

**THE FLYING FROG.**

The flying frog is a native of East India and the islands of the Sunda Archipelago. Several species of these frogs have long been known, but it was not until a few years ago that Wallace discovered that the skin connecting the toes of this frog serves not only for swimming, but for flying also. Wallace thought he had discovered an entirely new species, but subsequent researches have proved the identity of this frog with the so-called paddle frog previously known.

As will be seen from the accompanying engraving, the toes of the flying frog are very long, and are connected by a skin, which is laid in numerous folds when the animal is at rest, but which, when spread, covers a larger area than is taken up by the body and limbs of the animal. The individual captured by Wallace was altogether about four inches long. The skin between the toes of the hind feet measured four and a half square inches, while the area taken up by the extended skins of all four feet exceeded twelve square inches. The ends of the toes are provided with concave disks, the peculiar construction of which permits the frog to take a firm hold of the branches. Another peculiarity of this frog is the power to inhale and store in the body a large volume of air. By this means the body is considerably distended, and its weight, compared with its bulk, reduced. This faculty and the large surface offered by the membrane between the toes, enable the frog to fly short distances from branch to branch. In appearance the flying frog is extremely beautiful. The back and legs are of a lustrous green color; the belly and toes are yellow; the skin between the toes black and decorated by yellow stripes. With the exception of the folds in the web of the feet, the surface of the entire body is smooth.

**THE FENNEC, OR SAHARA FOX.**

The fennec is an inhabitant of Africa, being found in Nubia and Egypt. It is a very pretty and lively little creature, running about with much activity, and anon sitting upright and regarding the prospect with marvelous gravity. The color of the fennec is a very pale fawn, sometimes almost of a creamy whiteness. The tail is bushy, and partakes of the general color of the fur, except at the upper part of the base and the extreme tip, which are boldly marked with black.

The full grown animal is quite small, measuring scarcely more than a foot, exclusive of the bushy tail, which is about 8 inches long.

It is said that the fennec, although a carnivorous animal,

delights to feed upon various fruits, especially preferring the date. It is also said that it can climb the trunk of the date palm and procure for itself the coveted luxury.

This creature presents a strange medley of characteristics that have been a stumbling block to systematic zoologists, and it has been frequently transferred by them from one portion of the animal kingdom to another. Now, however, it



**THE FLYING FROG.**

is admitted that the fennec belongs to the genus *Vulpus*, being a congener with the various foxes of the Old and New Worlds.

Like veritable foxes, the fennec is accustomed to dwell in subterranean abodes, which it scoops in the light sandy soil of its native land. Its fur is of considerable value among the natives of the locality wherein it is found; it is said to be the warmest found in Africa, and is highly prized for that quality.

The fennec is a quaint little creature, wearing an air of precocious self-reliance that has quite a ludicrous effect in so small an animal. The color of its eyes is a beautiful blue; and the whisker hairs which decorate its face are long and thick in their texture and white in color. The fennec is identical with the fox-like animal named "zerda" by Rüppell and "cerdo" by Illiger.

KNOWLEDGE cannot be acquired without pain and application. It is troublesome, and like deep digging for pure waters; but, when once you come to the spring, it rises up to meet you.

