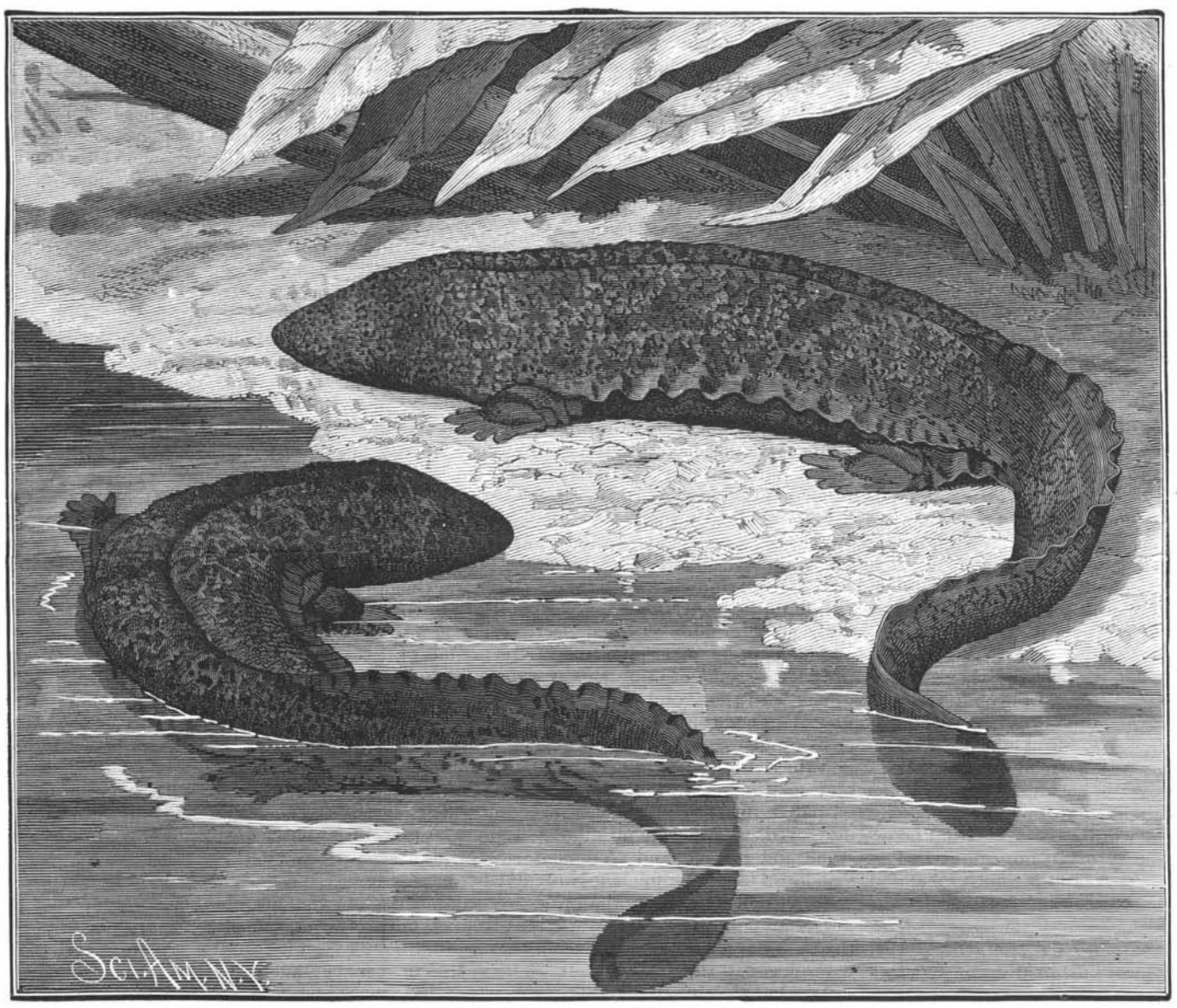
A PAIR OF LIVE SALAMANDERS.

