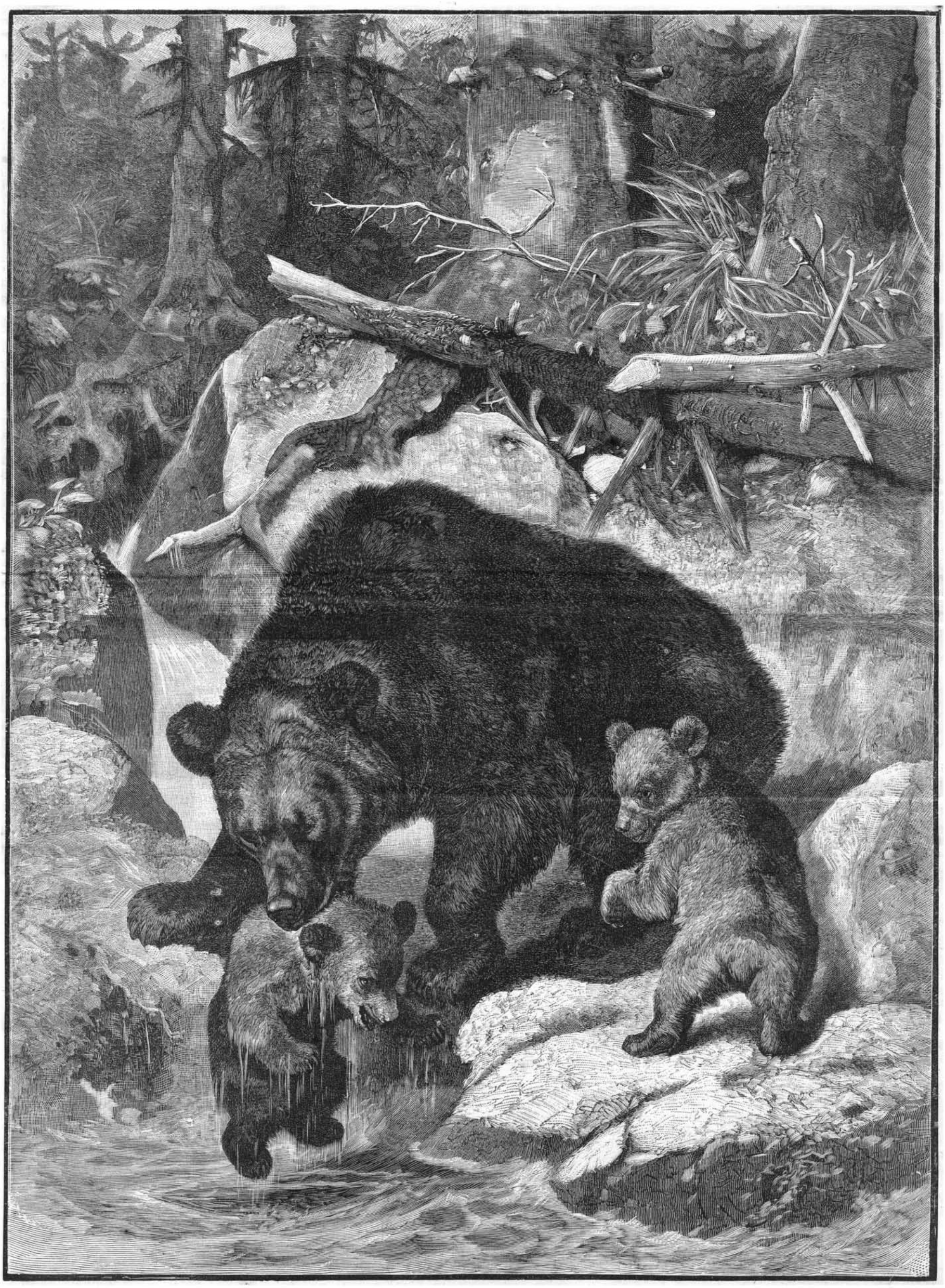
A GRIZZLY BEAR AND ITS CUBS.—"THE BATH."

In the accompanying illustration, the artist has succeeded in presenting an interesting view of the domestic amenities of bear life. The locality which the mother bear has selected for the purpose of giving her cubs an ablution is such a one as can be found in many places in California or the Rocky Mountain range, where these bears are principally to be met with, the wild and lonely neighborhood of the mountain gully, with its clear pool of cold water, furnishing a retirement in which there can be little danger of interruption.