**Utility of Toads.**

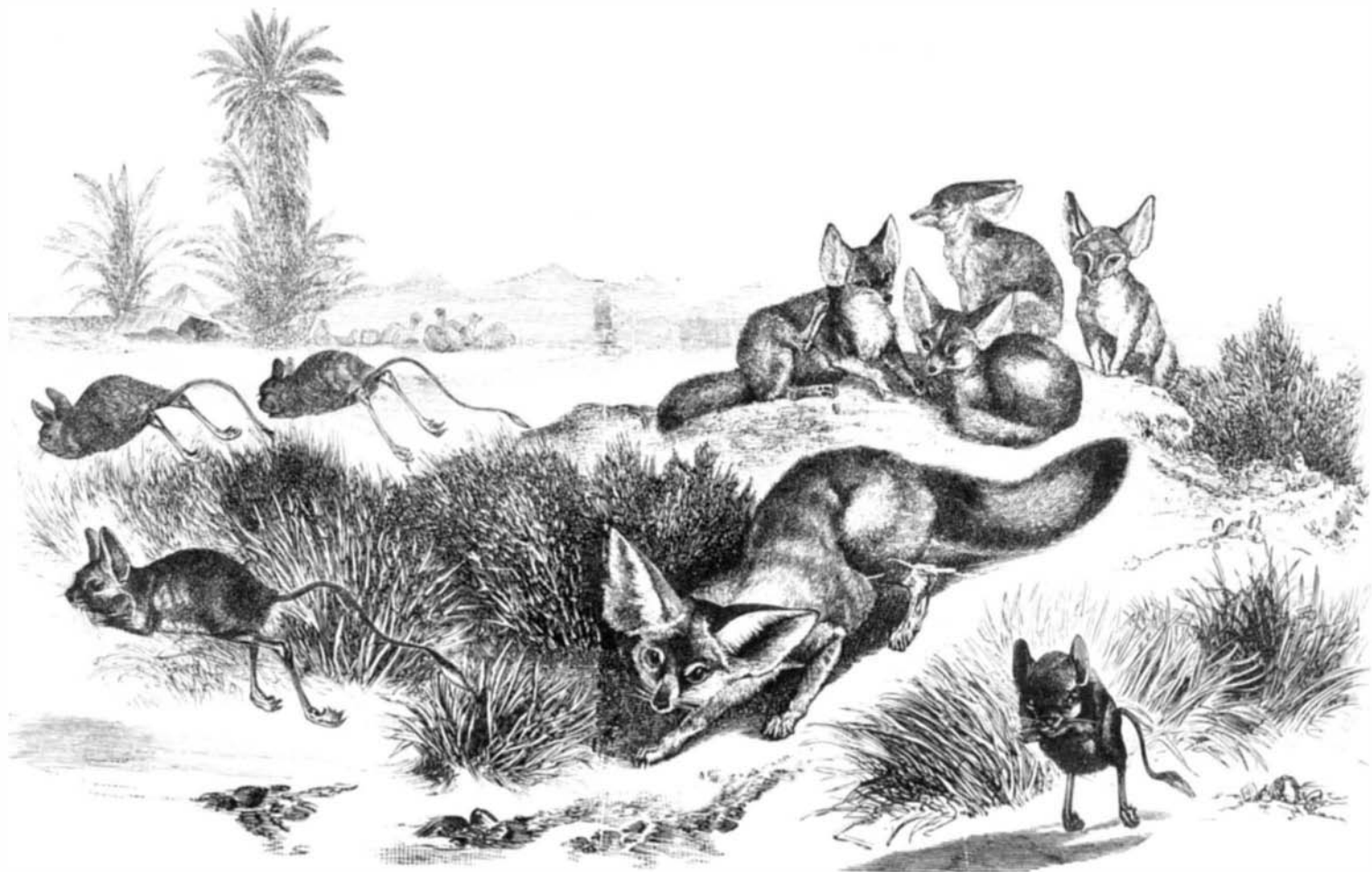
In our last issue we published an appeal, all the way from India, for the crow, which our farmers a little later will strive to annihilate, and, failing in that, will contrive all sorts of devices for scaring them from their fields. Now comes an appeal from our own land in behalf of the toad.

A writer in the New York *Tribune* notices the fact that many gardeners already appreciate the valuable services of common toads for their insect-destroying propensities, and afford them protection, while as many more, perhaps, are ignorant of their usefulness. To the latter class it should be known that toads live almost wholly upon slugs, caterpillars, beetles, and other insects, making their rounds at night when the farmer is asleep—and the birds too—and the insects are supposed to be having it all their own way. English gardeners understand these facts so well that toads are purchased at so much a dozen and turned loose, and the best of it is the toads generally stay at home, so the gardener is not troubled with buying his own toads over again every few days.

The toad can be tamed, and will even learn to know its master, and come when called; the writer has not only had such pets himself, but could give other instances of toad-taming that have come under his observation. Toads can be made very useful about the house, and will do not a little good in destroying cockroaches, flies, and other household pests. They are sometimes known to eat worms, which they grasp by the middle with their jaws, cramming in the writhing ends of the unfortunate articulates by means of their front feet. Insects are seized and conveyed to the mouth by means of the rapidly darting tongue, which always secures the victim as it is about to fly or run away.

