wider angle.

The facts with which we are dealing are diverse. The plantation system of the south brought to our shores a large Negro population. Considerable mixture between white masters and slave women occurred during the period of slavery, so that the number of pure Negroes was dwindling continually and the colored population gradually became lighter. A certain amount of intermingling between White and Indian took place, but in the United States and Canada this has never occurred to such a degree that it became an important social phenomenon. In Mexico and many parts of Central and South America it is the most typical case of race contact and race mixture. With the development of immigration the people of eastern and southern Europe were attracted to our country and form now an important part of our population. They differ in type somewhat among themselves, although the racial contrasts are much less than those between Indians or Negroes and Whites. Through Mexican and West Indian immigration another group has come into our country, partly of South European, partly of mixed Negro

[1] Address of the president of the American Association for the Advancement of Science, Pasadena, June 15.

and mixed Indian descent. To all these must be added the East Asiatic groups, Chinese, Japanese and Filipinos, who play a particularly important rôle on the Pacific Coast.

The first point in regard to which we need clarification refers to the significance of the term race. In common parlance when we speak of a race we mean a group of people that have certain bodily and perhaps also mental characteristics in common. The Whites, with their light skin, straight or wavy hair and high nose, are a race set off clearly from the Negro with their dark skin, frizzly hair and flat nose. In regard to these traits the two races are fundamentally distinct. Not quite so definite is the distinction between East Asiatics and European types, because transitional forms do occur among normal White individuals, such as flat faces, straight black hair and eye forms resembling the East Asiatic types; and conversely European-like traits are found among East Asiatics. For Negro and White we may speak of hereditary racial traits so far as these radically distinct features are concerned. For Whites and East Asiatics the difference is not quite so absolute, because a few individuals may be found in each race for whom the racial traits do not hold good, so that in a strict sense we can not speak of absolutely valid hereditary racial traits.

This condition prevails to a much more marked extent among the different so-called races of Europe. We are accustomed to speak of a Scandinavian as tall, blonde and blue-eyed, of a South Italian as short, swarthy and dark-eyed; of a Bohemian as middle-sized, with brown or gray eyes and wide face and straight hair. We are apt to construct ideal local types which are based on our everyday experience, abstracted from a combination of forms that are most frequently seen in a given locality, and we forget that there are numerous individuals for whom this description does not hold true. It would be a rash undertaking to determine the locality in which a person is born solely from his bodily characteristics. In many cases we may be helped in such a determination by manners of wearing the hair, peculiar mannerisms of motion, and by dress, but these are not to be mistaken for essential hereditary traits. In populations of various parts of Europe many individuals may be found that may as well belong to one part of the continent as to another. There is no truth in the contention so often made that two Englishmen are more alike in bodily form than, let us say, an Englishman and a German. A greater number of forms may be duplicated in the narrower area, but similar forms may be found in all parts of the continent. There is an overlapping of bodily form between the local groups. It is not justifiable to assume that the individuals that do not fit into the ideal local type which we construct from general impressions are foreign elements in the population, that their presence is always due to intermixture with alien types. It is a fundamental characteristic of all local populations that the individuals differ among themselves, and a closer study shows that this is true of animals as well as of men. It is, therefore, not quite proper to speak in these cases of traits that are hereditary in the racial type as a whole, because too many of them occur also in other racial types. Hereditary racial traits should be shared by the whole population and set it off against others.

The matter is quite different when individuals are studied as members of their own family lines. Racial heredity implies that there must be a unity of descent, that there must have existed at one time a small number of ancestors of definite bodily form, from whom the present population has descended. It is quite impossible to reconstruct this ancestry through the study of a modern population, but the study of families extending over several generations is often possible. Whenever this study has been undertaken we find that the family lines represented in a single population differ very much among themselves. In isolated communities where the same families have intermarried for generations the differences are less than in larger communities. We may say that every racial group consists of a great many family lines which are distinct in bodily form. Some of these family lines are duplicated in neighboring territories and the more duplication exists the less is it possible to speak of fundamental racial characteristics. These conditions are so manifest in Europe that all we can do is to study the frequency of occurrence of various family lines all over the continent. The differences between the family lines belonging to each larger area are much greater than the differences between the populations as a whole.

