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THE UNITED STATES JOINS THE INDUSTRIAL UNION. By concurrence of the Senate on March 2 last, the government of the United States is about to become a member of the International Union for the Protection of Industrial Property. The official papers signifying the desire of this government to enter the Union are now being prepared by the State Department for exchange at Berne, Switzerland; and in a few weeks, probably, the inventors, merchants, and manufacturers of this country will be entitled to share in all the benefits the Union can yield.

The vast advantages which have accrued to the nations composing the International Postal Union are well understood. The Industrial Union is designed to confer equal benefits, but in another direction. One of its special objects is to secure better protection for patents, designs, models, inventions, trade marks, and trade names. For example, at the present time, when a patent is issued here to an American inventor, he loses the right to obtain a patent in most of the European countries. He is therefore obliged to secure his foreign patents before the American patent issues, and he aims to have all the patents issue on the same date; otherwise there is liability of invalidation of the foreign patents, while if the latter issue first, the term of the American patent is abridged. The American inventor is also subjected, at present, to the risk that outside parties may secure his invention in other countries in their own names, and deprive him of all right thereto. These and other difficulties will be removed when the United States enters the Industrial Union. One of the special provisions of the Union is that inventors, patentees, and proprietors of designs and trade marks shall have a prior right of registration in all countries or nations that are members of the Union. The term of this priority for Americans is seven months as respects patents, and four months for trade marks. This provision is likely to be of great importance to our inventive countrymen. The regulations of the Union will also apply in favor of its members in respect to protection against infringers.

Several other excellent provisions pertain to the Union, which extends the aegis of its protection to all kinds of industrial property and products, including agricultural productions, wine, corn, fruits, cattle, minerals, etc. We shall take occasion in future articles to explain more fully the nature and workings of the new institution.

ANT-EATER AND PENGUIN.

It is a long while since anything so curious has arrived at the port of New York as the two live specimens which are now safely caged in the Philadelphia Zoological Gardens. The first of these is a live ant-eater (Tachyglossus hystrix), or echidna, an animal that lays eggs, and the other a penguin, a bird that cannot fly, belonging to a sub family of web-footed creatures living at sea, sometimes seen at a distance of 300 miles from shore, but usually found near rocky islands and headlands or ice floes and fields. The ant-eater, because of its peculiarities of structure, its restrictions as to diet, and the infrequency with which it brings forth young, has often been quoted, and not without reason, it would seem, as additional evidence in support of the theory of foreordination, the prearrangement of the universe to suit its occupants, or what is quite the same thing, the nice adjustment of live forms to their surroundings.

Were the ant-eater as prolific as other animals, his race would long since have become extinct, because there is not enough food to go around of the kind he subsists on, or, if he came into existence where there were no collections of ants, and without the ability to get at the eggs of birds, nature could no longer be called an economizer.

Speaking of such live forms as the ant-eater and those curious insects and fishes which have a protective resemblance, the late Professor Agassiz said: "The existence of a superior intelligence, whose power alone can establish and sustain such an order of things, I consider to have been established by rigid demonstration and on a truly scientific foundation. Species do not insensibly pass into one another, but each has its appointed period, and is not connected, except in the order of time, with its predecessor. An invisible thread, in all ages, runs through this immense diversity, exhibiting, as a general result, the fact that there is a continual progress in development, ending in man, the four classes of vertebrates presenting the intermediate steps, and the invertebrates the constant accessory accompaniment."

One young one is brought forth by the ant-eater at long intervals. The young one attaches itself to its mother's back, and does not quit this position for more than a year. Curiously enough, nature seems to have calculated that food suitable for this animal is scarce, and that, at times, it must endure prolonged fasts, because the ant-eater is capable of going without food for incredible periods.