A large tub partly filled with water, and placed in the middle of a room on the second floor of Reiche & Bros.' animal house in Park Row, New York City, contains a pair of the world-famed salamanders, which ancient historians, and indeed some later naturalists, incline to place in the same category with the fabled sphinx, the dragon, and the basilisk. They are of the largest variety known (*Cryptobranchus maximus*), and said to have been found in the crater of an extinct volcano near Niphon, in Japan, lying torpid in an Avernus-like pool.

They belong to a second family of the order Batrachia, which also includes lizards and frogs, and can live out of as well as in the water. Having the legs of a saurian joined to the form of a fish, exuding an acrid humor through a skin covered throughout its whole extent with black warts and tubercles, the giant salamander seems the embodiment of all that is most repulsive among the reptilia. Goaded by the keeper with a sharp stick, it comes to the surface and spits and hisses, and its little eyes, sunk deep amid the cankerous growths of the head, burn like coals of fire. Then it looks a very demon.

One of the present specimens is 3 feet or thereabouts in length, and of a chocolate-brown color; the other is somewhat smaller and black. The mouth, when open, shows a double set of serrated teeth, with points like so many needles. The tongue is cream-pink, pointed, and has the quick, almost spasmodic movement of the snake's.



A PAIR OF LIVE SALAMANDERS.

The second night after their arrival, both escaped from the tub of water and left upon the sanded floor of the room two trails of slime, indicating the several directions they had taken. The smaller was found only a few feet distant, behind a pile of boards. The trail of the larger one led out into the hall, down two flights of stairs, and into the cellar. Before it was found, a black bear, chained in the cellar, suddenly died, and the dealer in animals insists that it was killed by the intruding salamander.

He thinks that the reptile, while crawling along, was attacked by the bear, and, in self-defense, spat at him. The fluid which it ejects from its mouth is milky-white, acrid, and does not differ essentially from aconite or wolf's bane. It is not soluble in water, but dissolves readily in spirits of wine. In taste it resembles corrosive sublimate, and is very astringent.

The student of natural history will scarcely fail of regret that a careful autopsy was not made of the dead bear to discover whether or no there was any proof that it was killed by the salamander. It is interesting to note that, when the wandering salamander was at last found, the experienced naturalist-dealer, thrusting aside for the time the terrible warnings that have come down through the ages of the deadliness of the salamander, coolly threw a blanket over the reptile and lifted him into the waiting tub, thus evincing his confidence in the more recent investigations of contemporary naturalists.

The two salamanders swim lazily about their tank, the smaller of the two continually seeking to hide his head under the big one, and both keeping well down toward the bottom, as though their eyes were unused to so strong a light as that shining upon the surface. At stated times, both come to the surface for air, though careful observations show that they can remain below for at least half an hour without apparent discomfort. When out of the water, there is no glisten to the skin, as in other of the amphibia. The surface is dull, though constantly changing its complexion as the great warts which cover it close up or separate with the rhythmical movements of the limbs. A close examination shows the bodies of these creatures to be alive with the fœtid exudations from the pores; an exudation which, if active in the normal state, is strikingly increased if the animals be irritated, in proof of which the keeper, prodding the larger salamander with a pointed stick while crawling on the floor, the slimy track he left behind him visibly thickened.

With commendable alacrity and caution, the New York Board of Health sent a sanitary inspector to examine the conditions under which the reptiles were being cared for. Authorities say that everything the salamander touches is impregnated with poison. That distinguished naturalist, Pliny, says:

"Of all the venomous animals, it is the salamander that is by far the most dangerous, for while other reptiles attack individuals only, and never kill many persons at a time, the salamander is able to destroy whole nations, unless they take proper precautions against it. For if this reptile happens to crawl up a tree, it infects all the fruit with its poison, and kills those who eat thereof by the chilling properties of its venom. Nay, even more than this: if it only touches with its foot the wood upon which bread is baked, or if it happens to fall into a well, the same fatal effects will be sure to ensue. The saliva of this reptile, if it comes in contact with any part of the body, the sole of the foot even, causes the hair to fall off from the whole body."