Although it is not necessary to consider the great differences in type that occur in a population as due to mixture of different types, it is easy to see that intermingling has played an important part in the history of modern populations. Let us recall to our minds the migrations that occurred in early times in Europe, when the Kelts of Western Europe swept over Italy and eastward to Asia Minor, when the Teutonic tribes migrated from the Black Sea westward into Italy, Spain and even into North Africa; when the Slav expanded northeastward over Russia, and southward into the Balkan Peninsula; when the Moors held a large part of Spain, when Roman and Greek slaves disappeared in the general population, and when Roman colonization affected a large part of the Mediterranean area. It is interesting to note

that Spain's greatness followed the period of greatest race mixture, that its decline set in when the population became stable and immigration stopped. This might give us pause when we speak about the dangers of the intermingling of European types. What is happening in America now is the repetition on a larger scale and in a shorter time of what happened in Europe during the centuries when the people of northern Europe were not yet firmly attached to the soil.

The actual occurrence of intermingling leads us to consider what the biological effect of intermixture of different types may be. Much light has been shed on this question through the intensive study of the phenomena of heredity. It is true we are hampered in the study of heredity in man by the impossibility of experimentation, but much can be learned from observation and through the application of studies of heredity in animals and plants. One fact stands out clearly. When two individuals are mated and there is a very large number of offspring and when furthermore there is no disturbing environmental factor, then the distribution of different forms in the offspring is determined by the genetic characteristics of the parents. What may happen after thousands of generations have passed does not concern us here.

Our previous remarks regarding the characteristics of local types show that matings between individuals essentially different in genetic type must occur in even the most homogeneous population. If it could be shown, as is sometimes claimed, that the progeny of individuals of decidedly distinct proportions of the body would be what has been called disharmonic in character, this would occur with considerable frequency in every population, for we do find individuals let us say with large jaws and large teeth and those with small jaws and small teeth. If it is assumed that in the later offspring these conditions might result in a combination of small jaws and large teeth a disharmony would develop. We do not know that this actually occurs. It merely illustrates the line of reasoning. In matings between various European groups these conditions would not be materially changed, although greater differences between parents would be more frequent than in a homogeneous population.

The essential question to be answered is whether we have any evidence that would indicate that matings between individuals of different descent and different type would result in a progeny less vigorous than that of their ancestors. We have not had any opportunity to observe any degeneracy in man as clearly due to this cause. The high nobility of all parts of Europe can be shown to be of very mixed origin. French, German and Italian urban populations are derived from all the distinct European types. It would be difficult to show that any degeneracy that may exist among them is due to an evil effect of intermating. Biological degeneracy is found rather in small districts of intense inbreeding. Here again it is not so much a question of type, but of the presence of pathological conditions in the family strains, for we know of many perfectly healthy and vigorous intensely inbred communities. We find these among the Eskimos and also among many primitive tribes among whom cousin marriages are prescribed by custom.

These remarks do not touch upon the problem of the effect of intermarriages upon bodily form, health and vigor of crosses between races that are biologically more distinct than the types of Europe. It is not quite easy to give absolutely conclusive evidence in regard to this question. Judging merely on the basis of anatomical features and health conditions of mixed populations there does not seem to be any reason to assume unfavorable results, either in the first or in later generations of offspring. The mixed descendants of European and American Indians are taller and more fertile than the pureblood Indians. They are even taller than either parental race. The mixed blood Dutch and Hottentot of South Africa and the Malay mixed bloods of the Island of Kisar are in type intermediate between the two races, and do not exhibit any traits of degeneracy. The populations of the Sudan, mixtures of Mediterranean and Negro types, have always been characterized by great vigor. There is also little doubt that in eastern Russia a considerable infusion of Asiatic blood has occurred. The biological observations on our North American mulattoes do not convince us that there is any deleterious effect of race mixture so far as it is evident in anatomical form and function.

