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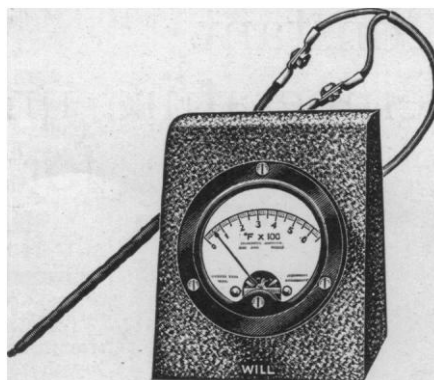
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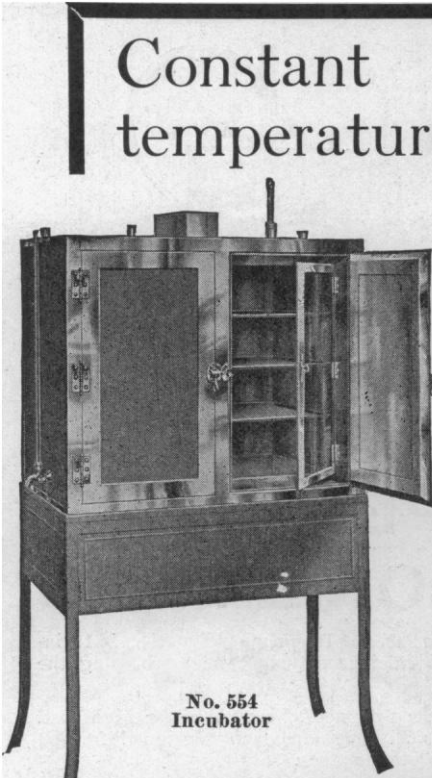
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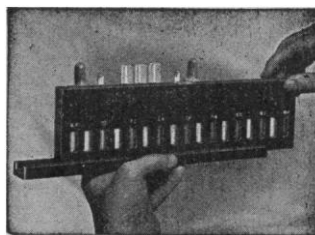
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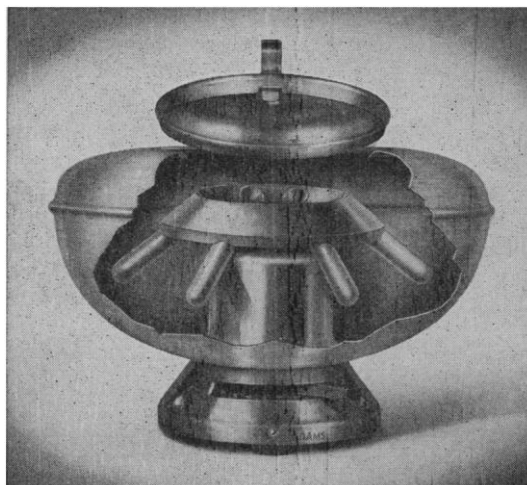
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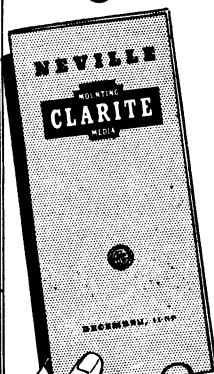
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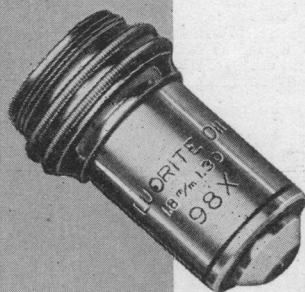
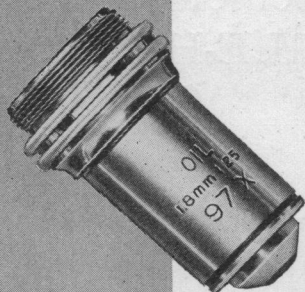
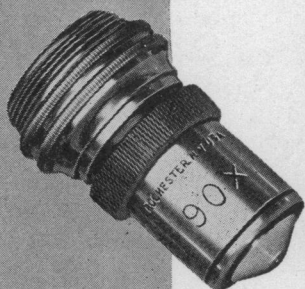
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GEOLOGIC ANTIQUITY OF MAN IN AMERICA¹

By Professor KIRK BRYAN

HARVARD UNIVERSITY

THE PROBLEM

THE Europeans who first explored the Americas found in this "New World" numerous tribes of dark-skinned, black-haired people. They differed in dress, habits and social organization, but all of them lived by agriculture or by a combination of agriculture, food-gathering, hunting and fishing. Only a few tribes were solely dependent on hunting, and most of them were in touch by trade with agricultural groups. These cultural similarities and a common physiognomy led to the popular recognition of these newly found people as a separate race, the Red or American. More detailed scientific study has shown that these peoples are much more diverse in physical and cultural attributes

¹ Address of the retiring vice-president and chairman of the Section on Geology and Geography of the American Association for the Advancement of Science, Philadelphia, December 27, 1940.

than was at first supposed. It is clear that there has been an intimate blending of racial strains. One must suppose that these people, descended from whatever diverse stocks, have a long common history.

