

A REMARKABLE KINGFISHER.

There are over fifty species of the *halcyonidae* or kingfishers; but none is more remarkable than the one shown in our illustration. From its peculiar screaming laugh, not unlike the bray of a donkey, it has obtained the name of "the laughing jackass." Its zoological name is *dacelo*, one species, *d. gigas*, being a large bird, 18 inches long, and endowed with strength and courage; it feeds indiscriminately on any animals of suitable size, whether quadruped, bird, reptile, fish, insect, or crustacean. It is a handsome bird, being brightly colored; and its flight is quick and noiseless. Its powerful bill makes it a very formidable enemy.

The *Illustrated News*, of Adelaide, Australia, from whose pages we select the engraving, gives the following particulars of this interesting bird: "The laughing jackass is almost too well known to need description. His appearance and extraordinary note are familiar to the inhabitants of every country village. Indeed, he frequently extends his researches into the neighborhood of towns, occasionally taking up his abode for life in some healthy suburb, and punctually entertaining the inhabitants thereof, morning and evening, with a succession of those singular sounds which have rendered his name famous. Although a kingfisher, he never procures his food from the water, after the orthodox fashion of kingfishers, but has more the habits of a bird of prey. Sitting motionless among the lower branches of some tall gum tree unnoticed, and apparently half asleep, he waits, like Micawber, for something to turn up. Suddenly, without noise, he drops off his bough and flies direct to a certain spot, whence he soon returns, bearing in his beak a lizard, a small snake, or perhaps a rat. His acuteness of sight is extraordinary. From his elevated post he seems to miss nothing, and discerns his prey in swamps and crevices of rocks at a distance that is perfectly astounding. The laughing jackass has the advantage of being able to live on almost anything that presents itself; hence it is always in good condition, and apparently in good humor. It seems, indeed, to pass its life in self-congratulations; and when four or five meet and unite their voices, and they invariably do, morning and evening, the noise would suggest the idea that a party of demons had broken loose and were rejoicing over some piece of successful mischief. But in spite of his careless, happy life, the laughing jackass has his peculiar duty, and he performs it conscientiously. Snake killing is his specialty: lizards, frogs, beetles, small birds, rats, etc., are his usual food. In fact, nothing comes amiss to him; let a snake appear upon the scene, and the laughing jackass recognizes his quarry at once. Never hesitating, he makes straight for it, his agitation being observable by the quivering crest feathers. With some caution, he swoops backwards and forwards, seeking an opportunity to seize the reptile. The snake, with head erect, ready to strike, keeps on the alert. The excitement continues for some time till the bird finally settles down, close by, on the ground. But all his stolid heavy appearance is gone. His wings and tail quiver with agitation and eagerness. Fully alive to the dangerous character of his opponent, he keeps at a safe distance. Flitting round, his head just out of reach, he continues to annoy him, till becoming exhausted, the snake affords him the opportunity he is seeking. With the rapidity of lightning the bird descends upon his prey, then rises in the air, bearing with him the captured snake, neatly held just behind the head, in such a position as to render him perfectly powerless. Rising until he has attained a considerable height, he directs his flight to a more open part of the country, then suddenly backing in the air, he drops the reptile, following it down and reaching the ground almost at the same time. Stunned and bruised, the unfortunate snake is in no condition to renew the contest, and is very soon despatched and eaten by his victorious enemy."