It is also necessary to remember that in varying environment human forms are not absolutely stable, and many of the anatomical traits of the body are subject to a limited amount of change according to climate and conditions of life. We have definite evidence showing changes of bodily size. The stature in European populations has increased materially since the middle of the nineteenth century. War and starvation have left their effects upon the children growing up in the second decade of our century. Proportions of the body change with occupation. The forms of the hand of the laborer and that of the musician reflect their occupations. The changes in headform that have been observed are analogous to those observed in animals under varying conditions of life, among lions born in captivity or among rats fed with different types of diet. The extent to which geographical and social environment may change

bodily form is not known, but the influences of outer conditions have to be taken into consideration when comparing different human types.

Selective processes are also at work in changing the character of a population. Differential birth-rate, mortality and migration may bring about changes in the hereditary composition of a group. The range of such changes is limited by the range of variation within the original population. The importance of selection upon the character of a population is easily overestimated. It is true enough that certain defects are transmitted by heredity, but it can not be proved that a whole population degenerates physically by the numerical increase of degenerates. These always include the physically unfit, and others, the victims of circumstances. The economic depression of our days shows clearly how easily perfectly competent individuals may be brought into conditions of abject poverty and under stresses that only the most vigorous minds can withstand successfully. Equally unjustified is the opinion that war, the struggle between national groups, is a selective process which is necessary to keep mankind on the onward march. Sir Arthur Keith, only a week ago, in his rectoral address at the University of Aberdeen is reported to have said that "Nature keeps her human orchard healthy by pruning and war is her pruning hook." I do not see how such a statement can be justified in any way. War eliminates the physically strong, war increases all the devastating scourges of mankind such as tuberculosis and genital diseases, war weakens the growing generation. History shows that energetic action of masses may be released not only by war but also by other forces. We may not share the fervor or believe in the stimulating ideals; the important point is to observe that they may arouse the same kind of energy that is released in war. Such a stimulus was the abandonment to religion in the middle ages, such is the abandonment of modern Russian youths to their ideal.

So far we have discussed the effects of heredity, environment and selection upon bodily form. We are not so much concerned with the form of the body as with its functions, for in the life of a nation the activities of the individual count rather than his appearance. There is no doubt in my mind that there is a very definite association between the biological make-up of the individual and the physiological and psychological functioning of his body. The claim that only social and other environmental conditions determine the reactions of the individual disregards the most elementary observations, like differences in heart beat, basal metabolism or gland development; and mental differences in their relation to extreme anatomical disturbances of the nervous system. There are organic reasons why individuals differ in their mental behavior.

But to acknowledge this fact does not mean that all differences of behavior can be adequately explained on a purely anatomical basis. When the human body has reached maturity, its form remains fairly stable until the changes due to increasing age set in. Under normal conditions the form and the chemical constitution of the adult body remain almost stable for a number of years. Not so with bodily functions. The conditions of life vary considerably. Our heart beat is different in sleep and in waking. It depends upon the work we are doing, the altitude in which we live, and upon many other factors. It may, therefore, well be that the same individual under different conditions will show quite different reactions. It is the same with other bodily functions. The action of our digestive tract depends upon the quality and quantity of the food we consume. In short, the physiological reactions of the body are markedly adjusted to conditions of life. Owing to this many individuals of different organic structure when exposed to the same environmental conditions will assume a certain degree of similarity of reaction.

On the whole it is much easier to find decided differences between races in bodily form than in function. It can not be claimed that the body in all races functions in an identical way, but that kind of overlapping which we observed in form is even more pronounced in function. It is quite impossible to say that, because some physical function, let us say the heart beat, has a certain measure, the individual must be White or Negro—for the same rates are found in both races. A certain basal metabolism does not show that a person is a Japanese or a White, although the averages of all the individuals in the races compared may exhibit differences. Furthermore, the particular function is so markedly modified by the demands made upon the organism that these will make the reactions of the racial groups living under the same conditions markedly alike. Every organ is capable of adjustment to a fairly wide range of conditions, and thus the conditions will determine to a great extent the kind of reaction.