Though this is a highly colored and evidently erroneous description of the properties of the salamander, there is no doubt that its saliva and secretions are poisonous, and one cannot help regretting that the Board of Health did not send an analytical chemist along with its inspector, so that we might know just how much truth there is in the water story; that is to say, just how far the poisonous influence of this reptile will extend in a running stream or in still water.

The result of the inspector's visit was an order from the Board of Health that the water from the great tub be carried away only in galvanized iron buckets, and that disinfectants be used freely in and about the premises as long as the salamanders are there. A very interesting experiment was made last week to test the power of the reptiles to destroy life. A rabbit was brought in and thrust against the large salamander, the same being placed upon the floor for the purpose. Bunny gave the same manifestations of fear as when pursued by his arch enemy, the ferret. He shook as with a palsy, his eyes filled with tears, and his powers so weakened that, at times, the limbs refused to bear the body upright, and he fell upon his side or head. The reptile, as though regarding the occasion as unworthy the exhibition of his much vaunted powers, simply thrust poor Bunny aside with a lazy movement of his ugly head, and all attempts to make him bite or spit failed signally.

Like his suppositious congener, the newt, the salamander's favorite food is said to be flies, bugs, frogs, and fish; and though he can bite, as is proved by the ease with which he masticates the meat on which he is now fed, and the fact that he has been known to eat his own species, nature has evidently supplied him with other means of attack and defense than the needle-like teeth that deck his jaws. The head is large and flat, having a single branchial orifice on each side, thus closely resembling a North American tailed batrachian reptile called the menopoma, and which is said to connect the perrenibranchiate amphibians with the salamanders. Indeed, no less an authority than Van der Hoeven classes the menopoma with the reptile under discussion, which he calls *Cryptobranchus japonicus*. The tail is about one-third the entire length, and there is a loose fold of skin extending from the head all the way to the tail, which seems to have an active part in the locomotion.

A wonderful property of the salamander is its power of enduring extreme heat or cold, which led to its being called "Daughter of fire with body of ice." Perhaps it was because of his ability to withstand very high temperatures that induced the belief among the ancient Greeks, who seem to have originated the fabulous stories concerning the salamander, that he could survive the furnace. It is certain that he has been found frozen in blocks of ice and come to life again upon its melting.

Another wonderful property is his power of renewing portions of his body when once removed, a case being on record where a lost eye was completely renewed in a year's time, and his extraordinary tenacity of life.

M. Dumeril mentions a case where three-fourths of the head of a salamander was cut off with a pair of shears. Put into a glass vessel and deprived of nostrils, eyes, ears, and without a tongue, he continued to live and to move around, even when cicatrization had so done its work that there was no normal connection with the lungs, and no passage for receiving food. Aristotle, Nicander, Dioscorides, and Pliny all agree that the salamander is proof against the fiercest flames. The latter authority even outstrips the others in declaring it has no sex. Linnæus places the salamander among the lizards, though he has a heart with two auricles.

As to the ability of the salamander to withstand fire, the only evidence recorded of later years was supplied to the naturalist Buffon by M. Ponthonier, a French consul at Rhodes. He declared that he saw a salamander—one of the smaller species—walking about among the live coals of his kitchen fire. He removed it while still alive; the balance of his household, insisting it was the devil, flying for their lives meantime. Buffon, removing it from the bottle in which it was sent him, discovered that a portion of the reptile was missing, and concludes therefrom that it would have been entirely burnt up had the Frenchman not rescued it in time.

Ancient authority says that the wonderful cloth sent by the Tartar king to the Roman pontiff, and containing the holy napkin, the *sudarium domani*, in which it is yet preserved, was made of the skin of the salamander. For centuries the heart of the salamander, worn in an amulet, was thought to be a prophylactic, and a certain cure for leprosy.