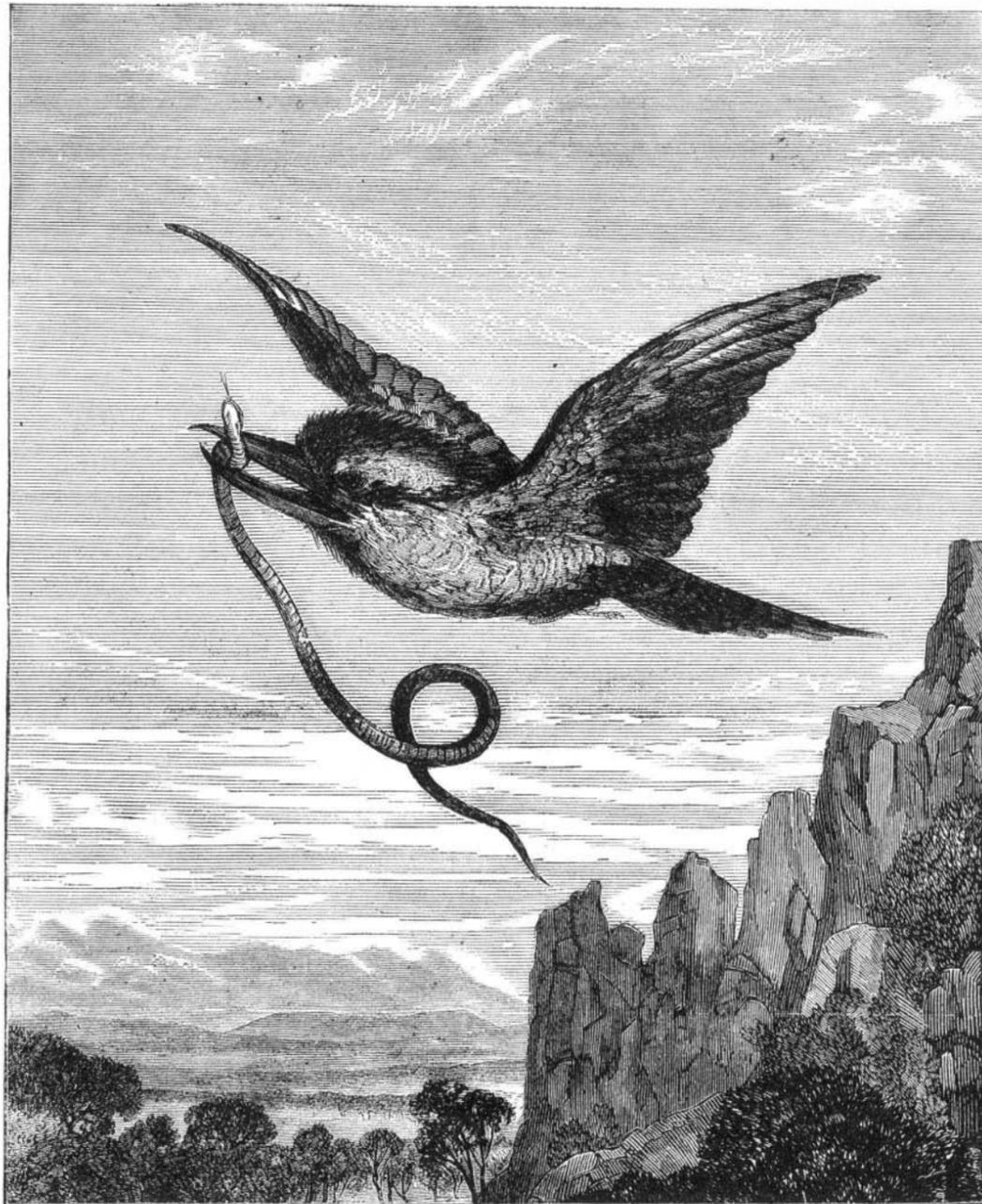
The Secretary Bird.

A curious experiment took place the other day at the Jardin d'Acclimatation in Paris. A nest of living vipers was thrown into the inclosure where the secretaries or snake-eat-

ers (from the Cape) are kept. These birds have the bright eye of birds of prey, powerful beaks, and vulture-like bodies mounted on legs like those of a wading bird. Whenever the secretaries saw the snakes they fell upon them with shrill cries, and an exciting struggle ensued. The reptiles fixed on the ground by the strong feet of the bird, twisted and hissed, and bit; but they could make no impression on the rugose skin, and they were chopped into mincemeat with a few strokes of the beak. The secretary is also, it may be remarked, a great destroyer of rodents.

Scarcity of Tanning Materials in Great Britain.

