

lus, or its development, or its culture, before it invades the race by the individual, that is, should create in the organism such conditions, should produce such constitutions, as would not allow of the existence of these microscopical pestilences. That would be asepsis instead of antisepsis. Here is what asepsis has to do. It stands at the fountain head, its mission is to keep the spring of life free from impurity. Let a commission, or whatever body of scientific information and action, go to Russia, to the original habitat of the typhus germ, oppose the development of its colonies before they begin their trip around the world. The first thing to do will probably be to improve the condition of the Russian Jew. Prevent the Hindoos from poisoning themselves with their holy water, with which they drink the blessing of cholera. Enact laws to isolate the syphilitic and the tuberculous. Prohibit the marriage of such. Let the congenitally incurable die before puberty: it is better that the offending limb should be lost than that tuberculosis, syphilis, leprosy, etc., should spread through the whole body. Let the healthy, the temperate, the moral, alone have the inheritance. A correct life is the most perfect asepsis, and insures an immunity with which the burnt infant's immunity, known as such, cannot compare.

THE "GOPHER FROG."

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THROUGH the kindness of Mr. H. G. Hubbard, of Crescent City, Florida, I am enabled to make a note on the habits of the "gopher frog," *Rana areolata cesopus*, Cope. This form seems to be so rare in collections that so far the only specimen reported as having been identified with this sub-species is the type in the National Museum, from Micanopy, Florida, and described by Professor Cope in the Proceedings of the American Philosophical Society for 1886. I have been unable to find any published mention of its habits, which are peculiar.

It appears to be almost entirely subterranean in its habits, living in the holes and burrows of the "gopher" turtle, *Gopherus polyphemus*, in conjunction with it, and apparently on the best of terms. Roughly described, it is grayish green, with thirty-five or forty ragged black spots arranged in four or five irregular longitudinal rows on the back, and grading off into smaller spots on the flanks, while the legs are barred with about fifteen half-rings of black, from the thighs to the toes. Beneath it is white, with the throat marbled with very dark brown. The body is rather flat, with wide head and sharp-pointed snout, and the two dorso-lateral ridges, together with indicated folds between them, are greenish brown. The size is about that of a small "leopard frog," *Rana pipilus*, or the "swamp frog," *Rana palustris*, to which last it is closely related, although individuals are said to have been seen weighing two or three pounds. But those must have been huge toads, noticed by persons unable to distinguish between them and the frogs, or too unobserving to make the distinction. Its food has not been ascertained, from dissection of the stomachs of freshly captured specimens, but as these frogs are rarely seen away from the burrows, it is probable that they feed on the insects living in the burrows, for the holes possess a flourishing insect fauna, to a great extent peculiar to them.

On cloudy and rainy days the frogs sit at the mouths of the burrows—as many as three have been found in a single burrow—but on the approach of a human being dive down out of sight, and as the holes are from 12 to 20 feet in length, and 7 or 8 in vertical depth at the end, digging the frogs out is no easy matter, especially as the sandy soil has a tendency to cave in on the excavator. But the

frogs may be successfully angled for with a fishing line and small hook baited with a grasshopper.

In the fact that the burrows usually or always go down to water, may be found an explanation of the frogs inhabiting them, and the facility of procuring insect food therein may be an additional inducement, as well as their being safe hiding places. Nothing seems to be known of the habits of the other varieties of the species, of which also but few specimens are known, *Rana areolata areolata*, from Texas and Georgia, *Rana areolata capito*, from Georgia, and *Rana areolata circulosa*, the "Hoosier frog," found in Indiana and Illinois. It is to be hoped that further observations will be made upon this interesting species, and additional specimens collected.

ALTITUDE AS THE CAUSE OF THE GLACIAL PERIOD.

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Among the numerous difficult questions which are now being investigated and discussed by glacialists, none seems more important or worthy of attention than the cause, or the causes and conditions, which produced the Glacial period, with its very exceptional accumulation of ice-sheets upon large continental areas in the north and south temperate zones. Climatic conditions like those to-day prevailing in Greenland and on the Antarctic continent, both now covered by ice-sheets whose central portions are several thousands of feet thick, then prevailed in North America as far south as to Long Island, New York, Cincinnati, St. Louis, Bismarck and Seattle, reaching to a more southern latitude in the moist eastern half of the United States than in its mostly arid western half. Likewise Scandinavia, Great Britain south to London, Germany south to Berlin, and the northwestern half of Russia, were enveloped by ice. The glaciers of the Alps, too, of other European and Asiatic mountain ranges, of the Rocky Mountains, and of the mountains of New Zealand, were far more extensive than now; and in South America a broad ice-sheet covered Patagonia.

Three chief theories have been proposed to account for the great climatic changes made known to us by the extent of these areas of glacial drift. During the past twenty years all glacialists have been greatly interested in the astronomic theory of Dr. James Croll, so ably advocated by him in his volume, "Climate and Time," and by Prof. James Geikie in "The Great Ice Age," attributing the ice accumulation to climatic conditions attendant upon an epoch of maximum eccentricity of the earth's orbit. American glacialists, like those of Great Britain and continental Europe, were several years ago very generally inclined to think that this was a true and sufficient explanation. At the present time, however, a majority of the advanced students of this subject, at least in America, doubt that this theory is applicable to the observed facts of glaciation. For, in accordance with Dr. Croll's view, glacial periods should be recognizable with geologic frequency through the earlier Tertiary and Mesozoic eras, where, on the contrary, evidence of glacial conditions is wholly absent or exceedingly scanty, being wherever it is known probably referable to Alpine rather than continental glaciers. Besides, it seems within the past ten years to be fully ascertained that the time since the disappearance of the ice-sheets of North America and Europe has been only 6,000 to 10,000 years, whereas if they had depended on the astronomic causes mentioned their departure must have occurred some 80,000 years ago.

A second theory, accounting for the Glacial period by changes in the position of the earth's poles, and consequently in the latitude of the countries glaciated, which