The new arrival, unlike its cousin (Myrmecophaga jubata), or ant-bear, can climb trees, and thus secure the eggs of forest birds, which it readily gets to its mouth by means of its long cylindrical tongue. Before

it started for Philadelphia the other day, it was given the white of an egg mixed with condensed milk, and seemed to enjoy it immensely. The lightning-like quickness with which it thrusts in and out its long glutinous tongue would seem marvelous, did we not know that the tongue of the toad is still quicker.

The Philadelphia specimen is covered with quills like the porcupine, in this respect differing from the great ant-eater, which has long hair in place of quills, and, where the ground is ordinarily soft, can bury himself below the surface in an incredibly short space of time. Unlike most burrowing animals, he uses all four feet at the same time, and sinks into the ground in much the same fashion as a harlequin at the pantomime disappears through the stage on a descending trap. His spine curved, and the formidable quills standing out threateningly, like the retrenchment called in military parlance chevaux de frise—a piece of timber traversed with spikes, used to stop cavalry. He is slow and awkward of gait, indeed cumbersome, and, as his claws turn inward, he cannot bear the weight of his body upon the soles of his feet, but must needs walk upon the callous pads formed on the back of the claws, and which cover an entire phalanx, or the space between two joints. Besides the purely defensive quills, it has a sharp pointed spur on the inside of its right hind leg, similar to those worn by the fighting cock. This spur is hollow, like a serpent's fang, and resembles it again in having at its base a sack of venom, which, pressed against by the spur during attack, injects its poison into the wound made by the spur.

The newly arrived penguin is one of those curious birds only found in uninhabited and remote spots, and which, when out of the water, stands upright in long rows, silent and motionless, like sections of a great army in battle array, line upon line en echelon, that is to say, in the form of steps. Each line represents a distinct condition; the young being in one, those of perfect plumage in another, while the other lines are made up of those moulting and sitting upon eggs. The penguin can neither fly nor walk, and while moving over the rocks lies flat and propels itself along by means of its wings, which it uses like anterior limbs. In the water, however, it is at home, moving under the surface as actively as a fish.

How Wood is Made.

In many trees the annual layers are so regular, and seem to be placed so nicely, that one not a botanist might be pardoned for believing that the sap was changed to wood matter in the leaves, and the new formed matter sent down, sliding over the old layer like the section of a telescope; but, though the food was prepared by the leaves in a great measure, the actual growth was made by the germination of some of the cells along the whole outside wall of last year's wood beneath the inner bark. The germination of the cells takes place about the middle of June. Take a healthy cherry tree, and strip it entirely of its bark to any length desired. At that season a viscid liquid will be found covering the woody surface in abundance. The stripped part is covered with a cloth to prevent evaporation, and in a few days numerous dots, like needle points, will be seen about the sixteenth of an inch apart all over the surface. These are the young cells which have germinated from those of last year. They continue germinating, one from the other, until they meet, when they unite and form a complete surface.

In the autumn a layer of wood will be found just as thick as in the part of the tree not disbarked, and a single layer of liber, with its outer coat of cellular matter—perfect bark—will have been formed over the whole. The entire formation of wood and bark can thus be seen by the ordinary observer without the necessity of any nice microscopical work. Other people have tried the experiment with other trees. We have seen large apple trees that have had their bark peeled wholly off from their trunks, at the season named, make an entire new layer of bark and wood, not only with no injury to the tree, but to its manifest enjoyment; but our own experiments were confined exclusively to the cherry. By this experiment we learn that there is no difference primarily in any part of the annual covering. The same cell may become permanent tissue or generating tissue, and from the generative tissue may come, before the season of growth closes, every form of structure known to anatomists, from pure wood to the outermost cuticle of the bark. How these cells become differentiated may be passed over here. We know that cell growth is not always uniform in its operations. The law that changes the outermost series of newly made cells into liber need not necessarily operate so exactly as to make them perfect to this end—a few may be thrown off into the liber as generative tissue—and, granting this possibility, we see how the woody granules in the apple are formed.—The Garden.

In Russia, on the northern railways, the locomotives, hitherto burning wood or coal, are being adapted for peat burning, the saving being estimated at fifty per cent.