

**The Brotherhood of Locomotive Engineers.**

At the morning session of the International Brotherhood of Locomotive Engineers, in Baltimore, October 22, the annual election of officers took place, and Chief Engineer Arthur holds over until 1883. Mr. T. S. Ingraham, of Cleveland, was unanimously re-elected First Grand Engineer for three years; Robert Thomas, of St. Thomas, Ontario, Canada, Second Grand Engineer for one year; and E. A. Stevens, of Boston, Second Grand Assistant Engineer.

**THE SPOTTED AMBLYSTOME.**

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This brilliantly marked amblystome was first described by Linnæus, in 1767, under the name of *Lacerta punctata*, that is, dotted lizard. But in 1803, Barton, in "Daudin's History of Reptiles," renamed it the *Salamandra veneuosa*, or venomous salamander. Barton subsequently burdened it with another specific name, *subviolacea*, which was adopted by several naturalists; but the law of priority forces us to reject all except that of Linnæus, namely, *punctata*. We of course know that our animal is not a lizard. It does not even belong to the class of reptiles. But although Linnæus' classification and nomenclature were admirable in their time, they are now totally inadequate to embrace the vast kingdom of nature, so great has been the investigations and advancement of science.

For what reason Barton called it venomous we are at a loss to know, unless he was so informed by ignorant persons, and without testing the truth of the assertion, so published it to the world. It is hardly necessary for me to say that this amblystome, and in fact all of the salamander family, are non-venomous and harmless.

The salamanders are interesting on account of the wonderful metamorphoses they undergo. Thus, during the first part of their lives, they breathe by gills alone, and then are closely related to the fishes; and, in the latter part, breathe by lungs, and then in many points resemble the higher animals. The evolutionist, therefore, looks to this quarter for the link between the fishes and the mammals.

The spotted amblystome, *Amblystoma punctatum* (Linnæus), Baird, is of a coal-black color above, and dull purple gray beneath. On each side of the dorsal line is a series of large round lemon-yellow spots. These spots are about the size of the eye or a little larger, and number generally eight or ten from the head to the hind limbs. On the sides and abdomen are scattered small bluish-white dots. There are a few yellow spots and whitish dots on the legs. There is a strong groove or furrow along the back from the head to the base of the tail. In alcohol the spots become white, and the animal is not so pretty as in life. Its average length is six inches, but it frequently attains the size of six and a half inches and more. It can be distinguished from the tiger amblystome (*A. tigrinum*), to which it bears a slight resemblance, by its strong dorsal groove, and in having two rows of yellow spots, while in *tigrinum* there are many and irregular. It is found under rotten logs and bark in moist woods and forests, from Canada to Louisiana, and west to Missouri.

**Extraction of Tannin.**

Mr. O. Kohlrausch has succeeded in devising a process of extracting tannin in almost theoretical quantities from many different kinds of barks. He concludes that as in tannin the tannic acid (tannin) enters the skin by osmosis, it similarly leaves the cells of plants through their permeable membrane; chemical and microscopical examination having shown that the interior of the uninjured cells is the same as the exterior of thick bark which had already been utilized. It is therefore not the solution of the tannin set free by finely dividing the bark, and taken up by the skins, but *dialysis of the tannin through the permeable membrane of the plant cells*, and also through the animal membrane of the skin.

Hence it is not necessary to divide the bark into very small fragments, but, on the contrary, pieces may be used with advantage which are small enough to allow the dialyzing operation to take place in a battery of closed vessels, thus avoiding any danger of choking up the valves or pipes of the apparatus.

The result of this is that purer extracts are obtained in a more economical manner, so that lighter colored extracts rich in tannin can be prepared at a smaller cost than usual, and in the case of tannin lighter colored leather is produced. In the latter circumstance the author is of opinion that if the freshly prepared dialyzed extracts are used at once considerably less tannin would be required.

The researches of the author have shown that *tannin passes through the animal membrane very rapidly in the dialyzer*, so that in a short interval of time fine extracts run from a battery, and the residual bark is almost entirely free from tannic acid. It appears from this curious result that tannin must be a *crystalloid*, although it has never been obtained in a crystalline state in the laboratory.

**The Vegetable Origin of Diphtheria.**

In a recent lecture before the Academy of Natural Science, in Philadelphia, Prof. H. C. Wood, of that city, gave a statement of the results of certain researches upon the nature of diphtheria undertaken by him and Dr. H. F. Formad, at the instigation of the National Board of Health. The investigations embraced not only the ordinary endemic diphtheria prevailing in Philadelphia, but also the more violent forms of the disease occurring from time to time in different places.

In this pursuit Dr. Formad visited an infected town on Lake Michigan, where one-third of all the children in a marshy district died of the epidemic, and brought back with him specimens of the diphtheric virus, several of the false membranes which are invariably formed in the throats of afflicted persons, and portions of their viscera. In all blood, said the professor, as reported by the *Philadelphia Times*, there are two kinds of corpuscles, the red or color-giving and the white. By careful study and experiments, both in human beings and the lower animals, it was found that this infinitesimal plant fastens upon the white corpuscles and multiplies its cells, altering their character until, with the interior destroyed, they burst, and the plants, set loose in an

THE SPOTTED AMBLYSTOME.—(*Amblystoma punctatum*.)

irregular mass, separate and go off individually, to continue the destructive work on other corpuscles. Thus increased, they poison the blood, choke the vessels, and are found in myriad numbers in the spleen and other organs rich in blood. Prof. Wood's investigations show that the false membrane, supposed to invariably indicate the presence of diphtheria, may be caused by ammonia, Spanish fly, or any other irritating influence in the throat, so that its presence is not infallible as indicating the existence of this disease.