The giant salamander is said, on good authority, to be a specimen of the now extinct species, a portion of whose remains, found in 1725 incrusted in a large block

of stone, and mistaken for those of a human being, gave rise to the belief that man witnessed the Deluge, and excited great interest among the palæontologists. We are told that "Scheuchzer, a Swiss naturalist of some celebrity, who added to his scientific pursuits the study of theology, being called upon to give his opinion as to the nature of this relic of ancient times, declared that he recognized in the skeleton the remains of a man. In 1726 he published a description of these fossil remains in the Philosophical Transactions of London, and in 1731 he made it the subject of a special dissertation entitled '*Homo diluvii testis*'"—man a witness of the Deluge.

Many Items of Interest.

Bradstreet's has compiled very exhaustive tables on the number of workmen at present engaged in the various industries of the country, the wages paid them, and other highly interesting data, and the general results shown are very satisfactory. It appears from them that at least 400,000 more workmen are engaged than at this time two years ago, and that the wages, which had sunk very low in the two years prior to 1885, are at present at about the same figures they were during the bright business year of 1881–82.

A correspondent of the *Carriage Monthly* asks the editor for a good receipt for mixing body rough-stuff out of Reno's umber and orange. The editor applied to Reno Bros. for the information, and their reponse contained the following receipts, with the further remark that many painters had various ways of mixing rough-stuff, the rules below being as near right in general use as any:

For Rough-stuff.—Take equal parts of good japan and coach rubbing varnish. Pour together and add enough of the French umber filler to bring it to the consistency of a thin paste. Thin with thin turpentine.

For Priming and Lead Coating.—Use French umber filler. Mix with oil to the consistency of keg white lead, and use the same as lead.

For Putty and Glazing.—Mix with japan and varnish to the consistency required.

A harrow-shaped flock of wild geese, the Waterbury (Conn.) *American* says, went northward over the city recently. They seemed to attend sharply to the business of traveling until they spied one of the numerous kites the boys in the northern portion of the city were flying. This kite was uncommonly high in the air, and the geese objected to it. At least they circled about it two or three times, and then four of their number, delegated for the purpose, attacked the kite and tore it into shreds, and went on their way.

Mr. E. L. Corthell, chief engineer of the Atlantic and Pacific ship railway project, of which the late Captain Eads was the head, announces.his determination to do all in his power to bring it to a successful conclusion. All who have known of Mr. Corthell's work in connection therewith, his unceasing efforts before Congress, certainly have faith in Mr. Corthell's ability to construct the work. He is well and favorably known in connection with this project, as well as his construction of the jetties in the South Pass, and other engineering plans with which Mr. Eads was identified.

Mr. Corthell has entered into a copartnership with Mr. Geo. S. Morrison as consulting and constructing engineers, with offices at 35 Wall Street, New York City, and Lasalle Street, Chicago, and will direct construction of railroads, examine, report, and take charge of river and harbor improvements for government or corporations. This will in no way, says our informant, interfere with the ship railway project, in which Mr. Corthell is interested with an enthusiasm second only to that of the late great inventor of the vast enterprise.

A country hotel proprietor, who had advertised for city boarders, was astonished the other day at receiving a letter from a New York gentleman asking him to send him samples of his drinking water for analysis. It was a wise precaution on the part of the man seeking a summer home, for a great deal of sickness arises from contaminated water; and if every one seeking country board for their family would make similar investigation respecting the sanitary condition of the places they are inclined to occupy, a twofold benefit would be the result—sickness in his own family would likely be avoided, and the boarding-house keeper would be necessitated to put his premises in cleanly condition.

A writer says that female canker worms have not the power of flying, and can only reach the extremities of limbs, on which they deposit their eggs, by crawling up the trunk. They begin this with the first warm days of spring, before buds and leaves are ready to put forth. It is quite common for them to do this while the nights are cold enough to harden tar in vessels around the trees intended to obstruct their progress. This old method has therefore given way to spraying the trees with water in which London purple or Paris green has been dissolved, thus killing the worms after they begin to eat. It requires very little poison to do this, two teaspoonfuls of poison to a barrel of water being sufficient. Too strong a dose might injure the apple leaves, which when young are very tender.