The grizzly bear is one of the largest of the bear family, some specimens being nearly as large as the largest polar bears. Its ears are small, nose bare, hair long and abundant, particularly about the head and neck, the longest hairs being in summer about three inches and in winter five or six inches long. It varies greatly in color, so that it is difficult to find two specimens closely alike in this particular. The hair is commonly dark brown at the roots, gradually fading into reddish-brown, and is broadly tipped with white intermixed with irregular patches of black or dull brown, giving a hoary or grizzly appearance on the surface, from which it derives its name.



A GRIZZLY BEAR AND ITS CUBS.-"THE BATH."

These bears are omnivorous, feedingly largely upon wild fruits or vegetation and honey, or upon the flesh of such beasts as are less powerful, fleet, or cunning than themselves. They ramble abroad both by day and night, and have been known to seize a wounded buffalo, kill it, and partially bury it in the earth for future use, after having gorged themselves on the best parts of the flesh and lapped up the warm blood. The number of adventures that have been related concerning the sagacity of bears when hunted or in hunting their own food would fill volumes. But in all cases their great affection for and tender care of their young, one illustration of which forms the subject of our sketch, have formed a marked feature of their character.

We are indebted to our German contemporary *Uber Land und Meer* for our illustration, which is a subject of careful study.

Natural History Notes.

A Fireproof Tree.—The *Gardeners' Chronicle* mentions a curious tree, a species of *Rhopola*, of contorted appearance, and growing to a height of about twenty feet, which is said by Mr. W. T. Thiselton Dyer to be absolutely indestructible by fire, and which survives in large districts in South America where the dry pastures and bush are burnt twice a year, and everything in the way of vegetable life is destroyed with the exception of this tree.

Forms of Cotyledonary Leaves.—At the anniversary meeting of the Linnean Society on May 20, an interesting paper was read by Sir John Lubbock on the forms of cotyledonary leaves. The result of his investigations seems to point to the conclusion that the form of the cotyledon is largely dependent on the shape and structure of the seed coat. Thus in *Chenopodium*, in which the embryo lies coiled outside the albumen, the width of the cotyledons is determined by the narrow diameter of the seed. In *Galium saccharatum*, in which a thick pericarp, rendered necessary as a protection in the hot climates in which the plant grows, leaves only a small rigid opening for the cotyledons to emerge, they are narrow, while in *Galium aparine*, in which the pericarp is thinner, and becomes split open in germination, the cotyledons are much wider. The unequal size of cotyledons, as in the sycamore, mustard, and geranium, depends upon the rolling or folding of the cotyledons one within the other, the inner one being restricted in its growth by the more rapid, because unhindered, development of the outer one. In some cases this development is carried to such an extent that only one cotyledon is formed, the inner one remaining rudimentary. The crenated appearance of some cotyledonary leaves was shown to be due, as in *Cordia*, to the plaited manner in which they are folded in the seed, but the emarginate character so well seen in the mustard, etc., seems to be due to various causes. In some, as in *Impatiens*, it is caused by the pressure of a projecting point in the testa; in mustard, by the folding of one cotyledon over another in a seed so formed as to cause an angle to be cut off; in *Senicio*, to the development of a gland arresting growth at the apex of the cotyledon. Auricled cotyledons were shown to be formed when occurring in exalbuminous seeds by the development of the cotyledon into the angle between the testa and the radicle. The non-development of cotyledons in *Gloxinia* and other plants was also alluded to. Sir John Lubbock stated his belief that the size of the seed was in direct relation to its chances of growth, and the number of seeds produced in inverse ratio to the same factor.

A Large Mullein.—La Nature has recently figured a remarkable specimen of the common mullein (*Verbascum thapsus*), which was found growing in a garden near Rouen, and the dimensions of which were as follows: Height, 10 feet 1 inch; raceme of flowers, 5½ feet in length; leaves, on an average, 1 foot wide by 2 feet in length.