But in any case the false membrane is built up by this parasitical plant, which grows and multiplies upon its inflamed surroundings, whatever may be its cause. It is when the plants grow strong enough to extend to the blood, either poisoning it themselves or carrying the poison with them, that diphtheria sets in. This little plant is exactly the same as found upon the coated tongue. When Prof. Wood put plants such as are found upon a healthy tongue in sterilized matter they failed to grow. On the contrary, plants from the throat or blood of a person affected with diphtheria multiplied rapidly. The practical result of the investigation pointed out was the possibility that diphtheria, if existing theories hold good, may be prevented by artificial vaccination.

In the case of splenic fever caught from animals, which has been proved to originate in a somewhat similar plant, Pasteur has found that the plant, when exposed a sufficient time to the air, by the action of oxygen loses its virulent character, and when then introduced into the system makes the animal sick, but is no longer fatal. The deduction is that this diphtheric plant, scientifically known as "micrococcus," may in time be cultivated so that when inoculated with it the system will be no longer subject to the disease in its fatal form. Concluding the lecture, Prof. Wood was applauded when he said that these discoveries could never have been made but for the aid of vivisection, against which there is a foolish prejudice in the minds of many.

**Choice of Seed in Cotton Growing**

A Mississippi planter has on exhibition at the Atlanta Cotton Fair a bale of cotton, pronounced by many good judges as the finest short staple cotton ever seen in Atlanta. His especial hobby is the selection of his seed. It is not a question of different varieties, but of good and bad seed of the common variety. He has the seed of his best stalks selected every year for plauting; and he claims that it is by a judicious selection of seed that the cotton can be made better. It is needless to say, remarks a critical observer, that as a rule the selection of seed and of guano, as well as the methods of culture, are matters of accident and not of exact study. There is no reason why the greater part of the inferior cotton that sells for eight or nine cents might not, under a careful system of agriculture and manipulation, be made to sell for ten or twelve cents. Careful agriculture, if need be scientific agriculture—this is what the South needs quite as much as manufactures and capital. These samples of cotton are not a very great attraction to the Southern farmers that visit the exhibition, but the lessons that are to be learned from the experiments that have produced them are the most important lessons by all odds that the exhibition can teach.

**Soles and Turbots in New York Waters.**

The United States Fish Commission lately received from England three live soles and six turbot out of a consignment of seventy soles and thirty-five turbot. The fish were set free off Coney Island. Previous attempts to transplant these fish to American waters have not been successful.

The turbot is a soft-rayed flat fish, whose left side is of a brownish color and under or right side white. Without the tail its body is almost round. The common size of the fish varies from five pounds to ten pounds weight, although occasionally it attains to twenty pounds and sometimes thirty pounds. It is the most prolific fish known. One weighing twenty-three pounds was once found to contain a roe weighing five pounds nine ounces, which contained 14,311,200 eggs. The majority of turbot are taken along the east coast of England and the coast of Holland. It is caught in trawl nets and also on lines, the most taking bait being those fishes of bright color. The sole is also a soft-rayed flat fish, which, to the casual eye, somewhat resembles the flounder. Its length varies from ten to twenty inches. Its color is a uniform dark brown above and a white below, the pectoral being tipped with black. To the British public soles are the most important of all sea fishes. Little is known of their habits. They are caught in great quantities off the coast of England, in the North Sea, where they breed. Both fishes are considered great delicacies in England.

**Carrier Pigeons as Doctors' Messengers.**

The *Medical Record* has the following: A physician of Erie, Pa., is training homing pigeons for use in his practice. Some of his young birds, put upon the road to make records for distance, have made very good time, namely, fifty miles in ninety minutes, sixty-six miles in eighty-two minutes. Homing pigeons are largely used by country physicians, both here and abroad. One doctor in Hamilton county, N. Y., uses them constantly in his practice, extending over nearly two townships, and considers them an almost invaluable aid. After visiting a patient he sends the necessary prescription to his dispensary by pigeon; also any other advice or instruction the case or situation may demand. He frequently also leaves pigeons at places from which he wishes reports of progress to be dispatched at specified times, or at certain crises. He says he is enabled to attend to a third more business at least through the time saved to him by the use of pigeons. In critical cases he is able to keep posted by hourly bulletins from the bedside between daylight and nightfall, and he can recall case after case where lives have been saved that must have been lost if he had been obliged to depend upon ordinary means of conveying information.

BUFFON spoke wisely when he said: "How much useful knowledge is lost by the scattered forms in which it is ushered to the world! How many solitary students spend half their lives in making discoveries which had been perfected a century before their time, for want of a condensed exhibition of what is known!" This want is met by the *SCIENTIFIC AMERICAN*, and our notices of new inventions alone are worth many times the cost of the paper to inventors and others, with whom it is more than ordinarily important to know not only what is doing but what has been done.