What is true of physiological function is equally true of mental function. There exists an enormous amount of literature dealing with mental characteristics of races. The blonde North-Europeans, South Italians, Jews, Negroes, Indians, Chinese have been described, as though their mental characteristics were biologically determined. It is true, each population has a certain character that is expressed in its behavior, so that there is a geographical distribution of types of behavior. At the same time we have a geographical distribution of anatomical types, and

as a result we find that a selected population can be described as having a certain anatomical type and a certain kind of behavior. This, however, does not justify us in claiming that the anatomical type determines behavior. A great error is committed when we allow ourselves to draw this inference. First of all it would be necessary to prove that the correlation between bodily form and behavior is absolute, that it is valid not only for the selected spot, but for the whole population of the given type, and, conversely, that the same behavior does not occur when the types of bodily build differ. Secondly, it would have to be shown that there is an inner relation between the two phenomena.

I might illustrate this by an example taken from an entirely different field. A particular country has a specific climate and particular geological formation. In the same country is found a certain flora. Nevertheless, the character of soil and climate does not explain the composition of the flora, except in so far as it depends upon these two factors. Its composition depends upon the whole historical evolution of plant forms all over the world. The single fact of an agreement of distribution does not prove a genetic relation between the two sets of observations. Negroes in Africa have long limbs and a certain kind of mental behavior. It does not follow that the long limbs are in any way the cause of their mental behavior. The very point to be proved is assumed as proved in this kind of argumentation.

A scientific solution of this problem requires a different line of approach. Mental activities are functions of the organism. We have seen that physiological functions of the same organism may vary greatly under varying conditions. Is the case of mental reactions different? While the study of cretins and of men of genius shows that biological differences exist which limit the type of individual behavior, this has little bearing upon the masses constituting a population in which great varieties of bodily structure prevail. We have seen that the same physiological functions occur in different races with varying frequency, but that no essential qualitative differences can be established. The question must be asked whether the same conditions prevail in mental life.

If it were possible to subject two populations of different type to the same outer conditions the answer would not be difficult. The obstacle in our way lies in the impossibility of establishing sameness of conditions. Investigators differ fundamentally in their opinion in regard to the question of what constitutes sameness of conditions, and our attention must be directed, therefore, to this question.

If we could show how people of exactly the same biological composition react in different types of environment, much might be gained. It seems to me that the data of history create a strong presumption in favor of material changes of mental behavior among peoples of the same genetic composition. The free and easy English of Elizabethan times contrasts forcibly with the prudish Mid-Victorian; the Norse Viking and the modern Norwegian do not impress us as the same; the stern Roman republican and his dissolute descendant of imperial times present striking contrasts.

But we need more tangible evidence. At least in so far as intelligent reaction to simple problems of everyday life is concerned, we may bring forward a considerable amount of experimental evidence that deals with this problem. We do not need to assume that our modern intelligence tests give us a clue to absolutely biologically determined intelligence—whatever that may mean—they certainly do tell us how individuals react to simple, more or less unfamiliar, situations. At a first glance it would seem that very important racial differences are found. I refer to the many comparative tests of the intelligence of individuals of various European types and of Europeans and Negroes. North Europeans tested in our country were found as a whole decidedly superior to South Europeans, Europeans as a whole to Negroes. The question arises, what does this mean? If there is a real difference determined by race, we should find the same kind of difference between these racial types wherever they live. Professor Garth has recently collected the available evidence and reaches the conclusion that it is not possible to prove a difference due to genetic factors, that rather all the available observations may be easily explained as due to differences in social environment. It seems to me the most convincing proof of the correctness of this view has been given by Dr. Klineberg, who examined the various outstanding European types in urban and rural communities in Europe. He found that there is everywhere a marked contrast between rural and urban populations, the city giving considerably better results than the country and that furthermore the various groups do not follow by any means the same order in city and country, that the order rather depends upon social conditions, such as the excellence of the school systems and conflicts between home and school. Still more convincing are his observations on Negroes. He examined a considerable number of Negroes in southern cities who had moved to the city from rural districts. He found that the longer they lived in the city the better the results of the tests came to be, so that Negroes who had lived in the city for six years were far superior to those who had just moved to the city. He found the same result

