

transverse fields, and in Curve II for longitudinal fields. With a transverse magnetic field, no persistent current flows in a field greater than 41 gauss, while with a longitudinal field the limiting value is 71 gauss. The ratio of the transverse to the longitudinal field for the first appearance of resistance is therefore 0.58 instead of 1/2. This result agrees with the work of de Haas, Voogt and Jonker², who also found this ratio to be 0.58 in the case of direct resistance measurements. Along the descending

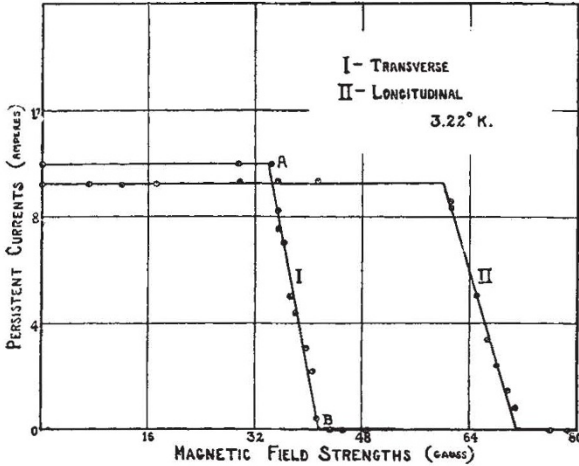


Fig. 1.

portion *AB* of Curve I, the persistent current decreases as the external field is increased, in such a way that the relation $\frac{H}{0.58} + H_i = H_c$ is obeyed, where $H_i = \frac{2i}{r}$ is the field at the surface of the wire due to the current itself.

Complete results will be published shortly.

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Jan. 7.

¹ Smith, H. Grayson, and Tarr, F. G. A., *Trans. Roy. Soc. Can.*, (3), 29, Sec. III (1935). Smith, H. Grayson, Mann, K. C., and Wilhelm, J. O., *Trans. Roy. Soc. Can.*, 30, Sec. III (1936).

² Laue, M. von, *Phys. Z.*, 33, 793 (1932).

³ London, F., *Physica*, 3, No. 6 (June 1936).

⁴ Peierls, R., *Proc. Roy. Soc., A*, 155, 886 (1936).

⁵ de Haas, W. J., Voogt, J., and Jonker, J. M., *Leiden Comm.*, 229c (1934).

The Sterckfontein Ape

THE letter from Dr. E. Schwarz which appeared in *NATURE* of December 5 shows, I think, the necessity for some hesitation before coming to any definite conclusion as to the affinities of *Australopithecus*. Dr. Schwarz considers it "very probable that *Australopithecus* was a pigmy gorilla"; and he has compared it with the dwarf chimpanzee of the Congo (*Pan satyrus panicus*). It is unnecessary at this stage to criticize in detail Dr. Schwarz's views, but the fact that other prominent anatomists have come to quite different opinions shows that we are not yet able finally to place it.

Dr. Adloff, who has made a special study of the dentition of *Australopithecus*, says, "Das Gebiss von *Australopithecus* ist aber rein menschlich und lässt den Schluss zu, dass *Australopithecus* kein Anthro-

poide, sondern ein Hominide ist". Dr. Gregory, of New York, who is probably the greatest living authority on mammalian teeth, has pointed out that of twenty-six dental characters in *Australopithecus*, not one is nearer to the chimpanzee, two are nearer to the gorilla, one is nearer to the chimpanzee and gorilla, three are common to the chimpanzee, gorilla and primitive man, and twenty are transitional to or nearer to primitive man; and he adds: "if *Australopithecus* is not literally a missing link between the older dryopithecoid group and primitive man, what conceivable combination of ape and human characters would ever be admitted as such?" Romer, of Harvard, the eminent American palaeontologist who made a careful study of the Taungs ape in 1929, while not definitely deciding as to the affinities, says it is "clearly not a chimpanzee or a gorilla".

All this seems to show that *Australopithecus* is a form of considerable interest whose affinities are difficult to determine; but I think it likely that the whole question will be quite definitely settled within two years. In the meantime, I may mention that the brain of the Sterckfontein ape was considerably smaller than was at first believed. The contact of the occipital fragment has been found, and the restored brain appears to have been only about 435 c.c. It is thus an ape fairly comparable in size with the chimpanzee, but with teeth which in my opinion resemble those of man much more than they do those of any of the living anthropoids.

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Vitamin P

WE reported in our previous notes¹ on the vitamin nature of phenyl-benzo- γ -pyrone dyes, and have described a method for the experimental demonstration of this activity. Using this method, we tested the following substances for their vitamin activity: hesperidine (m.p. 261°), an impure sample of demethylo-hesperidine (mother liquor of 'citrin') and quercitrine, 1 mgm. being given daily.

The experiment consisted of seven groups of 20 guinea pigs each. One of these groups received the basal diet only. The other groups received in addition: hesperidine, demethylo-hesperidine, quercitrine, ascorbic acid (2 mgm.), ascorbic acid plus hesperidine, ascorbic acid plus demethylo-hesperidine.

All three groups receiving ascorbic acid equally showed normal growth. The animals receiving hesperidine, or demethylo-hesperidine only, behaved in the same way as the animals of our previous experiments receiving 'citrin'. The animals receiving the basal diet only or this diet and quercitrine showed severe scurvy and died after a sharp fall in weight on about the twenty-eighth day.

These results admit of the following conclusions: experimental scurvy, as commonly known, is the symptom of a mixed C and P avitaminosis. Pure C avitaminosis can be observed, if in addition to the basal diet vitamin P is administered. The pure P avitaminosis has no clinical symptoms. If, however, vitamins C and P are simultaneously withheld, the lack of P will greatly modify the pathological condition.

There is a great difference in the activity of different phenyl-benzo- γ -pyrones. Since the only essential difference in the formula of quercitrine and hesperidine is found on the C² and C³ atoms, it can be concluded that these atoms are of special importance