hocken, Pa., has established an independent research organization with headquarters in Chicago.

DR. ROBERT M. KLEINPELL, micropaleontologist of Bakersfield, Calif., and of the California Institute of Technology, who was captured in Manila by the Japanese in 1942, has recently been released from prison and has returned to the United States.

DR. EDMUND V. COWDRY, professor of anatomy at the Washington University School of Medicine, St. Louis, will deliver on April 23 the Adam M. Miller Memorial Lecture of the Long Island College of Medicine. He will speak on "Microscopic and Chemical Properties of Precancerous Lesions."

DR. K. LARK-HOROVITZ, head of the department of physics of Purdue University, addressed the Chapter of Sigma Xi of the University of Cincinnati on April 2. His subject was "Radioactive Tracers and their Application to Biological Problems."

PROFESSOR JOHN G. KIRKWOOD, of Cornell University, will deliver the Edward Lee Memorial Lecture at the University of Chicago on May 11. He will speak on "Hindered Molecular Rotation in Polar Liquids."

COLONEL SCOTT B. RITCHIE, deputy chief of Research and Development Service, Office Chief of Ordnance, discussed "Army Ordnance Development Since World War I" at a meeting on April 12 of the Washington, D. C., Section of the American Society of Mechanical Engineers.

DR. ERIC G. BALL, associate professor of biological chemistry at Harvard University, is giving a series of lectures at the School of Medicine of the University of Brazil in Rio de Janeiro, where he will direct research in cellular respiration. His trip is under the joint auspices of the Brazilian Government and the Department of State of the United States.

PROFESSOR JAMES MACKINTOSH, dean of the London School of Hygiene and Tropical Medicine, has been lecturing in Sweden for the British Council on "Housing and Medicine," "Nutrition and Medicine" and other aspects of social medicine and health education.

THE Director-General of the Army Medical Services, Sir Alexander Hood, K.C.B., will deliver on May 28 the Harveian Lecture at the Royal College of Surgeons of England. He will speak on "Total Medicine."

THE annual general meeting of the American Philosophical Society that it was planned to hold on April 19, 20 and 21 in Philadelphia, has been cancelled in compliance with the request of the War Committee on Conventions of the Office of Defense Transportation.

IN compliance with the wishes of the ODT, the Institute of Chemists has cancelled its annual meeting, and its Gold Medal will be awarded by the Miami Valley Chapter at its regular meeting in Columbus, Ohio, on May 11. As already announced in SCIENCE, the 1945 recipient of the medal is John W. Thomas, chairman and chief executive of the Firestone Tire and Rubber Company. William M. Jeffers, president of the Union Pacific Railroad and formerly U. S. Rubber Director, will address the meeting. Other speakers will include Dr. Hezzleton E. Simmons, president of the University of Akron; Dr. Donald B. Keyes, director of the Office of Production, Research and Development of the War Production Board; John D. Coleman, president of the Dayton Society of Professional Engineers and supervisor of Production Processes of the Frigidaire Division of the General Motors Corporation. The medal will be presented by Dr. Gustav Egloff, president of the institute.

THE regular meeting of the Paleontological Research Institution took place on April 7 at Ithaca, N. Y. Special orders of the day for which appropriations have already been made related (1) to the early completion of doubling the library and working space of the institution; (2) to a discussion of the best methods for finishing publication of (a) a 50 plate volume on Ordovician cephalopods, (b) a 65 plate volume on Jackson Eocene Mollusca, (c) completion of the gathering together of material and the publishing of Carpenter's West Coast molluscan types and (d) minor reports.

# DISCUSSION

## "FACTS" AND "INTERPRETATIONS" REGARDING RACE DIFFERENCES

IN a recent note,[1] Mr. Birch objects to the distinction which I drew between "facts" and "interpretations" with respect to psychological differences among races. I would agree that the distinction breaks down in those rare cases in which only one interpretation is possible. But such rigid relationships are seldom found in the social sciences; inevitably, perhaps, there are several interpretations of the same data and one interpretation is apt to be more adequate than another. I shall give two "exhibits" as illustrations of what I mean.

*Exhibit A:* Medians on the Army Alpha and Army

[1] SCIENCE, n.s., 101: 173–174, 1945.