The Swim Bladder of Fishes.—Charles Morris has published in the *Proceedings* of the Philadelphia Academy a theory of the origins of lungs and swim bladder, and an explanation of their homologies and the peculiarities of their relative positions. He imagines that the primitive fishes, like the sharks, were without this organ, but that some of them, venturing on land for longer or shorter excursions, took in stomach and throatfuls of air, which procured a certain aeration of the blood. He imagines that the air held in the throat finally produced a distention of its superior wall, which became later a diverticulum, and still later a sac with a narrowed opening. The tendency to rise when in the water would insure that this bag of air should maintain its position above the œsophagus. In those fishes which continued to use air, as the *Dipnoi*, the sac became cellular and more complex. Its weight would then cause it to sink below the œsophagus, as we find it in Polypterus. From this stage the lung of air breathers was derived. In those fishes which became most exclusively aquatic, the bladder underwent degeneration if it had acquired cells, and if not, remained a bladder only. In either case the loss of the connection with the œsophagus (ductus pneumaticus) is the final stage in this degeneracy.

This proposition of Mr. Morris is very plausible, and corresponds with the general course of evolution of the skeleton.—*American Naturalist.*

The Growth of Rootlets.—Messrs. Van Tieghem and Doubot have recently shown that rootlets, in making their way out from the interior of the axis of main roots, secrete a fluid which destroys the cells in their immediate neighborhood by converting them into jelly and then dissolving, perhaps absorbing, them, somewhat in the same manner that the embryo metamorphoses the albumen surrounding it and then appropriates it as food.

The Rosewood.—The leading tree that yields the rosewood of commerce has been supposed to be *Jacaranda mimosæfolia*, but it seems that the true origin of the product is not as yet definitely known. The *Proceedings* of the Botanical Society of Edinburgh gives the following as the latest information in regard to the matter:

"Brazilian rosewood, which is the rosewood *par excellence*, has been used in Europe for furniture purposes for at least 200 years, and if the dates of some articles of this material, shown at South Kensington, be correct, for nearly 300 years. Tables and cabinets were made of it long before mahogany was brought across the Atlantic. According to a Brazilian official publication, rosewood trees are abundant in all the provinces on the east side of the empire, from Pernambuco to Rio de Janeiro. The exports of this wood from Brazil have increased tenfold within the last fifty or sixty years, and now amount in value to about £100,000 per annum. Notwithstanding its importance, and the length of time it has been used in Europe, the species of tree which yields it is not yet known. In Brazil it is called jacaranda wood; but in that country there are several jacarandas—the black, the purple, the violet, the white, and the thorny jacarandas, the species of which are known, besides the rose jarcaranda, of which, apparently, only the genus is known. At all events, the botanical source of Brazilian rosewood is not known in Europe. According to the catalogue of the Kew Museum, it is supposed to be obtained from one or more species of *Dalbergia*. In East India there are three dark, heavy woods belonging to this genus, well known for their useful properties, which somewhat resemble though they have not the beauty of Brazilian rosewood. These are the *Dalbergia latifolia*, the *D. sissoo*, and the *D. cultrata*. Indeed, the *D. latifolia* has been long well known in England as East India rosewood."

Suspension of Life in Anguillalæ.—As long ago as 1735, Becker described the apparent death of dried-up *Anguillalæ*, and conceded that, at the end of a hundred or more years, these worms might, under the influence of moisture, recover their pristine activity. Needham, in 1745, demonstrated experimentally the resurrection of paste-eels after a period of twenty-eight years. More recently, Darainne has resuscitated some at the end of four years. At a recent meeting of the Academy of Sciences, the director of the Museum of Natural History of Rouen gave his opinion upon this very interesting subject. Operating upon the paste eel, he had found, he said, through experiments dating back to 1872, that at the end of fourteen years the animal's vital powers were about spent.

Brainless Fishes.—In some experiments performed some time ago by Mr. Vulpian, it was found by him that a carp, when deprived of its two cerebral hemispheres, not only survived the operation, but continued to manifest cerebral faculties; that after two or three days the fish began to eat; and that, if small fragments of hard-boiled egg were thrown to it, it went for them eagerly and devoured them. One of these fishes having been accidentally killed at the end of six months, Mr. Vulpian found, as he states in a recent note to the Academy of Sciences, that no tendency toward a reproduction of the extirpated organ was exhibited.

Correlation between the Appearance of an Animal and a Plant.—Not long ago, Mr. Von Ihering published in *Kosmos* a very interesting article upon a genuine Egyptian plague that occurs at quite irregular intervals in Brazil, viz., an invasion of mice belonging to the genus *Hesperomys*. These animals only very exceptionally visit dwellings, but live in burrows ending in a large chamber carpeted with grass. They are omnivorous, living chiefly upon seeds, herbs, and meat. Usually they are rare, and naturalists find it difficult to procure specimens of them, and this makes the prodigious numbers that appear in certain years all the more striking. In May and June, 1876, an immense number of these rodents appeared at Lourenco. The animals invaded the corn fields, and in a few days destroyed everything edible. From thence they proceeded to the potato fields, and dug up and ate or put aside everything they could find. Pumpkins and cucurbits of all kinds were opened and gutted, and the fields of oats and barley were devastated.

