been 20,480,000 + 52,224,000 = 72,704,000 cu. km. Since the ocean has an area of 363,520,000 sq. km, its floor has received a load equivalent to a layer $\frac{72,704,000}{363,520,000} = .2$ km in mean thickness. This would raise the sea surface, but the load of sediment would depress the sea floor, and consequently the sea surface, and at the same time cause the rise of the continental column by way of compensation. The deposit on the sea floor is reckoned as a layer .2 km thick of density 2.7, and its load would displace in depth a layer of heavy rock $.2 \times \frac{2.7}{3.3} = .1636$ km thick, and so cause a fall of sea level of .1636 km. The net rise of sea level relative to the center of the earth is thus .2 − .1636 = .0364 km. The equivalent of the heavy rock displaced in depth beneath the ocean is transferred to the region beneath the continents, but in different proportions to mountains and lowlands. To the mountain belts goes the equivalent of a layer $2 \times \frac{2.7}{3.3} = 1.6363$ km thick of rock of density 3.3; and the mean altitude of the ranges is increased by 1.6363 km, so that, although 2 km has been eroded away, the reduction in mean altitude is only 2 − 1.6363 = .3636 km with reference to the center of the earth.

To balance the erosional removal of a layer $\frac{2}{5} = .4$ km thick from the lowlands a layer of heavy rock of density 3.3, having a thickness of $.4 \times \frac{2.7}{3.3} = .3272$ km, is supplied to those regions in depth and raises their surface that much. So that, although they have lost by erosion a layer having a mean thickness of .4 km, the reduction of mean altitude is only .4 − .3272 = .0728 km, with reference to the center of the earth. It thus appears that, with reference to the center of the earth, the sea level has risen .0364 km, while the surface of the mountain belts has been reduced in mean altitude .3636 km. That is, the distance apart, measured on the earth's radius, of the sea surface and the mean surface of the mountain belts has diminished by .0364 + .3636 = .4 km. To one who believes the earth is so strong as to be incapable of yielding, except elastically, to stresses caused by shift of load, this can only mean that sea level has risen .4 km. Similarly, the distance apart of the sea surface and the mean surface of the lowlands has diminished by .0364 + .0728 = .1092 km, and the apparent rise of sea level is .1 km. That is to say, on the theory of a perfectly strong earth, the surface of the sea would appear to have risen four times more in one place than in another.

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THE POSSIBILITIES OF SYSTEMIC INFECTION WITH DERMATITIS-PRODUCING SCHISTOSOMES[1]

FREQUENT inquiry has been made as to whether the "swimmer's itch" or dermatitis-producing schistosome cercariae of the United States continue their development and set up a systemic infection in man. Brackett[2] has discussed the "mass of evidence which almost surely indicates that such a thing does not happen." A portion of the evidence discussed evolves from the fact that nowhere, not even in the regions most severely afflicted with "swimmer's itch," have there appeared systemic infections resembling schistosomiasis following the dermatitis.

In order to obtain information concerning the suitability of primates as hosts of *Schistosomatium douthitti* (Cort, 1914), Brackett exposed the extremities and face of a young female rhesus monkey to the penetration of the cercariae and noted a very mild dermatitis on the exposed areas. Three weeks after the last exposure the animal was autopsied, but no trace of a schistosome infection was seen. Brackett's assumption was that if *S. douthitti,* which develops readily in a wide variety of laboratory mammals, developed readily in man, it would probably have been found in the one monkey used.

Believing the cercaria of *S. douthitti* to be the most likely one of the dermatitis-producing forms to continue development in man, the author exposed a healthy young rhesus monkey to cercarial baths over a period of two weeks' time during the fall of 1939. The exposures were light, and a mild dermatitis was produced after each exposure. The monkey was autopsied four weeks after the last exposure and after a complete and careful examination was found negative for schistosomes. In June, 1940, a second healthy young rhesus monkey was placed for one hour in a 10-gallon metal milk can with the 24-hour cercarial output of 28 snails. The number of cercariae used was estimated to be approximately 28,000. The monkey showed signs of distress and did considerable scratching from shortly after time of exposure until time of autopsy five and one-half days later. A marked dermatitis was evident but mild, considering the number of cercariae that must have penetrated the skin. On autopsy the migrating worms were found to be abundant in the lungs and slight hemorrhage was noted. A third rhesus monkey with a latent case of malaria, estimated to be about three years old, was exposed to *S. douthitti* by having a bottle containing about 400 cercariae inverted on the abdomen. A mild dermatitis was observed the next day, but this rapidly disappeared. Whether the

[1] Aided by a grant from the American Academy of Arts and Sciences.