Mr. Thomas A. Edison, the famous electrician, has a very handsome residence in Llewellyn Park, Orange, N. J., and he is about to erect outside of the park a three story brick building, 250 × 60 feet, for conducting his experiments and as a repository for his books, drawings, models, etc. When completed, it will undoubtedly be the finest building devoted to electrical science in the world.

Wood and Iron says that one of the neatest and best ways of testing the soundness of a boiler plate is to sling it up by the corners so that it will lie in a horizontal position, and scatter a small quantity of dry sand evenly over the surface. By tapping the sheet lightly underneath, the sand will be thrown off wherever the plate is solid, while in places where lamination or blister occurs the sand will remain fixed.

Wrought iron expands and contracts with a force of about 200 pounds per square inch for each degree Fah. This property was taken advantage of at the Museum of Arts and Trades, in Paris, to draw in the walls of a gallery that had bulged outward by the weight on the arch. A number of bars were placed across the building and screwed into plates on the outside. Alternate bars were then heated, and when expanded were screwed up tightly, when the cooling and contraction of the bars drew the walls closer together. By repeating the operation the walls were brought into their original position.

The Burning of the Museum of Confucius.

A conflagration which took place lately in a remote village of China has destroyed one of the most remarkable literary and artistic museums in the world. The edifice in question was the ancestral home of the family of Confucius, built centuries ago, near Loo, in the province of Shan-Tung. In this building, generation after generation, the male heirs of the great Chinese teacher have dwelt in an unbroken line for 2,500 years, bearing the title of dukes. With every other family in China, a nobleman's rank must always be lower than that of his ancestor; for no true Confucian would presume to stand higher than his grandfather, father, or his elder brother. In the illustrious "House of Confucius," however, the lofty title of duke passes unchanged except when emperor after emperor adds by royal decree some new phrase of honor to the name and line of the famous philosopher. The tomb of Confucius is a huge mound, overgrown with trees, on the banks of the River Sze, with carved animals on each corner and groves of cypress trees ranged solemnly around. The relics of his age, and the rich tributes of worship paid to him by generation after generation, since 600 B. C., have all been gathered into this "House of Confucius," lately destroyed. Here were accumulated precious texts on stone and marble and commentaries of his books, wonderful carvings in jade and alabaster, jars and vases of porcelain, beyond all price, to say nothing of jewels and gold and silver work sent from all parts of the Celestial Kingdom, and even by reverential "outer barbarians." All, or nearly all, of these treasures are forever lost by this deplorable event, which has fallen upon China as nothing short of a national calamity. No liberality on the part of emperor or people can replace the vanished memorials of that remarkable teacher.—*London Telegraph.*

Spectroscopic Reaction in Gases.

At the suggestion of Sir Henry Roscoe, Mr. T. W. Best has made an interesting series of experiments on this subject, which has recently been communicated to the Manchester Literary and Philosophical Society. The author mixed the pure and perfectly dry gases in eudiometers provided with aluminum electrodes, which were connected with an induction coil and Leyden jar. The light of the discharge was then focused upon the slit of a one-prism spectroscope. The only gases experimented upon were hydrogen, nitrogen, and oxygen, but it may be hoped that others will shortly be examined. When nitrogen is added to hydrogen at ordinary atmospheric pressure, the least quantity of the former element that can be detected is 1·1 per cent. At the same pressure as little as 0·25 per cent of hydrogen can be detected in nitrogen. This curious difference is also observed with mixtures of nitrogen and oxygen. As little as 0·8 per cent of nitrogen can be detected in oxygen, whereas not less than 4·5 per cent of oxygen gives a visible spectrum in nitrogen. At lower pressures the results are somewhat different, the least quantity of nitrogen perceptible in hydrogen being, at ten inches and a half, 3 6, and at three inches and a half 2·5. The experiments are well worth extending. The limits of delicacy with gases containing carbon would be very interesting.

A Microscope Showing Perspective.

