

pronounced parallelism between the protective action as measured by the gold number of the colloid substance and its action on the electrolytic deposit. Highly protective substances (gelatin and serum albumin) modify considerably the stress in the copper, whereas the less protective (gum arabic and gum tragacanth) have a much smaller effect. The dextrin with its very high gold number has no effect in the limits of the concentrations examined.

These results show that the effect produced by the colloids on the electrolytic copper deposit must be attributed mainly to phenomena similar to those manifested in protective actions, that is, they have to be brought back finally to adsorption.

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<sup>1</sup> C. R. Acad. Sci., Paris, 194, 456, 870; 1932.

#### Application of the Gold-Beater's Skin Test to Some Synthetic Tannins

IN several communications<sup>1</sup> we have shown that the generally accepted reactions for the tannins are quite unreliable, with the result that the above-named test was evolved.<sup>2</sup> The gold-beater's skin test demonstrates the *tanning* properties of a substance, and is given *only* by true tannins. Its application to the following synthetic tannins, prepared according to Emil Fischer,<sup>3</sup> digalloyl-glycol, trigalloyl-glycerin, tetragalloyl-erythrol and hexagalloyl-mannitol, shows them to possess no tanning properties whatever. These observations thus extend my objections,<sup>4</sup> since further emphasised by Tschitschibabin,<sup>5</sup> to Fischer's galloyl-glucose formula of gallotannin.

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<sup>1</sup> Jones, *Analyst*, 52, 275; 1927; 53, 429; 1928. Fear, *ibid.*, 54, 227, 316; 1929.

<sup>2</sup> Atkinson and Hazleton, *Biochem. J.*, 16, 516; 1922. Price, *Analyst*, 49, 25, 336; 1924.

<sup>3</sup> Fischer and Bergmann, *Berichte*, 52, 829; 1919.

<sup>4</sup> Nierenstein, Spiers and Geake, *J. Chem. Soc.*, 119, 275; 1921.

<sup>5</sup> Nierenstein, Spiers and Hadley, *J. Amer. Chem. Soc.*, 47, 1726; 1925.

<sup>6</sup> Tschitschibabin, Kirsanow and Korolew, *Annalen*, 469, 93; 1929.

#### Inheritance of Acquired Characters

THE response evoked by my letter in NATURE of October 1 calls for a reply. Dr. R. A. Fisher, in his interesting communication,<sup>1</sup> points out that before my conclusion is accepted there are one or two preliminary points to be considered. His suggestion that the somewhat retarded ages of fatherhood of the upper and middle classes would alone explain the greater age of paternity cannot, I think, be accepted: the frequency curve would surely be displaced so as to be substantially parallel to the normal curve, but this is not the observed fact. Again, Dr. Fisher states that the comparison would be more valid if based upon birth order: I venture to suggest that this is quite a different proposition, although ability is undoubtedly correlated with birth order. The suggestion that the differences may be due to environmental modifications is a more plausible one but it cannot, I think, be sustained: a father seventy years of age is not likely either to survive to influence his child during the critical years of adolescence or to provide a substantially better environment than a father fifty years of age.

If my thesis is true it is important eugenically, since there emerges the possibility of materially improving a stock in one generation. In this connexion the tradition that Isaac was born when Abraham was an hundred years old and Sarah ninety is interesting, seeing that from him sprang the whole Jewish race. The story in *Genesis* is very circumstantial and emphasises that both parents were old and well stricken in age. It is commonly held, I believe, that such progeny is necessarily degenerate.

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<sup>1</sup> NATURE, 130, 579, Oct. 15, 1932.

#### Ecology of Man's Ancestors

IN his recent book "The Causes of Evolution" (p. 10) Prof. J. B. S. Haldane makes the following incidental remark: "Thus that common enemy of man, the bed-bug belongs to a family whose members are mostly parasitic on bats. Dr. Buxton has, I think, suggested that it is a relic of the association of our palaeolithic ancestors with bats in caves." It is, indeed, interesting to note that a number of other animals associated with man and his immediate environment belong to the ecological group of rock and cave communities. The members of the family Cimicidae to which the bed-bug belongs are predaceous (not parasitic in the strict sense of the word) not only on man and bats, but also on pigeons and house-martins, and the original habitat of these birds, as well as of swallows, is amongst cliffs and in caves. The predaceous bug *Reduvius personatus*, often preying on the bed-bug, is found only in houses and sheds, but other species of the genus occur amongst stones, in rock crevices, etc., in the Mediterranean region. The same largely applies to the house-cricket and to the myriapod, *Scutigera*. The typical cave bugs belonging to the subfamily *Emesinae* are represented in the animal community grouped around man by several species of the genus *Ploiaria* (for example, *P. domestica*). The geckos are typical rock animals but they are just as commonly found on the walls of houses.

All these facts lend strong support to the hypothesis that man originally belonged to the community of cave-inhabiting animals rather than of forest-dwellers such as the anthropoid apes. It would be of great interest to make a thorough analysis of the animals commensal with man in various countries with regard to their systematic, zoogeographical and ecological relations, since this may throw some light on the early history of mankind. So far as we know, this much discussed problem has not yet been attacked from the ecological point of view.

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#### Implements from the Raised Beach at Slindon Park, Sussex

WITH the help of a grant from the Percy Sladen Memorial Fund, I have recently examined the raised beach at Slindon Park, situated between Arundel and Chichester.

The section shows some 8 ft. of raised beach, consisting mainly of flint cobbles. Its surface lies