The scarcity of the vegetable products principally used in tanning has become so serious that the Tanners' Society of Bristol has officially brought the matter under the notice of the Council of the Linnean Society, in the hope that they may encourage a search by travelers for other plants having similar properties, or stimulate the cultivation of known ones. The supply of valonia from Surzema and Greece is this year very small; and as this is one of the most impor-

**THE LAUGHING JACKASS OF AUSTRALIA.**

tant tanning agents, much inconvenience has been experienced, and the trade has been compelled to seek other materials. Two new plants have been brought to market, but in such small quantities as to be of little use; but if their growth could be encouraged they would be very valuable. One is a small gall from the tamarix, growing in Morocco and also in India. It yields about forty per cent of tannin, which is of remarkably fine quality, and is at present used almost entirely for medicinal purposes. The other is the seed and pod of a kind of bean called *balsamo carpon*, and yields a tanning gum of great strength. It grows in mountainous districts in Chili. The seedpods are very soluble in water, and would need to be grown in a country where little rain falls.

To Cleanse the Woodwork Around Doors.

Take a pail of hot water; throw in two tablespoonfuls of pulverized borax; use a good coarse house cloth—an old coarse towel does splendidly—and wash the painting; do not use a brush; when washing places that are extra yellow are stained, soap the cloth; then sprinkle it with the dry powdered borax, and rub the places well, using plenty of rinsing water; by washing the woodwork in this way you will not remove the paint, and the borax will soften and make the hands white—a fact well worth knowing. The uses of borax in domestic economy are numerous; and one of the most valuable is its employment to aid the detergent properties of soap.

Underground Telegraphs.

The two valuable practical papers, "Underground Telegraphs," by Mr. Willoughby Smith, and "Underground Telegraphs in France," by Mr. John Aylmer, C. E., of Paris—which were read before the Society of Telegraph Engineers at their last meeting, on the 28th ult., has served to bring again into prominence the subject of covered telegraph lines.

Taking up a statement of Mr. Prescott's which appeared in the *American Journal of the Telegraph* some six or eight months ago, that the "use of underground telegraph lines had thus far been attended with very unsatisfactory results," Mr. Willoughby Smith sought to establish, and undoubtedly succeeded in establishing, the fact that underground telegraph lines need be attended with no greater risks than open lines—nay that, were the proper material only employed, and due care taken in the execution of the work, there is no reason why covered lines should not be made as safe and durable as need be desired. The most interesting feature, however, of Mr. Willoughby Smith's communication was the argument which he brought forward against the employ-

ment of tar on gutta percha covered wire. A covering of tarred tape is, as is well known, all but universally adopted at present as the final protective covering. This, it is alleged, is a grave mistake; for by reason of its use the insulation resistance is materially diminished, and the germs of decay, which in time lead to the complete destruction of the coating, are implanted in the gutta percha. The tar ought to be abandoned, and in its place tannin, whose employment was stated to have been highly satisfactory, ought to be adopted. In the valuable address delivered some time since by Professor Abel, at the Society's opening meeting, this same subject was dealt with, and the state of our knowledge with reference to the causes of decay in gutta percha was shown to be crude in the extreme.

Granting, however, that tar is an objectionable feature in the manufacture of gutta percha covered wire, was there not some point in what was remarked, by one of the speakers in the animated discussion which followed, that surely then Chatterton's compound was not altogether an unmixed advantage? Chatterton's compound consists of one part of Stockholm tar to one of resin and three of gutta percha, and has long been regarded as the panacea for every evil that could befall gutta percha covered wires. No coating can be considered complete, it is said, no wires can be welded homogeneously together, without Chatterton's compound; and if tar is the *bête noir* it is now stated to be, what becomes of the influence of Chatterton's compound? It is all very well to be told, as Mr. Willoughby Smith told us the other evening, that "in the compound the sting of the tar was taken out." It is a pity that the same process of sting-abstraction could not be applied with equal success to the tar in the tape. No, we shall wait for a few further data and a few additional experiments before condemning the tar wholesale and making it accountable for all the mischief; and we will be content to look for the deterioration of the gutta percha, to a very great extent at least, in the cheap and consequently indifferent material which has never been properly tested, and hasty manufacture over which no efficient check has yet been introduced.

