embryonic fin, but as this region was somewhat mutilated after death, their presence has not definitely been established. The embryonic fin enveloped the body without indication of finrays. Pectorals were prominent. No hypural elements had developed, the end of the notachord being quite straight. At twenty-four hours the prelarva had increased to 10 mm in length and four pairs of teeth could be seen in each jaw, longer and much slenderer than on the previous day.

Were it possible to obtain descriptions of the young of all living eels, one might with certainty attribute this leptocephalus to a particular species. Every expedition at sea, however, captures more new species, so that, although I feel reasonably sure that the proof in this case is quite conclusive, it is only provisionally that the eggs and young at hand are called *Anguilla rostrata*. The evidence for this identification may be summed up as follows:

(1) *Character of the eggs:* The eggs were definitely those of an eel or eel-like fish, evidenced by their large size, large perivitelline space, vesicular-stalked yolk, and slightly iridescent cell membrane, fine in texture and lacking pore canals, as well as by the leptocephalid character of the larvae hatching from them. They were different from any murænoid eggs previously observed.

(2) *Location of the collecting-ground:* The eggs were found within the area designated by Schmidt to encompass the breeding ground of the American and European eels. In the absence of closing net hauls it is impossible to state at what level they were taken. The nets rose to the surface open and consequently fished at various depths. At the time of the collection four surface nets, meter nets at three hundred and four hundred fathoms, and a meter net and Petersen trawl at five hundred fathoms were towing. The fact that but four eggs were taken in the trawl and none in the meter net at the same depth would indicate that the eggs were not abundant. If we were able to conclude, from the fact that the eggs were collected only by the deepest net, that they were taken while towing at five hundred fathoms and not during its passage from this depth to the surface, then the early stage of development attained would favor a previous theory of fertilization at considerable depths.

(3) *Comparison of this prelarva with an European eel 6 mm long:* Since the two species *Anguilla rostrata* and *Anguilla vulgaris* are so closely allied that distinction is based mostly upon the difference of only a few muscle segments, it is logical to suppose that the earliest larval stages will show like similarity. The present prelarva strikingly resembles the European eel prelarva in the general proportions of the body, the teeth and the probable presence of pigment on the caudal portion of the embryonic fin, but the pigmented eye and the absence of an oil globule, as well as the difference in myomere count, show them to be separate species.

(4) *Comparison of this prelarva with an American eel 10½ mm long:* The smallest American eel prelarva previously recorded was pictured by Schmidt (1916). It measured 10½ mm after preservation and was obviously in a later stage of development than my specimen. The dental formula $\frac{1+3}{1+3}$ was identical in the two prelarvae, but the teeth of Schmidt's specimen were more even, stronger and less tapering, like those of older leptocephali. The depth of the body of the latter was slightly greater, a change which is known to occur as development progresses. Pigmentation, as in the present specimen, was restricted to the eye and a few black stellate chromatophores on the embryonic fin near the tip of the tail (not on the tail itself). The number of myomeres was the same.

(5) *Myomere count:* A character which remains constant throughout all stages of development is the number of muscle segments and vertebrae. According to the principle adopted by most investigators interested in the eel question, "A species is regarded as new only when it differs from all known species in which the myomere count is known" (Lea). This leptocephalus has the same number of muscle segments as the American eel, and no other larva or adult species of an eel has this count. Of those species which have a number of muscle segments within twenty of the present specimen, there are other specific differences which allow their elimination.

Since the time of the early Greeks scientists have speculated upon the mysterious reproductive methods of the eel, and it was not until after 1904, when Johannes Schmidt began his intensive work upon this subject, that its breeding ground was definitely located. If my identification is indeed correct, the sea has given up the last secret concerning the life history of the American eel which it has jealously guarded for so many centuries.

A complete account and a number of illustrations of these eggs and the larva, together with a review of previous literature on the embryology of other eels and the life history of the common eel, has been submitted to the U. S. Bureau of Fisheries, and will be published by the New York Zoological Society in a forthcoming volume of *Zoologica*.