[2] S. Brackett, *Am. Jour. Hyg.*, 31: 49–63, 1940.

worms continued their development was not ascertained, as an autopsy could not be conducted on this animal. In all cases, the *S. douthitti* cercariae used were taken from *Stagnicola reflexa* (Say) collected in a pond near Edina, Minnesota.

Attention should be called to the fact that *Cercaria douthitti,* now shown for the first time to penetrate the skin of a very young primate and migrate through to the lungs, might also go at least this far in man, and particularly in children who swim in infested areas. Whether the worms can go farther than the lungs is not known. That the entrance of this species of larval trematode into the lungs might carry infections mechanically from the outside is of potential importance and in the infested areas where wading or swimming is done, may constitute a public health problem not yet realized.

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A CLOTTING FACTOR IN RABBIT PLASMA

WHILE working on the isolation of certain fractions of immune rabbit plasma a fraction that exhibits very high clotting capacity has been found. It was noted that this clotting factor in rabbit plasma is almost quantitatively localized in a very small fraction, namely, that which is precipitated by 20 to 30 per cent. ammonium sulfate (between 200 and 300 gm of dry ammonium sulfate per one liter of plasma). Furthermore, the clotting factor could be isolated in purer form from the mixture of inert proteins precipitable in the above-mentioned concentration of ammonium sulfate. Such separation was possible because the globulin fraction possessing this clotting property is insoluble at pH 5.3 in the absence of NaCl and passes in solution on addition of 0.1 per cent. of NaCl.

The clotting globulin of rabbit plasma prepared in this way is able to accelerate the clotting of freshly shed blood and to clot blood-plasma (prepared by addition of sodium citrate, potassium oxalate, heparin and germanin). Excess of these anti-coagulants did not prevent the clotting of the plasmas by this fraction. Human, horse and rabbit blood-plasmas were used.

The above-described preparation of clotting globulin possessed a high potency. Some of the preparations, when concentrated to contain 10 per cent. total solids, clotted 100 volumes of horse plasma within 30 seconds and 1,000 volumes in from 10 to 15 minutes. Our experiences so far have indicated that solutions of clotting globulin are comparatively stable. Some preparations of clotting globulin preserved with ether-phenol and phenyl mercuric acetate showed partial loss of potency after one year of storage in the ice box. The described properties of the clotting globulin prepared from rabbit serum suggest the possibility of its use as a hemostatic agent. Work in this direction is in progress.

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LITTLE KNOWN ENEMIES OF YOUNG OYSTERS

IT is well known that starfish and drills kill and devour large numbers of recently set oysters. Few persons are aware, however, of the fact that several other species of our common mollusks besides the drills are also inflicting extremely heavy losses among young oysters. Observations carried on during the last four summers showed definitely that two genera of mollusks, namely, *Anomia* and *Crepidula,* are responsible for the destruction of oyster spat in several areas of Long Island Sound, where at the beginning of each season very good set of oysters was recorded.

As a rule, setting of oysters, *Anomia* and *Crepidula,* occurs at approximately the same time. However, the rate of growth of oysters is much slower than that of *Anomia* or *Crepidula.* Therefore, the latter soon outgrow the oysters. While growing, the shells of *Anomia* spread over the oyster spat attached nearby. The oyster spat covered in this manner soon suffocate and die. Our examination of shells collected from the lots where sets of *Anomia* and oysters occurred revealed that in almost every instance there were several smothered young oysters under each *Anomia* shell. In one instance, for example, there were 22 dead oyster spat found under a single *Anomia* five eighths of an inch in diameter. *Crepidula,* although having but one shell, destroys the oyster spat in the same manner. Rapidly growing, it covers oyster spat, which soon dies on being deprived of oxygen and food.

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SCIENTIFIC BOOKS

ENTOMOLOGY

Entomophagous Insects. By CURTIS P. CLAUSEN. 688 pp., 257 figs. New York: McGraw-Hill Book Co. 1940. $7.00.

THE raw facts in the struggle for existence among organisms are nowhere better illustrated than by the diverse hordes of animals that form the class Insecta. Led by inexorable instincts and provided with innum-