No one will now attempt to call in question the possibility of manufacturing really good covered wires: the battle of india rubber and gutta percha need not be fought over again, for the improvements effected in the latter have been so decided of recent years that its position is well-nigh unassailable by its old rival. If danger is to be anticipated from any quarter, paraffin and the products of paraffin will probably show it the most dangerous front. Meanwhile, every one will admit that covered wires as good as need be looked for in the existing state of our knowledge can without difficulty be manufactured, and no one will deny that their laying is a matter which requires nothing more than care to be attended with success. When, therefore, the need for underground telegraphs on a more extended scale than at present does arise, either from the crowded state of the open lines on every

available route, or from an alternative channel being thought desirable, we may rest perfectly satisfied that our telegraph engineers and electricians will be quite equal to the occasion; and if the day when that need does arise is even but a short way off, they may as likely as not turn round and regard our manner of doing things in much the same light as we regard the now antiquated attempts of but a few years back in the matter of covered lines.—*London Telegraphic Journal.*

Care of Horses' Feet.

When the foot is gone, there is no horse left. There is an old adage to this effect, the truth of which is incontrovertible. Yet no part of a horse's anatomy is worse used than the foot, and there are no more frequent diseases to which the notice of the veterinary surgeon is brought than those of the feet. This comes of the unwise yet obstinately maintained fashion of rasping, cutting, burning, tarring, and greasing the hoofs. It would occupy too much space here to describe the anatomy of the foot fully, but it is a very timely matter just now to consider the structure of the horny outer covering or crust of the foot, by which the delicate inner parts are protected.

Horn is a fibrous substance, which contains twenty-five per cent of water. The fact that it contains water in its normal composition is a very important one, and needs to be stated here, because, unless specific reasons are given, very little weight is generally accorded to all that may be written or said about the proper treatment of the horse's foot, by either horse owners, farmers, blacksmiths, or professional horseshoers. When horn is deprived of water it becomes dry, hard, and without elasticity, precisely like a piece of dry glue, which breaks and splinters into glassy fragments. It is necessary, therefore, that this water should be retained, to keep the horn in good condition. The common practices of burning the sole to procure a fit for the shoe, or rasping the outer surface to get a good shape, and of tarring and greasing the hoof, all tend to drive the water out of the horn, and not only to harden and contract it, but to make it brittle. In this condition its usefulness as a protection for the foot is at once impaired and partially destroyed. When the sole is burned by contact with a hot shoe, it is obvious that the water in the portion of the horn that is heated must be driven off. That is so obvious that no more need be said about it. When the smooth, polished, hard surface of the horn is rasped away, the softer inner fibrous portion is exposed to all the evil influences of evaporation and degradation, and the numberless pores and cells or interstices of the horn are enabled to give up the water they contain. The horn in this case is also made dry and brittle, and, of course, contracts. Tar contains an acid and a volatile oil, which evaporates and leaves a hardened pitchy mass. When tar is applied to a hoof the acid acts chemically upon the horn, and hardens or disintegrates it, and the oil, evaporating, leaves a space between the fibers filled with the hardened residue. It operates precisely in the same manner as when it is applied to leather—as a sole of a shoe, for instance—as a preservative: the leather in a few days becoming hard and unyielding, impervious to moisture, and dry. As with tar, so with grease; both these substances drive out the water from the horn and occupy its place, in time hardening and acidifying the substance of the hoof crust, rendering it brittle, and contracting it.

The substance of the frog is horn, but is of a softer and more open texture than the sole and crust of the hoof. It is, therefore, more easily affected by injurious conditions, and when it becomes deprived of its water it shrinks more than the more solid horn. From this explanation of the character of the horny covering of the foot any reasonable horse owner may learn how to treat the hoof, and how to avoid injuring it. When a shoe is to be fitted, the edge or wall sole should be prepared by cutting or rasping, and not by burning. Indeed the shoe should be fitted to the foot, and not the foot to the shoe. When, from bad management, the sole and frog have become dry and contracted, no grease or tar should be used; but water should be used freely, and then the hoof should be dressed with glycerin, which will mix with water, and does not displace it. Glycerin contains no acid or acrid properties, but is soft, bland, emollient, and does not evaporate. It therefore softens the horn, and allows the fibers to expand. Contraction is thus prevented, or overcome when it has actually occurred.—*New York Times.*

Culture of the Memory.