From the beginning of exploration also the question of the origin has been posed. As the people of the Americas are obviously not closely related to the peoples of western Europe their origin by migration across the Atlantic has been rejected except by advocates of the myth of Atlantis. The Mongolian strain clearly marked in many American tribes and the narrow seas of Bering Strait point to migration from Asia. Most of the immigrants must have crossed on foot either on the ice north of the strait² or on a land bridge produced by the lowered sea level of glacial

² P. S. Smith, "Certain Relations between North-western America and North-eastern Asia: Early Man," pp. 85-92. Ed. by G. G. McCurdy. Philadelphia, 1937.

mice following the feeding of lyophilized tissue prepared from breast tumors suggests that the active influence usually transferred in the milk by nursing may be a virus.

JOHN J. BITTNER¹⁰

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The fatalities in 1939 occurred from May 10 to September 28. An old barn infested with "blue bugs," *Argas persicus* (Oken) (*A. miniatus* Koch), stood near the pens, and the chickens were practically all infested when the large number of fatalities occurred. This led one of the authors (Brown) to suspect the "blue bugs," or fowl ticks, as being associated with the disease. Immediately experiments were started to see if the suspicion was justifiable. The barn was torn down and the hen houses were disinfected with carbolineum.

On September 2, 1939, twelve pens heavily infested with "blue bugs" were divided into two groups of six pens each. In group I six birds with paralysis were placed in each pen on September 4. On September 9 twelve birds without paralysis were placed in the six pens with the thirty-six paralyzed birds. The paralyzed birds were removed from the pens on September 21. Twenty-one days after being placed in the pens the well birds began to show paralysis. On the thirty-first day all were down with paralysis.

The six pens of group II were thoroughly disinfected with carbolineum on September 5. Six pullets were placed in each of the six disinfected pens on September 9. These pens were disinfected again on September 12. These pens were used as controls, and no paralysis occurred after they had been occupied for 31 days.

Similar experiments to the one outlined above were repeated five times over a period of one year, with the exception that no paralyzed birds were introduced. Some were kept in pens infested with "blue bugs," while others were kept as controls in pens free from these parasites. In the pens infested with the "blue bugs" 111 birds out of 120 developed paralysis. In the control pens 1 bird out of 126 developed paralysis.

¹⁰ Assisted by a grant from the National Cancer Institute.

On September 1, 1940, five hens were placed in one of the infested pens. When paralysis had appeared (September 27), one of the hens was taken to the laboratory where the young "blue bugs" were removed from the hen, treated with 50 per cent. ethyl alcohol, removed to a sterile physiological salt solution, and ground until a suspension was made of their body contents. This suspension was injected into three young birds—two cockerels and one pullet. These birds were placed in a clean pen free from "blue bugs." Between the twenty-first and the twenty-fifth day the cockerels broke down with paralysis; the pullet broke down on the twenty-ninth day. On November 1 a two-year-old hen and a pullet were injected with some of the same suspension (34 days after making it). On November 29 the pullet was prostrate. The hen was paralyzed in one leg. In the main breeding yards of the college only five chickens with paralysis have been found since September, 1939, following intensive work to prevent the recurrence of "blue bugs."

The results given here indicate that the "blue bugs," *Argas persicus*, are agents for transmitting fowl paralysis. Other parasites may be agents also, but in this preliminary report the authors have data for only the one. Further experimentation on an extensive scale is now being planned.

J. C. BROWN

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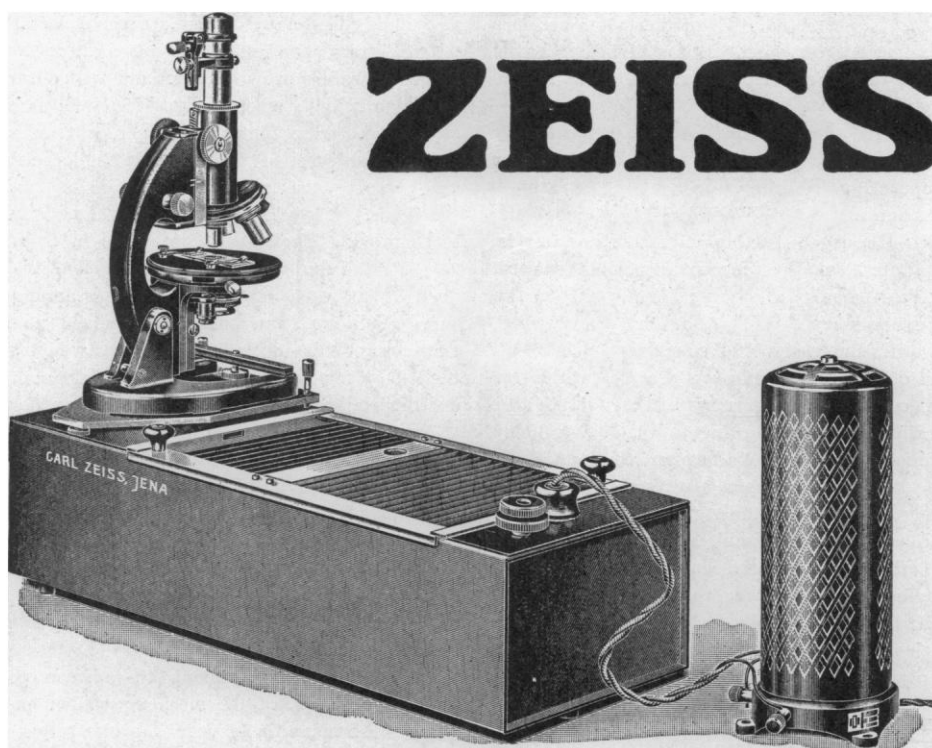
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