when studying Negroes who had moved from the south to New York, an improvement with the time of residence in New York. This result agrees with Brigham's findings for Italians who had lived for varying periods in the United States. It has often been claimed, as was done in the beginning by Brigham, that such changes are due to a process of selection, that more poorly endowed individuals have migrated to the country in late years and represent the group that has just come to the city. It would be difficult to maintain this in view of the regularity with which this phenomenon reappears in every test. Still, Dr. Klineberg has also given definite evidence that selection does not account for these differences. He compared the records of the migrating groups with those who remained behind. The records collected in Nashville and Birmingham showed that there is no appreciable difference between the two groups. The migrants were even a little below those who stayed at home. He also found that the migrants who came to New York were slightly inferior to those who remained in the South.

I have given these data in some detail, because they show definitely that cultural environment is a most important factor in determining the results of the so-called intelligence tests. In fact, a careful examination of the tests shows clearly that in none of them has our cultural experience been eliminated. City life and country life, the South and the North present different types of cultural background to which we learn to adapt ourselves, and our reactions are determined by these adaptations, which are often so obscure that they can be detected only by a most intimate knowledge of the conditions of life. We have indications of such adaptations in other cases. It would seem that among the Plains Indians the experience of girls with bead work gives to them a superiority in handling tests based on form. It is highly desirable that the tests should be examined with greatest care in regard to the indirect influence of experience upon the results. I suspect strongly that such influences can always be discovered and that it will be found impossible to construct any test in which this element is so completely eliminated that we could consider the results as an expression of purely biologically determined factors.

It is much more difficult to obtain convincing results in regard to emotional reactions in different races. No satisfactory experimental method has been devised that would answer the crucial question, in how far cultural background and in how far the biological basis of personality is responsible for observed differences. There is no doubt that individuals do differ in this respect on account of their biological constitution. It is very questionable whether the same may be said of races, for in all races we find a wide range of different types of personality. All that we can say with certainty is that the cultural factor is of greatest importance and might well account for all the observed differences, although this does not preclude the possibility of biologically determined differences. The form of response of groups of the same race but culturally different is so great that it seems likely that any existing biological differences are of minor importance. I can give only a few instances. The North American Indians are reputed as stoic, as ready to endure pain and torture without a murmur. This is true in all those cases in which culture demands repression of emotion. The same Indians, when ill, give in to hopeless depression. Among closely related Indian tribes certain ones are given to ecstatic orgies, while others enjoy a life running in smooth conventional channels. The buffalo hunter was an entirely different personality from the poor Indian who has to rely on government help, or who lives on the proceeds of land rented by his White neighbors. Social workers are familiar with the subtle influence of personal relations that will differentiate the character of members of the same family. Ethnological evidence is all in favor of the assumption that hereditary racial traits are unimportant as compared to cultural conditions. As a matter of fact, ethnological studies do not concern themselves with race as a factor in cultural form. From Waitz on, through Spencer, Tylor, Bastian to our times, ethnologists have not given serious attention to race, because they find cultural forms distributed regardless of race.

I believe the present state of our knowledge justifies us in saying, that while individuals differ, biological differences between races are small. There is no reason to believe that one race is by nature so much more intelligent, endowed with great will power, or emotionally more stable than another, that the difference would materially influence its culture. Nor is there any good reason to believe that the differences between races are so great, that the descendants of mixed marriages would be inferior to their parents. Biologically there is neither good reason to object to fairly close inbreeding in healthy groups, nor to intermingling of the principal races.