**NATURAL HISTORY NOTES.**

*A New Natural Order of Plants.*—If not an entirely new order, at least a very anomalous member of the vegetable kingdom, has been discovered by Dr. Beccari, in New Guinea. It is described and figured in the third part of Dr. Beccari's *Malesia*. At first sight one would take it for an orchid, and on a little closer inspection one would be inclined to regard it as an orchid with six free stamens. The plant, which has been called *Corsia ornata* (the genus name in honor of the Marchese Corsi Salviati), is a brittle, straw-colored, root parasite, from 6 to 8 inches high, with a stoloniferous root emitting long fibers, and bearing scales and buds. The stems are somewhat clustered or tufted, and clothed with variable scales increasing in size upward, the upper ones sheathing at the base, and about an inch long. Each stem is unbranched,



**FENNEC.—(Vulpes Zairensis.)**

and terminates in a solitary flower about 1½ inch in diameter when fully expanded. The perianth is superior, and consists of six divisions, a large upper cordate one, which is erect and flat, like the standard of some *Papilionaceæ*, and five narrow strap-shaped ones directed downward. Stamens six, in two series; filaments distinct, but very short and thick; anthers two-celled, relatively large; pollen pulverulent; ovary inferior, one-celled, with three intruding parietal placentas; style short, clavate, terminating in a three-lobed stigma. With regard to the position of this singular plant in the natural system, Dr. Beccari says it is undoubtedly near the orchids, and further adds that it might constitute the type of a new family between the *Burmanniaceæ* and *Hypoxidæ*, to be called the *Corsiaceæ*. The habitat of the plant is in Mount Morait, on the north coast of New Guinea, at an elevation of 1,200 to 1,300 feet.

**Respiration of "Amia."**—The *Amia calva* is a fresh water fish, abundant in the Mississippi river and the great lakes. It attains a length of about two feet. Prof. Burt G. Wilder, of Cornell University, has published in the Proceedings of the American Association for the Advancement of Science, an account of a series of experiments which seem to show conclusively that *Amia* not only exhales, but also inhales air, and that this respiration is carried on by means of its swim-bladder. This is so much subdivided that Cuvier and others compared it to the lung of some reptiles. Experiments seemed to show that the aerial respiration was more active when the water in which the fish lay was imperfectly aerated. The average of 23 measurements of the amount exhaled was 13 c. centimeters. The exhaled air contained 3 per cent of carbonic acid; and, when the fish was fasting, it contained at least 1 per cent. The fish displays great powers of endurance of privation of water. On one occasion a specimen was kept out of water for 65 minutes without any apparent discomfort or injury. During most of the time the gill covers tightly closed, but there were regular movements of the jaw, hyoid apparatus, and sides of the mouth.

**Does the Opossum "Play Possum?"**—We often hear of this mammal "playing possum," as it is called; in other words, feigning death when captured. Does this really occur? Does the opossum deliberately make an effort to deceive its captors by assuming such a position, and suppressing its breathing to such an extent as to appear dead? In an article on this subject in the *Science News*, Dr. C. C. Abbott answers these questions in the negative. After a number of experiments made on this animal he draws the conclusion that the curled up position usually assumed by the opossum when it is supposed to be feigning death is that which the animal always assumes when sleeping, and that it is the one best calculated to prevent injury from blows, as the head and breast are thus protected. He says that the opossum is superlatively lazy and positively timid, and not intelligent when compared with the raccoon, otter, muskrat, or marmot, and he believes that the supposed habit of feigning death when captured by man is to be attributed to fear, and by no means to cunning.

**Coorongite.**—Great interest was excited in South Australia about ten years ago by the discovery of a curious carboniferous substance resembling caoutchouc found on the surface of the soil, and serious attempts were made to utilize it. The origin of the substance (which was known by the name of "coorongite") was very uncertain, although it was supposed to be derived from subterranean deposits which oozed through fissures in the ground; but the sinking of deep wells in the ground led to the discovery that this theory was wrong. Large quantities were sent to England for experiment, but the supply proved very uncertain, and it was found that though useful chemicals might be derived from it, it would not properly amalgamate with the India rubber, so that it was useless to the manufacturers of India rubber goods. From an examination of specimens sent to the well known cryptogamic botanist, the Rev. M. J. Berkeley, the latter was inclined to believe that the substance was a vegetable production; and this view was held also by Mr. G. Francis, of the Adelaide Institute, who considered it a lichen from the fact that it was granular in structure and covered over with cups containing spores. During the fall of 1878 a fresh deposit was found, and a liberal supply having again been sent to Dr. Berkeley he now pronounces it to be not a vegetable, but a substance of as yet problematical nature, and states that nothing is likely to solve the difficulty but examination of it in the moment of deposit. The commercial value of the article being doubtful, the question now becomes one of purely scientific interest.