Beta Tests achieved by Whites and by northern Negroes in 1918 were as follows:

TABLE 1

| | Alpha median | Beta median |
|---|---|---|
| White | 58.9 | 43.4 |
| Northern Negro | 38.6 | 32.5 |
| Difference | 20.3 | 10.9 |

Alpha, it will be remembered, was a "verbal" or language test requiring the ability to read and write. Beta was a non-language test; the subject did not have to read or write but simply indicated his answers by marking. In presenting the above data as evidence that the Negro was handicapped in Alpha by lack of schooling, Professor Klineberg[2] writes: "The discrepancy (in Beta) is still marked, but it has been considerably reduced. It is obvious that the language factor is not the only one responsible for the observed difference, but it seems clear that it does participate in the final result." I am not concerned with Klineberg's general conclusion as to the effect of schooling, which is very probably true, but only with his statement that the difference between Negroes and Whites is "considerably reduced" upon Beta. Since Alpha and Beta were scored in different units, a 20-point difference on Alpha can not be compared directly with a 10-point difference on Beta. Moreover, if the proportion of northern Negroes who exceeded the White medians in Alpha and in Beta are computed, it is found that 29 per cent. of Negroes exceeded the White median on Beta as compared with 27 per cent. who exceeded the White median on Alpha. The difference in median performance of Whites and Negroes is not, therefore, "reduced" on Beta as compared with Alpha, and Klineberg's interpretation of the "facts" of Table 1 is clearly in error.

*Exhibit B:* In their recent pamphlet, "Races of Mankind," Benedict and Weltfish[3] reproduce the Alpha medians of Negro soldiers from New York, Illinois and Ohio, and of White soldiers from Arkansas, Kentucky and Mississippi (see Table 2).

TABLE 2

| Whites | | | Negroes | | |
|---|---|---|---|---|---|
| State | N | Median | State | N | Median |
| Arkansas | 618 | 41.0 | New York | 850 | 44.5 |
| Kentucky | 832 | 41.0 | Ohio | 152 | 48.8 |
| Mississippi | 665 | 40.8 | Illinois | 578 | 46.9 |

From the context it is quite clear that these data are meant to be taken as evidence that there are "no race differences." These authors fail to state, however, (1) that their data represent extreme selections and (2) that when Negroes in New York, Ohio and Illinois are compared with Whites in the same states, the overlap is 28 per cent.—almost exactly what it was in the country as a whole. One might argue, therefore, that given better schooling the Negro does indeed improve his Alpha score—but not his position relative to the White. Again, one might argue in favor of race differences on the grounds that White southerners did as well as highly selected northern Negroes in spite of educational handicaps which unfortunately affect Whites as well as Negroes. Divergent interpretations like these support by contention that the same facts can be marshalled equally well to support opposing points of view. Incidentally, the authors of "Races of Mankind" omit the sizes of their samples (shown in Table 2), which in the case of the Ohio Negroes might have cast some doubt upon their conclusions.

Although in my note I did not support any particular view of race differences, Mr. Birch feels constrained to defend vigorously the "no differences" view. As a first exhibit, he cites Brigham's[4] so-called "rejection" of his own test findings with regard to natio-racial differences. This is not an especially happy choice of evidence for Mr. Birch's purposes. When Brigham wrote his paper fifteen years ago, he was greatly impressed by the demands of the factor analysts for "purity" within a test battery. Brigham believed that Alpha was not "factorially pure," and was inclined to discount his findings with the Alpha test on that account. In my opinion, Brigham attached too much importance to the matter of test purity and Klineberg too uncritically accepted what he calls Brigham's "recantation." As a matter of fact, we know that the Alpha test possesses considerable generality (intercorrelations range from .59 to .86), as much, indeed, as does the new Stanford-Binet. Brigham's results may be criticized on the score of sampling and for other reasons; but the question of test purity upon which he based his "rejection" is not a crucial issue. As a final argument, Mr. Birch quotes a statement from Professor Klineberg[5] to the effect that "The conclusion (*i.e.*, that there are race differences) came first and the facts were found to justify it." In many instances this has undoubtedly been true. But the reversal of facts and conclusions is not peculiar to the race differences advocates, as is amply demonstrated by Professor Klineberg's own book.

[2] O. Klineberg, editor, "Characteristics of the American Negro," N. Y., Harper & Bros., 1944, p. 58.

[3] R. Benedict and G. Weltfish, "The Races of Mankind," Public Affairs Pamphlet, 85, Public Affairs Comm., 1943.

[4] C. C. Brigham, *Psychol. Rev.*, 37, pp. 158–165, 1930.

[5] O. Klineberg, "Race Differences," Harper and Bros., N. Y., 1935.