I have considered so far only the biological side of the problem. In actual life we have to reckon with social settings which have a very real existence, no matter how erroneous the opinions on which they are founded. Among us race antagonism is a fact, and we should try to understand its psychological significance. For this purpose we have to consider the behavior not only of man, but also of animals. Many animals live in societies. It may be a shoal

of fish which any individuals of the same species may join, or a swarm of mosquitoes. No social tie is apparent in these groups, but there are others which we may call closed societies that do not permit any outsider to join their group. Packs of dogs and well-organized herds of higher mammals, ants and bees are examples of this kind. In all these groups there is a considerable degree of social solidarity which is expressed particularly by antagonism against any outside group. The troops of monkeys that live in a given territory will not allow another troop to come and join them. The members of a closed animal society are mutually tolerant or even helpful. They repel all outside intruders.

Conditions in primitive society are quite similar. Strict social obligations exist between the members of a tribe, but all outsiders are enemies. Primitive ethics demands self-sacrifice in the group to which the individual belongs, deadly enmity against every outsider. A closed society does not exist without antagonisms against others. Although the degree of antagonism against outsiders has decreased, closed societies continue to exist in our own civilization. The nobility formed a closed society until very recent times. Patricians and plebeians in Rome, Greeks and barbarians, the gangs of our streets, Mohammedan and infidel, and our modern nations are in this sense closed societies that can not exist without antagonisms. The principles that hold societies together vary enormously, but common to all of them are social obligations within the group, antagonisms against other parallel groups.

Race consciousness and race antipathy differ in one respect from the social groups here enumerated. While in all other human societies there is no external characteristic that helps to assign an individual to his group, here his very appearance singles him out. If the belief should prevail, as it once did, that all red-haired individuals have an undesirable character, they would at once be segregated and no red-haired individual could escape from his class no matter what his personal characteristics might be. The Negro, the East Asiatic or Malay who may at once be recognized by his bodily build is automatically placed in his class and not one of them can escape being excluded from a foreign closed group. The same happens when a group is characterized by dress imposed by circumstances, by choice, or because a dominant group prescribe for them a distinguishing symbol—like the garb of the Medieval Jews or the stripes of the convict—so that each individual, no matter what his own character may be, is at once assigned to his group and treated accordingly. If racial antipathy were based on innate human traits this would be expressed in interracial sexual aversion. The free intermingling of slave owners with their female slaves and the resulting striking decrease in the number of full-blood Negroes, the progressive development of a half-blood Indian population and the readiness of intermarriage with Indians when economic advantages may be gained by such means, show clearly that there is no biological foundation for race feeling. There is no doubt that the strangeness of an alien racial type does play an important rôle, for the ideal of beauty of the White who grows up in a purely White society is different from that of a Negro. This again is analogous to the feeling of aloofness among groups that are characterized by different dress, different mannerisms of expression of emotion, or by the ideal of bodily strength as against that of refinement of form. The student of race relations must answer the question whether in societies in which different racial types form a socially homogeneous group, a marked race consciousness develops. This question can not be answered categorically, although interracial conditions in Brazil and the disregard of racial affiliation in the relation between Mohammedans and infidels show that race consciousness may be quite insignificant.

When social divisions follow racial lines, as they do among ourselves, the degree of difference between racial forms is an important element in establishing racial groupings and in creating racial conflicts.

The actual relation is not different from that developing in other cases in which social cleavage develops. In times of intense religious feeling denominational conflicts, in times of war national conflicts take the same course. The individual is merged in his group and not rated according to his personal value.

However, nature is such that constantly new groups are formed in which each individual subordinates himself to the group. He expresses his feeling of solidarity by an idealization of his group and by an emotional desire for its perpetuation. When the groups are denominational, there is strong antagonism against marriages outside of the group. The group must be kept pure, although denomination and descent are in no way related. If the social groups are racial groups we encounter in the same way the desire for racial exogamy in order to maintain racial purity.