**A Gigantic Earth Worm.**—The government of Victoria has recently issued the first decade (containing ten colored plates) of a "Prodromus" of the zoology of the colony. One of the most interesting of the invertebrate animals figured in the work is the gigantic earth worm, named *Megascoides Australis* by Prof. McCoy, which inhabits the rich soil of the Brandy Creek district of Victoria, and attains the surprising length of from 5 to 6 feet.

**The "Whistling Tree."**—In Nubia there are groves of acacias extending over 100 miles square. The most conspicuous species, says Dr. Schweinfurth, is the *Acacia fistula*. Its Arabic name is "soffar," meaning flute or pipe. From the larvæ of insects which have worked their way to the inside, their ivory white shoots are often distorted in form and swollen out at their base into a globular bladder-like gall, about one inch in diameter. After the insect has emerged from a circular hole, this thorn-like shoot becomes a sort of musical instrument, upon which the wind as it plays pro-

duces the regular sound of a flute. On this account the natives of the Soudan name it the "whistling tree."

**The Puff-balls of the United States.**—In a monograph of these fungi read before the Albany Institute in February, by Mr. Charles H. Peck, the author states that these well known vegetable productions are useful because they are edible. None of the species are considered dangerous or even hurtful, yet some are so small and so scarce that they are not of much value for food. The larger ones are generally better flavored than the smaller and more common ones. They should be used as food in the immature condition only, while the flesh is as yet of a pure white color. Puff-balls as an article of food have the advantage over mushrooms that they are not often infested by insects or their larvæ, and there is scarcely any possibility of mistaking any deleterious species for them. There are several genera of puff-balls, the most extensive one being that of *Lycoperdon*. It is this genus that is the subject of Mr. Peck's paper. The whole number of species of this genus thus far known to grow in the United States, according to the article, is 28; and of these the edible qualities of six of the larger species were personally tested. He recommends as good eating the "giant" puff-ball (*L. giganteum*), the "cup-shaped" (*L. cyathiforme*), the "long stemmed" (*L. saccatum*), and "Wright's" (*L. Wrightii*); but finds the two common ones—the "studded" (*L. gemmatum*) and the "pear-shaped" (*L. pyriforme*)—of an unpleasant flavor. The largest specimen of New York puff-ball that Mr. Peck has seen was one contributed to the State cabinet by Mr. Warne, and which was 15 inches in diameter in its dried state, and which was of course considerably larger when fresh.

#### Operation of Trimming a Tiger's Toes.

The Philadelphia *Evening Bulletin* gives the following graphic account of the operation of securing a tiger and trimming his toe nails, as performed at the Zoological Garden a few days ago. It seems the Royal Bengal Tiger had been suffering for a long time from in-growing claws, which had become so painful that it was with difficulty he was able to walk about his cage. It seems also that "Jim," for that is the animal's name, had become somewhat celebrated for his intractability, and from his distinguishing himself a short time after his advent at the Garden—1876—by inflicting injuries on his mate, from which she shortly afterward died. The female was confined in a cage next to "Jim," and one day stuck her tail through the bars into the compartment of her lord and master. That individual, being in a particularly ugly mood, seized her tail and held on. She, in order to free herself, put her hind legs against the bars and pulled. Her leg slipped between the bars, and "Jim" relinquished his hold upon her tail and caught her leg, which he literally crunched between his teeth. The injured animal died soon after the occurrence.

Not long ago, while Mr. Forepaugh, who performed the operation, was visiting the garden, he noticed the tiger's condition, and said at once that the claws should be cut. Speaking from a life-long experience, he said that if the claws were allowed to remain much longer, death from lock-jaw would be the result. Superintendent Brown accordingly made arrangements for the lion tamer to undertake the job.