Like many anthropologists, Professor Herskovits is concerned over the psychologist's use of the term "race." In commenting on my brief note,[6] Professor Herskovits offers an original—to say the least—if somewhat whimsical solution to the whole problem of race differences. One can not, he writes, speak of race differences as between Negroes and Whites, since there is no Negro race in this country, but instead a group of more-or-less African ancestry. At first glance, this view seems reasonable enough, though upon examination it is clearly a quibble over terms. Surely a group does not have to possess unmixed ancestry (be racially "pure") before the term "racial" is applicable. The anthropologist speaks understandably enough of the factor of economic status, although the economic condition within a given group is never a constant and may vary widely. By the same token, the psychologist may speak sensibly of the factor of race when the group being described does not possess biologically pure ancestry. Except for small groups of transitional types, the American Negro constitutes a recognizable and clearly defined group; and the criterion of membership in this group is (more-or-less) African ancestry. To repeat what I said in my note, studies in this country over the past forty years have regularly and consistently found differences as between the American Negro and the American White. These differences, to be sure, are subject to a number of interpretations; but the fact of their existence can not be denied.

Although the extent of race mixture in this country has probably been fairly large, I do not believe that Professor Herskovits's oft-quoted estimate of the degrees of admixture possesses much validity. Professor Herskovits writes that ". . . it would be hazardous to place the proportion of those among the American 'Negro' population of unmixed African descent—that is biological Negroes—at more than 30 per cent., with the large probability of a much smaller percentage of unmixed Negroes to-day." In view of the method by which this figure was obtained, I think it would be hazardous to accept it as anything more than a guess. Incidentally—and finally—I hope that Professor Herskovits, having now clarified the term "race" for psychologists, will proceed to clarify the even more nebulous concept of "culture" for his fellow anthropologists.

HENRY E. GARRETT

DEPARTMENT OF PSYCHOLOGY,
COLUMBIA UNIVERSITY

## MARINE FOULING AND ITS PREVENTION

THE fouling of ships reduces their speed, curtails their availability (by dry docking) and increases expenditure on fuel and labor. The 1943 report, issued by the joint anti-fouling subcommittee of the Iron and Steel Institute and the British Iron and Steel Federation, deals mainly with the anti-biotic properties of the copper and mercury components of protective paints.[1] The report shows that the progressive reduction in the effectiveness of such paints is not due to the exhaustion of their metallic constituents, but to the blocking of their active surface by slimy or cement-like formations largely of organic origin. This evolution of a natural "antidote" by marine organisms demands the revision of the whole idea of organic and inorganic poison paints as applied to fouling. The significance of these marine deposits becomes still more apparent when it is realized that they are not only products of marine life, but form the habitat or anchorage of many other types of flora and fauna. As to the nature of the slime, cement, coral and shell formations—they consist of organic, silicious and calcareous material in which the last predominates, whilst the first stabilizes the colloidal state, as in the case of mother of pearl. Again, apart from quantitative considerations, the ability of calcium carbonate to exist as a colloid in an inorganic medium (in its liquid-colloid-solid transition cycle)[2] gives it a dominant place in our problem. This is borne out by the effect of the "cleaning ports," treatment of dock basins infested with calcareous organisms, the geology of the area and such chemical influences as dissolved carbon dioxide, "soft" water, etc., upon the extent and type of fouling.[3] It would therefore appear that any measure calculated to hinder or inhibit the deposition of calcium salts would automatically counteract fouling. Such a preventive measure may possibly be found in a paint, incorporating zeolite or sodium permutit in a suitable medium, to be applied on top of the usual anti-corrosion protective covering. We may expect here the automatic combination of the two distinct processes operating in water-softening, namely, (1) the conversion of the sodium aluminium silicate into calcium aluminium silicate in presence of calcium bicarbonate and (2) the regeneration of the sodium aluminium silicate by the action of sodium chloride upon the calcium aluminium silicate. In other words, the normal salinity of seawater, exceeding its calcium carbonate content, may be sufficient to protect the anti-fouling paint and prevent the deposition of calcium carbonate. Such catalytic action would leave the sodium permutit paint apparently unaffected, with its surface free from gelatinous calcium carbonate.

[6] SCIENCE, n.s., 101: 200.

[1] See also Bengough and Shepheard, Paper No. I on "The Corrosion and Fouling of Ships," published by the Iron and Steel Institute, 1943; Ewart Bowles v Bengough, *Nature*, 152: 159, 1943.

[2] M. Copisarow, *Jour. Chem. Soc.*, 123: 785, 1923; 222, 1927; *Kolloid Zeits.*, 49: 309, 1929.

[3] *Idem, Chem. and Ind.*, Nov. 18, 1944.