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ACIDOSIS, TREMBLES AND MILKSICKNESS

DURING a biochemical study of the course of sickness in animals poisoned by richweed (*Eupatorium*

urticaefolium, Reichard) or by the rayless goldenrod (*Aplopappus heterophyllus*, (A. Gray) Blake, formerly known as *Isocoma wrightii*, Rydb.), it was observed that excretion of acetone by the lungs and kidneys is a constant symptom of poisoning. Some twenty-four hours after the first symptoms of trembling appear, sick animals begin to excrete large quantities of acetone. The urine becomes strongly acid and reeks of this ketone. It seldom contains albumen, and sugar was observed in two cases only. β-oxybutyric acid and acetoacetic acid have not been found in the urines examined.

EXPERIMENTAL RESULTS

Fifteen cases were studied. Of these, five were sheep poisoned by richweed, seven were sheep poisoned by rayless goldenrod, and three were cattle, one cow and two calves, also poisoned by rayless goldenrod.

All the richweed cases excreted acetone by lungs and kidneys. A quantitative determination of the urinary acetone in one case showed the presence of 24.32 mg of acetone per 100 cc. In two cases samples of blood were also obtained, and these were positive to tests for acetone.

Of the animals poisoned by the rayless goldenrod, acetone was demonstrated in the urine of six sheep that also carried the odor of this ketone on the expired air. In one case a quantitative determination of urinary acetone showed the presence of 34.35 mg per 100 cc. The seventh case showed no symptoms of trembles and probably was not poisoned. At no time did this sheep excrete acetone nor was the urine ever acid. The urine of the three cattle was collected at autopsy and in one case we were fortunate enough to obtain a good sample of blood. All the samples contained acetone.

Blood sugar determinations were made in several cases and showed a large increase in the concentration of glucose. One animal poisoned by rayless goldenrod had a blood sugar concentration of 0.1472 gram per 100 cc; another, poisoned by richweed, had 0.1680 gram per 100 cc. The normal figures for these animals were 0.090 to 0.100 gram per 100 cc.

SUMMARY OF FINDINGS

The findings indicate that animals poisoned by these two plants suffer from an acidosis. The fact that excretion of acetone does not begin until after the onset of the characteristic trembling—whence the common name "trembles" for the disease—suggests that the ketogenesis may be a secondary effect of the intoxication. This is supported by the fact that common remedies for acidosis do not appear to alter the course of the disease.

It is probable that the toxic principles of these two plants are excreted in the milk of lactating animals. The suckling young of animals feeding on these plants may be poisoned and exhibit the characteristic symptoms, such as trembles and acidosis. Consequently, human beings who drink milk or eat butter obtained from cows that have grazed on either of these plants are in danger of being poisoned. Cases of this sort are not rare in districts where the plants are abundant. "Milksickness," as the human disease is termed, occurs especially in the late summer and autumn at a time when trembles in cattle and sheep is also prevalent. In human cases the odor of acetone has been constantly remarked and is considered a diagnostic symptom. Dr. W. E. Walsh, of Morris, Illinois,[1] diagnosed the human disease as an acidosis and recommended the use of sodium bicarbonate as a remedy. The present study supplements this diagnosis with a demonstration that acidosis is present in the cattle disease also.

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THE WORLD'S FORESTRY CONGRESS

OTHER international forestry congresses have been held, but that of 1926 was attended by more delegates from more different nations than any other. Fifty-eight different countries were represented at the World's Forestry Congress held at Rome, Italy, from April 29 to May 5, 1926, with some six hundred to eight hundred delegates attending. The leading foresters of Europe were there, with many other well-known experts, economists and scientists—also a few politicians. Naturally, Italy led in number of delegates, most of whom were certified as official. His Majesty, the King of Italy, and Signor Benito Mussolini were present at the opening session at the Teatro Quirinale.

The congress was held under the auspices of the International Institute of Agriculture, in the very beautiful building in the spacious park known as Villa Umberto. The origins of this congress date back to 1922 and to the sixth annual general assembly of the International Institute held that year in Rome. At that meeting it was decided to invite all nations to a conference in Rome in 1926 to consider world problems of forestry, with especial reference to supply and consumption. Prior forestry congresses have been held in Paris in 1900 and in 1913 and others of more limited scope in recent years.

[1] *Illinois Med. J.*, n. s., 15, 422–5, 1909.