The undertaking was no trifling one, for a tiger is so powerful and active an animal that there was serious danger of his breaking his neck in his struggles. The operator was also in danger from the teeth and paws of the tiger. Upon the rail in front of the cage were arranged five stout manila ropes, each provided with a slip knot and a safety string. A safety string is a stout cord attached to the knotted loop in the rope, and when pulled it acts so as to release or open the knot. It is used so that the rope can be thrown at once from an animal in case "anything goes wrong," to use Mr. Forepaugh's words. One of the ropes was a ¼ inch rope, which was used to secure the animal's head. The others were ½ inch ropes, and were used to fasten the paws.

#### TYING THE TIGER.

The spectators were decidedly nervous when Mr. Forepaugh drew off his coat and the keepers arranged themselves in front of the cage. But not so with the man upon whom all the danger and responsibility rested. He was calm, cool, and deliberate, and his steel-gray piercing eyes took in every movement of his animal.

The tiger, meanwhile, was lying with its head close to the bars at the front of the cage, and when Mr. Forepaugh gently touched him with a pole he got up and hobbled around, looking in mild surprise at the array of keepers. The lion tamer coaxed him over near the bars, and placing the loop of the large rope on a pole, tried to pass it over his neck. The tiger did not at first understand this maneuver and avoided it. He was soon cornered, however, and the loop thrown over his neck and pulled tight. To his intense surprise and rage, he was drawn close to the bars. He then lay down and quietly awaited developments. The loop of one of the smaller lines was next laid in front of his front right paw. Mr. Forepaugh then, with a small iron scraper, pushed one rope under the paw, when the assistants drew the loop tight, and pulled the paw also close to the bar. "Jim," by this time, was fully awake to the situation, and he showed his rage by deep roaring and frantic struggles to free himself. The cool and collected Mr. Forepaugh paid no attention to these demonstrations of the tiger's dissatisfaction of the proceedings, but secured the other paw in the same way. The animal was now fronting the spectators, and, in order to secure the hind legs, Mr. Forepaugh had to

enter the cage, and tie the unsecured paws of the tiger. When both of the rear legs were caught in the noose, "Jim" sprang up in order to attempt to get loose, when the assistants, by drawing on the ropes, threw him on his "broad-side" and drew his four paws close to the cage bars in front.

#### THE CUTTING.

When the paws were secured close to the bars, the rope around the neck was removed, and a man was stationed near the head with a stout stick of oak, with instructions to put it in the tiger's mouth every time he raised himself and attempted to bite his fastenings.

The rear right foot, the worst of the four, was next drawn through between the bars, and the cutting part of the operation commenced. Mr. Forepaugh used a pair of wire nippers, sharpened to a fine edge, and seizing the paw, he pressed out each claw and cut the end off. In this paw each claw had grown into the ball of the foot. After cutting off one of the claws, Mr. Forepaugh called for a penknife, and dexterously drew from the wound another claw which had grown in and which had been shed. When the claws on this foot had been cut, burnt alum was rubbed into the wound and balsam of fir was then poured in. The former was to remove the corruption and the latter to heal the wound. This same operation was repeated with the other hind paw, and Mr. Forepaugh then proceeded to attend to the front feet. This operation was rather more dangerous, as the lion tamer was forced to place his hands within reach of the tiger's formidable teeth. Each time, however, that he started up, the stick was presented to him to chew upon, and when all was over, the end of the oaken stick was found to have been splintered by the animal's teeth. When all the claws had been clipped, and the alum and balsam rubbed into the wounds, the attendants, at a word from Mr. Forepaugh, pulled on the safety ropes, and the tiger sprang to his feet and was free.

The relief was immediate, judging from the manner in which the great beast walked about his cage. Mr. Forepaugh said that the paws would probably heal in a few days, if proud flesh did not appear. In that case "Jim" would have to be again secured, and more alum, or perhaps caustic, rubbed into the wounds. The whole operation was performed inside of twenty minutes, and had the cage been smaller and the bars further apart it would have taken even less time.