Then came the turn of the houses. Cats were routed, and hundreds of the mice were killed in vain, as their number was invincible. Everything except iron, glass, or stone was gnawed and destroyed. The wooden shoes of the cows were removed, fat swine devoured, and even the sleeper was not neglected by these invaders. What is interesting is the correlation existing between these invasions and the appearance of a herbaceous plant, a *Cresciuma*. This plant, which furnishes the mice with their principal food, comes to maturity and flowers only at regular intervals varying between six and thirty years.

The mice are abundant only at the epochs when this flowering occurs; after which they disappear for a time. We may see what an immense influence the proportion of food at their disposal exerts upon the number of the mice, when we reflect that, in a single summer, one couple may beget, directly or indirectly, 23,000 individuals. If, during the following years, the plant should flower and produce seed annually, as it does now only at certain intervals, the production of mice would be sufficient to drive every living being out of the country.

Movement of Plant Tendrils.—Mr. D. P. Penhallow contributes an important paper to the *American Journal of Science* upon the movement of tendrils in the squash (*Cucurbita maxima*) and pumpkin (*C. pipo*), and incidentally deals with other phenomena of growth in these plants. The results obtained are based upon observations extending over a period of ten years, the original and principal facts having been obtained in 1875 by a series of experiments which involved almost continuous observation, night and day, for a period of a week. His final conclusions with reference to the cause of motion are as follows:

1. Movements of the tendril and petiole are due to unequal growth, as producing unequal tension of tissues.

2. The unequal growth is chiefly defined in the vibrogen tissue, which may, therefore, be regarded as the seat of movement.

3. The band of unequal growth does not arise at successive points of the circumference.

4. The vibrogen tissue consists of three longitudinal bands, each of which becomes more active in turn, without regular order.

5. The collenchyme tissue is that which is chiefly concerned in variations of tension under mechanical stimuli.

6. Bending or coiling under the influence of irritation, or (free coiling) from irregularity of tension through maturity of tissues.

7. Transmission of impulses is effected through continuity of protoplasm in the active tissues.

Insects as Authors of Epidemics.—Dr. R. L. Maddox, in a paper read before the Royal Microscopical Society, details the results of further experiments in feeding insects, especially the common blow-fly, on the comma bacillus. His observations include a large number of microscopical determinations. The results of all his investigations lead him to believe that the comma bacillus from cultures can pass in a living state through the digestive tubes of some insects, and, through this fact, that such insects are likely to become an important means of distributing disease, especially to animals that feed upon them. This is in accordance with the views of Dr. Grossi, that "insects, especially flies, may be considered as veritable authors of epidemics and agents in infectious maladies."

Avoid Opiates.

The *Manufacturers' Gazette*, we believe, speaks candidly when it says that the increasing use of opiates and other drugs intended to either allay or excite nervous activity is an evil in this country equal to if not worse than the excessive use of intoxicating liquors. Comparatively little is said of it in public journals, and there is no such crusade against it as there is against intemperance. The insidiousness of the drug habit makes it the more dangerous. The great majority of those who begin the use of opium, morphine, and chloral do it under prescription of physicians, and often without being allowed to know what they are taking until the habit is thoroughly fastened upon them. Such trifling with life and health by physicians should be made a criminal offense, and its victim or his friends should prosecute for malpractice to the full extent of the law. It is a safe rule to take no medicines from any except those known to be trustworthy; and no physician is trustworthy who refuses to inform patients of possible danger from the drugs he may prescribe. So many have been wrecked in this way that the old secrecy about the composition of medicines is out of place, at least to the extent of informing patients that they are taking nothing liable to bind them in the hopeless slavery of some drug habit.

Libel as to Patent Rights.

In the case of the Baltimore Car Wheel Company *et al. vs.* Bemis *et al.*, the United States Circuit Court at Boston refused to grant an injunction restraining the defendants from making certain alleged injurious statements regarding the title of the plaintiffs to certain patents. The court said that there was no jurisdiction in a court of equity to enjoin a libel on the rights or title of the plaintiffs.