The student lamenting his lack of ability to remember his lessons, and, jealous of another who spends only half the time which he employs in their preparation, sees that his rival's memory always serves him in the recitation room, may take encouragement from the following, condensed from the Philadelphia *Public Ledger*:

It is a common idea that a good memory is a ready-made gift, which Nature whimsically confers upon some and withholds from others.

Now, the truth is that the memory is a faculty which, as much as any other, needs development. Its capacity is doubtless greater in some than in others by natural endowment, but this difference is less important than that which is caused by education or neglect. Whether for the purpose of facilitating mental processes, or of promoting practical efficiency in life's pursuits, a cultivated memory is much more valuable than a naturally strong one. We may be capable of amassing within our minds a vast amount of facts, or rules, or knowledge of any kind thrown together at random, without reaping any benefit, either in mental power or the

conduct of affairs; but when the memory has been so trained as to retain what is confided to it in classified order and make it available at every moment of need, its value cannot be overestimated.

Like all our other powers, the memory is strengthened and developed by exercise, and weakened by disuse. In whatever direction we make constant demands upon it, it responds obediently. The merchant finds no difficulty in remembering the prices and qualities of goods in his own line; the physician easily recalls the daily symptoms of his patient; the mechanic does not forget the functions of his various tools. The same conditions, daily repeated, will almost invariably bring up corresponding ideas, and in our regular employments we seldom have occasion to complain of a poor memory. This may afford a clue to the cultivation of this faculty in directions where it is now defective. If we would have it faithfully serve us, we must keep it in constant use. The same attention which we bestow on our daily business, and which enables us to recall its details with so much ease, will be equally effective if exercised in other matters. To strengthen the memory on any given point, the first requisite is to bring all our mental energy to bear upon it. We are charged with some message or commission, perhaps, which we promise in all good faith to convey or to execute; but not being in the line of our thoughts, it passes out of our minds and is unfulfilled. We commonly excuse ourselves for such dereliction, on the ground that we are unable, by any effort of the will, to command the power of memory. Yet had we, by a strong self-control, fixed our attention wholly upon the matter when presented to us, had we dismissed all wandering thoughts and concentrated our mental energies for the time upon that one thing, the impression would have been so strong that, in all probability, it would have been remembered and accomplished. This mental concentration is the first and most important means of improving the memory. It is largely within our own powers of will to enforce this, and he who is conscious of neglect in this respect cannot claim to be excused for forgetfulness.

Another valuable method of training the memory is through the laws of association. Our knowledge must be arranged and classified if we would recall it with facility. We must base rules upon principles, and effects upon causes, if we would imprint them firmly on our minds. That this is not done with sufficient thoroughness is the chief cause why so much of the knowledge which we acquire passes from us. The Emperor Napoleon, who was one of the most marked instances of a retentive mind, used to say of himself that his knowledge was all laid away in drawers, and that he had only to open the proper drawer and all that he had acquired on that subject was at once presented before him.

This is, as we have before hinted, one great need in our present systems of education. To take up a single study leisurely, presenting it to the student in all its relations, and leading him to trace its principles from their foundations up to their highest known results, is of far more real value, both as a mental discipline, and as a permanent acquisition of knowledge, than to skim over the surface of twenty branches, overloading the mind with isolated facts or rules, bearing no apparent connection with each other, and thus fixing no tenacious grasp upon the memory.

There is one great encouragement to the cultivation of the memory in the fact that the work will grow easier with every effort. If we patiently and steadily fix our attention on every subject we wish to recall, the power of concentration will become habitual. If we constantly arrange and classify our knowledge, it will grow more and more available.

Umbrellas, Past and Present.