The cut claws will grow again in time, and will, in all probability, grow in again, and will have to be clipped; but after they are clipped once more, it is believed they will not grow in again. Mr. Forepaugh said that they should be cut as soon as they grow out and exhibit a tendency to turn inward. He also said that all gaminivorous animals should have their hoofs pared once a year, as it makes them stand better. Neglecting this injures all such animals.

#### Capture of a Devil Fish.

One of the fishermen employed by Larco in drawing his nets this morning found, entangled in its meshes, a veritable devil fish of large size. The ugly thing was so entangled, and held on with such tenacity, that it was with great difficulty, and only after tearing the net badly, that it was released and got into the boat. It was brought to the wharf, where a number of persons visited and inspected the monster. The body is an elongated oval about 15 inches wide and 4 feet long from the head to the end of the spear-shaped tail. The mouth, or rather beak, is exactly like the mandibles of a hawk, and is placed underneath the body. The long arms or feelers, of which there are eight, radiate from around this beak, and the largest of them are upward of 7 feet in length, making 11 feet from the end of the two longest tentacles to the tip of the tail. The other arms are from 4 to 5 feet long. The underside of these feelers, for about two feet from the tip, are armed with rows of sharp-pointed hooks, increasing in size as they approach the end, where they terminate in veritable talons. The body is of a reddish-gray color on top and a pale salmon pink underneath. The underside is covered with small suckers possessing considerable power. Even after the creature had been on the dock for some time, and was nearly dead, a finger placed to the mouth of one of these suckers was seized upon and only released by a strong pull. While lying on the dock the fish exuded about two gallons of the dark fluid with which it is supplied, and which it uses to discolor the water, either to conceal itself, or to render helpless its prey. This fluid is of a most offensive odor and is of a dark yellow color. The monster, which was captured just inside of the line of kelp, would be an unpleasant thing to come across in the water, and after seeing him one can thoroughly appreciate the scene in the cavern, so graphically described by Victor Hugo in "The Toilers of the Sea." The fish was cut up and taken out by the fishermen to their crab nets as bait, but the beak and some of the larger talons were secured by Mr. Reece. Small fish of this description have been found in the channel at different times, measuring from 6 to 8 inches, but nothing approaching this one in size has ever been captured in this vicinity.—*Santa Barbara (Cal.) Press, March 22.*

#### Pinto's Journey Across Africa.

Pinto, the Portuguese explorer, reports that, notwithstanding the grievous hardships and difficulties, he succeeded in saving all his papers, embracing twenty geographical charts, many topographical maps, three volumes of notes, meteorological studies, drawings, and a diary of the complete exploration of the Upper Zambesi with its seventy-two cataracts



**Architects' Trials and Tribulations.**

A writer in the *American Architect* relates the common experience and trials of architects with their customers as follows:

What architect has not had clients who came to him with a painfully elaborated impossible sketch, saying, "Now, this is about my idea of a house. I wish you would make me a design that would embody it in a practical form." The architect takes such a sketch and remodels it, endeavoring to satisfy all the requirements, and making of it, in the end, a creation entirely his own, which he presents to his client, who exclaims almost invariably, "Why, how simple! any one could have done that!" and makes up his mind that architecture is a very easy business. Or, again, an architect inquires about some work that excites his interest or admiration, as having architectural merit, and is answered, "Well, Mr. So-and-so was our architect, but we really did not need him; my wife was the real designer, and the good points of the house are all her ideas." Of course it is not pleasant to have one's thunder stolen in such a manner, and the unfortunate architect who has twisted and turned his plans and put one tracing over another, in trying to reconcile the ideas of his client's wife with themselves, with each other, and with his design, is tempted to vow that in future he will reject, on principle, all ideas brought forward by his client's wife or any of his female relatives; or—a more dreadful vengeance still—that he will let madam design the house herself. It is the only redress he can hope for, as, when such a version of his services is given, it is more generally believed than would seem possible, in view of its improbability, and he has few opportunities to justify himself.