Mr. Burch has recently exhibited to the Royal Society of Great Britain a microscope of his invention, which, instead of being focused merely for the plane of the object to be examined, gives the perspective of the latter's different parts. All those who have looked into a microscope will appreciate the value of this improvement.

Mr. Burch discovered, in 1874, that if the distance of two lenses from each other is equal to the sum of their focal lengths, the optical conditions become such that the size of the images is always proportional to that of the objects, whatever be their position on the optical axis.

This proportion is in direct ratio of the focal length of the two lenses. A displacement of the object upon the optical axis brings about a displacement of the image in the same direction, but which is to the first as the square of the ratio.

He has constructed a microscope on this principle, and has exhibited to the Royal Society a magnified moss shown in perspective. The field of this first instrument is quite small, but Mr. Burch points out a means through which he hopes to enlarge it sufficiently. —*L'Industrie Moderne.*

The Use of Chloride of Palladium Paper in Detecting Gas Leakages.

To search for leakages of gas, Dr. Bunte suggests the use of paper dipped in palladium chloride solution. Such a paper, in fact, changes its color as soon as it is in the presence of a quantity, however small, of gas, coming from leaks imperceptible by the odor, and which produce no effect upon the earth covering the pipes. Dr. Bunte suggests the following method of practically applying the test to street mains. Above the pipe are excavated, at intervals of 2 to 3 meters (6½ to 10 feet), holes 30 to 40 cm. (12 to 16 inches) deep, corresponding to the joints and sleeves. In each opening is placed an iron tube 12 to 13 mm. (½ inch) in diameter, within which is a glass tube containing a roll of the test paper. The air from about the main enters the iron tube, and the trace of gas which may be present reveals itself by coloring the paper brown or black, according to its quantity. If after ten to twenty minutes the paper is still white, we may be certain that at the point tested there is not the smallest escape of gas. Various authorities who have experimented with Bunte's method certify to its efficacy. Beyer, of Mannheim, Eitner, of Heidelberg, Richard, of Carlsruhe, the superintendent of the gas company of Stuttgart, may be noted among these. As a consequence of the trials made at Monaco, it follows that if the use of palladium paper is of incontestable use for testing outdoor conduits, it is of no less value in the case of leaks occurring within houses.

Dr. Bunte admits this fact, but adds that in applying this reaction to places closed tightly, certain troubles present themselves. Thus, suspending a piece of paper saturated with palladium chloride to the ceiling of a gas-lighted room, only a small fraction of the air comes in contact with it. Now, to produce the coloration, a certain volume of gas is required. It fol lows that gas must form a considerable portion of the atmosphere to act upon the paper. Better results would be obtained by aspirating the gas through tubes containing it. Another trouble is that the paper suspended in the air dries and becomes less sensitive. Felker overcomes this trouble by placing under the glass tube a receptacle filled with palladium solution.—*L'Industria.*

Pietsch's Sewer Pipe Trap.

Under the head of "Something New in Traps," the Brooklyn *Eagle* of May 14 says:

"Mr. Herman Pietsch, of 360 Fulton Street, the inventor of a wash bowl trap for which he claims peculiar merits, exhibited his apparatus in the health department laboratory this morning. There were present Dr. Kent, Dr. Elias H. Bartley, and Inspector Coggins, of the Plumbing Bureau. All these gentlemen expressed their opinion that Mr. Pietsch's invention was far ahead of anything which had yet been placed before the public."

We may add this trap has been in use in the SCIENTIFIC AMERICAN office for two or three years, and gives the utmost satisfaction.

Whetstones.

The *Guide Scientifique* describes the following method of making artificial whetstones: Gelatine of good quality is dissolved in its own weight of water, the operation being conducted in a dark room. To the solution 1½ per cent of bichromate of potash is added, which has previously been dissolved in a little water. A quantity of very fine emery, equal to nine times the weight of the gelatine, is intimately mixed with the gelatine solution. Pulverized flint may be substituted for emery. The mass is moulded into any desired shape, and is then consolidated by heavy pressure. It is dried by exposure to strong sunlight for several hours.