Count d'Orsay, when reminded that, if he persisted in his extravagance, he would soon be unable to afford himself a carriage, replied that when he could not afford a carriage he would carry the best umbrella in London. The Count was true to his word, nor had he any reason to blush for the cheap and serviceable instrument. In the West it had been no doubt more used than honored; but looking to the East he found abundant sanction for his adoption of the unassuming umbrella. In bearing one he only followed in the steps of the kings and princes of Nineveh, Egypt, India, and China. From time immemorial, the contrivance for warding off the sun's rays and casting an artificial shade has been symbolical of the supreme human authority that can convert light to darkness, and in a trice drive ordinary mortals from the brightness of life to the gloom of death. No fitter emblem of his awful power could be imagined for the potentate who, by a word or a nod, could extinguish towards any of his creatures the sun of earthly happiness, and banish them suddenly to the abodes of gloom and despair, or could go yet further and by a glance put out the light of life. At every point of Oriental story one encounters the symbolical umbrella in literature and art. In the fifth incarnation of Vishnu, when the god goes down into hell, he bears in his hand a sun-shade. In like manner old bas-reliefs represent Dionysius bearing a parasol when he is descending to the infernal regions. To be a king in the East has from the remotest antiquity implied a right to bear an umbrella; and to be preceded by umbrellas has signified royal quality in the person following them. Indeed, the Eastern title with which we are more familiar than any other, signifies King of the Eternal Gingham. Satrap is a corrupt abbreviation of Ch'hatra-pati, i.e., Lord of the Umbrella, the title of the Mahratta Princes who reigned at Poonah and Sattara. The King of Ava's designation was "King of the White Elephant

and Lord of the Twenty-four Umbrellas." Writing to the Marquis of Dalhousie some two and twenty years since, the King of Burmah styled himself "His great, glorious, and most excellent Majesty, who reigns over the kingdoms of Phunaparanta, Tampadipa, and all the great umbrella-wearing chiefs of the Eastern countries." No English foxhunter would care to ride to the coverside at the tail of a company of walking or mounted umbrella bearers; but when the Emperor of China goes forth to hunt he is preceded by twenty-four umbrellas. Passing westward, the umbrella was adopted by the ancient Greeks and Romans, as a symbol of power, and a dainty article of feminine costume. The Greeks used it as a symbol in some of their sacred festivals, and put it in the hands of gentlewomen. Aristophanes and Pausanias both mention the lady's *skiadion*. Bestowing it on their women kind of high degree, the Romans also elevated it in their halls of justice as a symbol of authority. A red umbrella was the symbolical canopy under which the Roman judge sat in the basilikon; and when the basilican law courts were devoted to religious uses and passed into the hands of Christian clergy, the new owners of the consecrated judgment halls were quick to see their advantage in assuming the emblematic umbrellas. Hence the red canopy became the distinctive ensign of the cardinal priest. In his church he officiated, at public gatherings outside his church he walked, beneath it. In course of time he dispensed with the real canopy and its bearers during public promenades, and substituted for it a small red canopy so made that he could bear it for himself on his own head. The cardinal's scarlet hat is but a modified and cleverly adapted umbrella. It is the direct outcome of the old symbolical sun-shades of the Oriental despots. That our English umbrella has the same magnificent descent is shown by its name, which signifies shade-maker. Lineal, though remote, offspring of the Biblical "shade defending from the sun," the modern umbrella was brought from Italy to England by Tom Coryat, who describes it in his "Crudities" (1611) as "something answerable to the form of a little canopy, and hooped in the inside with divers little wooden hoops that extend the umbrella in a pretty little compass," and he introduced it into England as a parasol. It was so natural for the ladies who used it against the sun to use it also against the rain, that one may presume the umbrella was at once employed in our humid climate as much for the one purpose as the other. So early as 1620, Drayton described it as a thing "to shield you in all sorts of weathers;" but the original and true purpose of the ancient invention was not lost sight of till long afterwards. In "Rule a Wife and have a Wife," Beaumont and Fletcher say:

"Now you have got a shadow, an umbrella,
To keep the scorching world's opinion
From your fair credit."

The closed sun-shade borne by the black page in the frontispiece to John Evelyn's "Kalendarium Hortense" (1664) is perhaps the earliest notice of the umbrella by pictorial art in this country. Between 1664 and 1710 umbrellas for protection against rain had become so common that, as we have seen, every tuck-up sempstress of Queen Anne's London had one. The umbrella which Under Sheriff Beardman permitted a footman to hold over Dr. Shebbeare's head in 1758, when that unfortunate gentleman of letters paid the penalty of his indiscretions by standing in the pillory, was doubtless an unusually strong contrivance, as it was used to ward off brickbats and rotten eggs, as well as to conceal the face of the culprit.