But there are other instances where architects are subjected to more serious wrongs and annoyances, and which are seemingly as difficult of redress. An architect is invited, for instance, together with a number of other architects, to submit designs for some large building; the architect whose design proves the most acceptable to the owner or client is to be appointed architect of the building, and to carry out his design; the other competitors are to be paid a fixed sum, avowedly based, under the most liberal arrangements usually made, upon the amount of time and labor required to produce the drawings. In due time the designs are submitted to the owner, or his representatives, one of them is selected, and its author appointed architect, the other designs being returned to their authors, with the stipulated compensation. So far our architect, whom we will suppose to be one of the unsuccessful competitors, has nothing to complain of, unless, indeed, he has reason to believe that other considerations than the competence of the competitors and the merits of their design were allowed to influence the choice of the owner, a contingency which we will not consider here. The building goes on, and our architect returns to his own affairs, but discovers, during or after the erection of the building, that certain essential features, which at the time of the competition only appeared in his drawings, have been embodied in the new building. Now, what position can he take in the matter? Has he a right to feel that he has been defrauded, and if so, who has defrauded him, and what redress can he obtain?

**Beer Drinking in the United States.**

For some years past a decided inclination has been apparent all over the country to give up the use of whisky and other strong alcohols, using as a substitute, beer and bitters and other compounds. This is evidently founded on the idea that beer is not harmful and contains a large amount of nutriment; also that bitters may have some medicinal quality, which will neutralize the alcohol it conceals, etc. These theories are without confirmation in the observations of physicians and chemists where either has been used for any length of time. The constant use of beer is found to produce a species of degeneration of all the organism, profound and deceptive. Fatty deposits, diminished circulation, conditions of congestion, and perversion of functional activities, local inflammations of both the liver and kidneys, are constantly present. Intellectually, a stupor amounting almost to paralysis arrests the reason, precipitating all the higher faculties into a mere animalism; sensual, selfish, sluggish, varied only with paroxysms of anger, that are senseless and brutal; in appearance the beer-drinker may be the picture of health, but in reality he is most incapable of resisting disease. A slight injury, severe cold, or shock to the body or mind, will commonly provoke acute disease, ending fatally. Compared with inebriates, who use different forms of alcohol, he is more incurable, and more generally diseased. The constant use of beer every day gives the system no time for recuperation, but steadily lowers the vital forces, it is our observation that beer-drinking in this country produces the very lowest forms of inebriety, closely allied to criminal insanity. The most dangerous class of tramps and ruffians in our large

cities are beer drinkers. It is asserted by competent authority that the evils of heredity are more positive in this class than from alcoholics. If these facts are well founded, the recourse to beer as a substitute for alcohol, merely increases the danger and fatality following.

In bitters we have a drink which can never become general; but its chief danger will be in strengthening the disordered cravings, which later will develop a positive disease. Public sentiment and legislation should comprehend that all forms of alcohol are more or less dangerous when used steadily; and all persons who use them in this way should come under sanitary and legislative control.—*Quarterly Journal of Inebriety.*

**SILVER WATER BOTTLE.**

The engraving on this page represents a solid silver water bottle of rare beauty, engraved by native Indian designers, who follow with great strictness the canon of art which has



**ENGRAVED SILVER WATER BOTTLE.**

obtained for centuries; only too often misapplied by our own workmen in their endeavors to improve upon foreign styles of art, without understanding their principles.

**The Coliseum Drained.**

The stagnant water which has been suffered for years to accumulate and breed fevers and frogs in the Coliseum at Rome, has been drained off at last. An ancient sewer, extending from the *meta sudans* to the Tiber, was discovered, and was connected with a drain from the Coliseum. The water was admitted into this ancient sewer on the 3d of March, and the flood which filled the basement story of the famous amphitheater of Flavius was gradually drawn off. In cleansing the sewer there were found a quantity of ancient lamps with gladiatorial ornamentation, human skulls, and bones of animals. Much of the old Roman road in the Foro Romano is now exposed to view, and the ruins of the shops of the goldsmiths and silversmiths are visible.

**Waterproofing of Cotton and Linen Fabrics.**

The recipe for "waterproofing" stout calico, used by the Chinese, and which is perfectly efficient, alike in the hottest and coldest climates, is believed to be composed of boiled oil, one quart, soft soap, one ounce, and beeswax, one ounce; the whole boiled until reduced to three quarters of its previous quantity; but experiments are required to satisfactorily test the above proportions; paint soon cracks, and ceases to be impervious to water. The addition to the boiled oil preparation of some ingredient which would prevent all risk of spontaneous combustion, when bales of oiled goods are sent abroad, would be advantageous; but no objection on this account applies to the supply of waterproof sheets (prepared with boiled oil, etc.) for use in ships, as only those that are in the hammocks would be coated, and with

them there would be no more risk than is incurred with the seamen's waterproof jackets; the small spare supply would be harmless calico sheets, not to be waterproofed until required.

