per patient from the province, and $1.75 daily per patient from the municipality. The total general hospital revenue last year was $10,140,782. The commission emphasized the need of a government owned psychiatric hospital and to assist institutional schools in caring for Ontario's 6,000 crippled children, 2,000 blind and 3,000 deaf and dumb persons, recommended the division of the province into ten districts, in each of which will be stationed a graduate nurse or social worker supervised by a special government officer. It was recommended that the raising of funds to effect other recommendations of the commission should be patterned after the Quebec plan, in which more than $600,000 is raised annually by a hospital tax of 5 per cent. of the cost of all meals over $1, levied in hotels and restaurants. Among the recommendations was one which advised that a special conference of medical men be convened to study cancer treatment and that the province establish a cancer hospital and purchase a supply of radium. Emphasis was laid on the need of preventive clinics, provisions for occupational training for convalescents, and aid in the rehabilitation of tuberculosis patients on discharge.

ACCORDING to *Nature,* with the cooperation of the authorities of various national museums, the British Museums Association organized a short training course for curators during the week of October 6–11. The course was attended by thirty-three students from provincial museums, for the most part junior assistants, though a few seniors were glad to avail themselves of this opportunity. The gathering was welcomed in the new Conference Hall at the Science Museum by Sir Henry Lyons, when an opening address on first principles of museum work was given by Dr. F. A. Bather, and Dr. E. E. Lowe discussed some fundamental points in museum practice. Succeeding days were devoted to the Victoria and Albert Museum, with demonstrations on textiles, wood furniture, ceramics, prints and the circulation department; the Natural History Museum, with demonstrations on habitat groups, casting of whales, preparing spirit specimens, and preparation of fossils for exhibition; the National Galleries in Trafalgar Square and at Millbank, with talks on storage, cataloguing and the explanation of pictures; the laboratory of the British Museum, with a lecture on restoration of Egyptian relics.

DISCUSSION

SOME CRITICISMS OF "RACE CROSSING IN JAMAICA"

IN SCIENCE, No. 1850, Castle criticizes Jennings and me for certain conclusions drawn by Steggerda and me in "Race Crossing in Jamaica" (1928) and utilized by Jennings in his book "The Biological Basis of Human Behavior." The vigor of Castle's criticism reminds me of a boyhood experience, when absorbed in watching a procession. A woman next to me let out a shriek, crying, "You are stepping on my corns." Castle has two well-developed scientific corns: one, that size factors in mammals are general factors affecting all parts of the skeleton simultaneously (Castle, 1914); the other, that no disharmony results from race crossing.

The first corn is irritated by the finding of Steggerda and me (1929) that blacks have longer legs than whites, both absolutely and relatively to stature. Castle had previously[1] criticized me for finding a difference in leg length between Negro and Amerind. While in our Table 67 the difference in absolute leg length between blacks and whites is not much greater than the probable error of the means, the differences in relative leg length amount to 2 per cent., which strikes us as considerable, as anthropometric differences go. Also, the superiority of blacks in length of the leg and its segments is shown in all the other germane tables, namely, relative kneeling height, stature minus kneeling height and tibiale height (length of lower leg + foot). The difference between blacks and whites in these tables is consistent and in some cases considerable. The differences in absolute length of lower leg is 5 times the probable error.

That the proportions of trunk to leg do differ in different races of mankind is indisputable. If Castle will refer to Martin's "Lehrbuch der Anthropologie," 2d Aufl., pp. 411 and 412, he will find conclusive evidence of this. From his tables Martin draws the conclusion: "The relative leg-length of Negroes, Veddahs, some East Indians and Australians is especially large."

That Castle apparently still maintains his old position, though with some shifts (Castle, 1924, p. 20), is the more remarkable in view of the keen analysis of Wright (1918), who shows that in Castle's rabbits bone lengths vary to a certain extent independently. Also there are groups of bones that vary together and independently of the rest of the body. "Again," says Wright, "the bones of the hind leg (femur and tibia) form a group subject to common influences which do not affect the humerus, a bone of the fore leg."