On this subject I take issue with Sir Arthur Keith, who in the address already referred to is reported to have said that "Race antipathy and race prejudice nature has implanted in you for her own end—the improvement of mankind through racial differentiation." I challenge him to prove that race antipathy is "implanted by nature" and not the effect of social causes which are active in every closed social group,

no matter whether it is racially heterogeneous or homogeneous. The complete lack of sexual antipathy, the weakening of race consciousness in communities in which children grow up as an almost homogeneous group; the occurrence of equally strong antipathies between denominational groups, or between social strata—as witnessed by the Roman patricians and plebeians, the Spartan Lacedaemonians and Helots, the Egyptian castes and some of the Indian castes—all these show that antipathies are social phenomena. If you will, you may call them "implanted by nature," but only in so far as man is a being living in closed social groups, leaving it entirely indetermined what these social groups may be.

No matter how weak the case for racial purity may be, we understand its social appeal in our society. While the biological reasons that are adduced may not be relevant, a stratification of society in social groups that are racial in character will always lead to racial discrimination. As in all other sharp social groupings the individual is not judged as an individual but as a member of his class. We may be reasonably certain that whenever members of different races form a single social group with strong bonds, racial prejudice and racial antagonisms will come to lose their importance. They may even disappear entirely. As long as we insist on a stratification in racial layers, we shall pay the penalty in the form of interracial struggle. Will it be better for us to continue as we have been doing, or shall we try to recognize the conditions that lead to the fundamental antagonisms that trouble us?

OBITUARY

SAMUEL WILSON PARR

SAMUEL WILSON PARR died at Urbana, Illinois, on May 16, following a heart attack. He was born on January 21, 1857, at Granville, Illinois. Graduating from the University of Illinois with the A.B. degree in 1884, he continued his studies at Cornell University and received the M.S. degree in 1885. During 1900 and 1901 he was abroad at the University of Berlin and the University of Zurich. Following six years as instructor and professor of general science at Illinois College, 1885–1891, he came to the University of Illinois as professor of applied chemistry, a position which he retained until 1926, when he became professor emeritus. Even after retirement, however, he continued to carry on his researches.

From the beginning Professor Parr was a leader. During his undergraduate days he was an athlete, editor of the student paper, president of the literary society, president of the University Young Men's Christian Association and valedictorian of his class. His versatility may be further appreciated when it is realized that on his return to the teaching staff of the University of Illinois seven years after leaving as a student, he became leader of the Glee Club.

With Professor Arthur W. Palmer he contributed much to the early development of the chemistry department at the University of Illinois. He was always a virile and interesting teacher, and in the early days when the facilities and stimulus for research in the university were lacking, he was always at work developing methods and means of experimentation which not only contributed much to knowledge and technique, but also inspired his students with ambition to accomplish something original.

His scientific discoveries during his forty years of service to the University of Illinois are so numerous that only a few of those for which he was best known need be mentioned. The Parr calorimeter for determining the heat value in coals and other hydrocarbons is used throughout the world. The Parr peroxide bomb is found in the majority of analytical laboratories. More recently he perfected another calorimeter for measuring and recording the heat value of fuel gases. He made an extensive study of alloys and developed one in particular, "Illium," which has powerful acid-resisting properties and which has found wide application for replacing platinum in many types of equipment. His study of boiler waters and their treatment was a very valuable contribution. From the earliest days the study of the physical and chemical properties of coal was one of his prime interests, and the results of his investigations gave him an international reputation in this field. He devised a most valuable "Classification of Coal" and developed a low temperature coking process to a point where it is just a question of time before it will become an important industrial process.

Professor Parr was the author of many articles and bulletins and wrote a well-known text on "The Chemical Examination of Water, Fuel, Flue-Gases and Lubricants." The last few months of his life he devoted his remaining strength to a revision of this book. Professor Parr was associated with many scientific and engineering organizations and technical committees and in each he had much influence. Among the recognitions that came to him were the Presidency of the American Chemical Society, the honorary degrees of doctor of science conferred by Lehigh University and by Illinois College, and the award of the Chandler Medal. Above all he will be remembered best for his genial and kindly person-