The recipe used by Mr. Berthon to render the canvas of his collapsing boats airproof and waterproof, and believed to be similar to that used in the British dockyards for hammock cloths, is as follows: To 6 oz. of hard yellow soap add 1½ pint of water, and when boiling, add 5 lb. of ground spruce ocher, ½ lb. patent driers, and 5 lb. of boiled linseed oil.

For waterproofing sheets, the ocher should be omitted, as it adds to the weight, lessens the flexibility, and is unnecessary.

**Japanese Bronzes.**

Mr. Consul Flowers, in a report on the commerce of Hiogo and Osaka, Japan, lately issued by the Foreign Office, thus speaks of the manufacture of Japanese bronzes: "The moulds, which of course vary according to the shape of the vase or bowl it is desired to make, are made of wood, sometimes covered with straw. On this a coating of clay is placed; over this comes a layer of wax, which is moulded into the design required. Another thick coating of clay is then added, and the inner wooden mould being taken out the orifice at each end is closed. Two holes are then made at one end connecting with the layer of wax, so as to enable the wax, when melted, to run out, and through these the molten bronze enters, filling the interstices occupied by the wax. The subsequent process of casting is of the rudest kind. The earthen mould is placed in a small clay oven hollowed out in the floor of the workshop, the size of which depends upon that of the casting. The oven is then filled with charcoal and closed, with the exception of a circular opening at the top, on which a chimney, a foot or so high, is built of wet clay. The oven is connected underground with a wooden bellows, protected from the sparks and heat from the furnace by a small earthen or stone wall a foot high, and which is worked by hands and feet. The first operation is to melt the wax, which runs out, leaving the impression of the design stamped firmly in the surrounding layer of clay. This done, the mould is taken out and allowed to cool. It is then put a second time into the furnace as before, and the molten bronze is then poured into the mould through the holes by which the wax escaped. After the bronze has filled the mould the chimney is knocked off, the oven supplied with fresh charcoal laid evenly around the mould, and a lid being put on the oven, furnished with small perforated holes, the bellows are set to work again for an hour or more, according to the size of the casting taken. This operation generally occupies a day. When the casting is taken out of the oven, the earth outside and inside is scraped off, and reveals the vase or bowl in a rough state. It is then put into the hands of rude workmen, boys being mostly employed in this part of the work, by whom it is polished and scraped with a knife until it presents a smooth surface. It then passes on to the carver, who fills in the details of the designs. When his work is done the vase or bowl is dipped into a boiling solution of vinegar, sedge, and sulphate of copper, in order to give it the proper color. A few finishing touches in the way of polish are added, and the article is finished and ready for sale."

**Simultaneous Inventions.**

We have repeatedly alluded to the singular fact, from our own observation, of persons residing in remote places from each other making the same invention about the same time. The *New England Journal of Education* mentions a new case of the simultaneous appearance of the same invention as follows:

"The application of the methods of ordinary writing to telegraphic communications has been a matter of long study and experiment, but hitherto without success. We were shown on Saturday, March 22, at our office, a simple contrivance, invented by Professor Dolbear, of Tufts College, Somerville, Mass., by means of which the handwriting of the operator may be transmitted with the record of the message to the office to which it is sent. Singularly enough, on February 26, 1879, Mr. E. A. Cowper, of London, exhibited in operation, before the Society of Telegraph Engineers, in that city, a writing telegraph, constructed on the same principle as that of Professor Dolbear; and from the drawings in the *SCIENTIFIC AMERICAN* of March 29, one would suppose the instruments identical. The achievement is a valuable one, and both parties are worthy of highest credit as inventors."

DR. JAMES FREEMAN CLARKE recently delivered a discourse on the Chinese question, in which he very quaintly and truly said that in America, if a man is black we enslave him; if he is red we steal his lands and massacre his wife and children, and if he is yellow we won't let him come here at all.