The second irritating conclusion of mine is that in individual browns there occurs a deviation from the average proportions of leg length to arm length that is found in the parent races, white and black. Castle doubts if such a disharmony is possible. Not all the

[1] In Publication No. 320 of the Carnegie Institution.

evidence for our conclusion can be given here. It lies, in part, in the great range of dimensions of the arm and leg lengths in the browns as compared with either whites or blacks alone as shown in Tables 43 to 46, 48, 49, 52 to 54, 66 to 68, 72. That despite the usual large range the standard deviation of the browns is not always the highest of the three racial groups is probably due to the fact that the browns are the most rigidly selected of all, about half being students at Mico College.

That species hybrids can form highly variable zygotes including those that die in embryo or at a later developmental stage is well known among plants[2] in both first and especially second hybrid generations. If species hybrids, often apparently through the presence of genes with conflicting tendency, die, there is nothing extraordinary in the finding that in a less extreme cross viable but not fully harmonious progeny may be produced in F_2. That disharmonious instincts appear is easily demonstrated in dogs and poultry. That morphological disharmonies appear is well illustrated by Bryn's findings on the easily dislocated hips of Norwegian-Lapp hybrids, and the still unpublished findings of Stockard with dog hybrids.

The capacity of the organism through self-adjustment to make good some gene deficiencies is no doubt very great. But it has its limits. I have myself seen one of twins who, at birth, lacked even bilateral symmetry of the legs.

Finally, a word of protest against some misrepresenting phrases that Castle (no doubt unwittingly) has introduced into the discussion. He says, "Perhaps it is leg length in relation to total stature that puts browns at a physical disadvantage in relation to whites and blacks." This certainly distorts our conclusion. We never stated that "browns" were at a physical disadvantage; we stated precisely "some of the hybrids." We certainly never drew the conclusion that the Negro-white cross is inferior to the Negro or the whites; but we did find some cases of browns that seemed to present greater extremes—and sometimes less well-adjusted extremes—than either of the parental races. Our conclusion is not as Castle suggests it is, that the browns "are a degradation of the white race." Our conclusion is given at p. 477: "While, on the average, the Browns are intermediate in proportions and mental capacities between Whites and Blacks, and although some of the Browns are equal to the best of the Blacks in one or more traits still among the Browns there appear to be an excessive per cent. over random expectation who seem not to be able to utilize their native endowment."

[2] See Renner, in "Handbuch der Vererbungswiss.," Bd. II.

In *Nature,* No. 3177, Professor Karl Pearson publishes a critical review of "Race Crossing in Jamaica." His main complaints are based on the fact that the samples are insufficient—the adults of the 6 groups running from 50 to 93 per group. There is nothing to be said on this point except that funds and time were limited and the numbers of adults cited are all that we could, under the circumstances, secure. Whether results based on such small numbers were worth publishing is a question on which different opinions may be held. The committee thought they were worth publishing. The uniform computation of probable errors was relied upon to indicate the limits of significance (or insignificance) of the numerical results.

In regard to another matter about which Pearson complains, *viz.,* homogeneity of material, this is discussed from page 5 to 19; also pages 20 and 22. We do not recall any work of this nature where the homogeneity of the material is discussed more fully. Certainly we had in mind the desirability of genetical purity of the blacks, and think that we have eliminated the hybrids nearly as successfully as we could have done it for the "West African Negroes" to whom Pearson refers, mixed as they have been from time immemorial with Arabians and Jewish traders. If 2 or 5 per cent. of errors were made it would not have changed, we think, the essential conclusions of the work. The whites certainly included no "pass-for-whites," as they were taken from very segregated white populations.

C. B. DAVENPORT

CARNEGIE INSTITUTION OF WASHINGTON

INDUCED PARTHENOGENESIS AND HOMOZYGOSIS

THE report of the production of homozygotes through induced parthenogenesis in Nicotiana and Fragaria, by Dr. East,[1] may justify a short review of parthenogenesis in the grouse locusts (Tettigidae). During attempts, 1915–18, to cross males and females of *Paratettix texanus* with those, respectively, of *Apotettix eurycephalus,* it was observed that the comparatively few resulting offspring were homozygous for the dominant segregate, or cross-over color patterns of the females, were themselves females and showed no trace of the dominant characteristics of the males. It was at first thought and noted that perhaps the development of the eggs had been in some way induced, or initiated, by the males of the opposite species, or by their products. However, before publication[2] it had been ascertained that the parthenogenesis

[1] SCIENCE, August 8, 1930.

[2] *Amer. Nat.,* 53: 131–142, 1919.