Though they did not invent the umbrella, the English have done much to develop and bring it to perfection. Between October, 1786, and July, 1871, no less than 292 improvements on the ordinary walking stick were patented in this country; and though some few of these patents refer to undraped batons, some 270 of them are for portable canopies. A considerable proportion of these open letters were granted for improvements in one or another of the subordinate parts of the sun-shade—such as ribs, stretchers, tips, handles, ferrules, notches, springs; but the majority exhibit specifications that affect the general design or chief materials of the article. Indeed, an entire volume might be written about all the various projects for a perfect umbrella. The rhabdoskidopheros is an umbrella, with the drapery folded into a hollow stick, from which the canopy shoots forth and expands itself in a trice on the touch of a spring. The MacGregor umbrella may be used with equal effect against the rain or one's natural enemies, as it is fitted with a spear, and may be used as a bayonet. Just thirty years since an umbrella was invented for people with chilly hands, which had a curious little heating apparatus set in its handle. Draped canes have been fitted with sun dials, compasses, and watches. The lady's parasol riding whip is familiar to every one; but it is not every one who has seen a needle-gun cane, a fishing rod, and a pipe stalk fitted with a canopy for the protection of the sportsman or smoker. What would dear old Isaac Walton have thought of a fishing rod fitted with an umbrella? The special feature of another umbrella is a long falling curtain that, on the expansion of the *paraphuie*, hangs from the tips of the ribs and the edge of the covering to the ground. When he is in motion, the bearer of this umbrella has the appearance of an unusually tall and animated pillar post; and in order that he may see his way, the falling curtain is provided with a little glass window, bow or otherwise, through which he can gaze on the astonished world. To another inventor we are indebted for an umbrella whose hollow staff is furnished with a pistol, some charges of ball and powder, a screw telescope, pen and ink, paper, pencil, and a small knife. In

the automaton umbrella the stretchers are put so high that the canopy can be brought down close over the bearer's head. The club umbrella, invented only a few years since, was peculiar in having a handle that could be unscrewed, so that on removing the handle and putting it into his pocket the owner might leave the canopy in the hall with an agreeable confidence that he would see it again on leaving his club, as no one would care to "borrow" a handleless umbrella. But this ingenious contrivance failed to find favor in Pall Mall, because it was felt to be an unclubbable act for a man to enter his club with an umbrella that implied a distrust of the honesty of the members of his joint-stock home. It is almost needless to say that the perfect umbrella of the future will combine all the features of all the previous umbrellas—that it will be a fishing rod, fowling piece, driving whip, sword stick, bayonet, tobacco pipe, writing desk, and pillar post tent, and have its handle fitted with a fireplace, a repeating watch, and a compass, and will weigh only eight ounces avoirdupois, the weight of the most delicately constructed Paris umbrella.—*Hatters' Gazette.*

Fishing Extraordinary.

There are extraordinary ways of fishing practised by people of uncivilized countries, which are not the result of ignorance, but of that ingenuity which is always rendered fruitful by dire necessity and the instincts of self-support.

A method employed by the Chinese is generally practised at night, and depends upon a peculiar power which a white screen, stretched under the water, seems to possess over the fishes, decoying them to it and making them leap. A man, sitting at the stern of a long narrow boat, steers her with a paddle to the middle of a river, and there stops. Along the right hand side of his boat a narrow sheet of white canvas is stretched; when he leans to that side it dips under the surface, and, if it be a moonlit night, gleams through the water. Along the other side of the boat a net is fastened so as to form a barrier two or three feet high. The boatman keeps perfectly still. If another boat passes by, he will not speak; he is only impatient at the slight breaking of the silence. While he keeps thus without a sound or stir, the fish, attracted by the white canvas, approach and leap, and would go over the narrow boat and be free in their native waters on the other side, but for the screen of netting, which stops them, and throws them down before the man's feet.

Every one must have heard of the fishing cormorant, which is actually trained in China to catch fish. A man takes out ten or twelve of these web-footed birds in a boat, and as soon as the boat stops, at his word they plunge into the water and begin at once searching for and diving after fish. They are most diligent workers, for, if one of them is seen swimming about idly, the Chinaman in the boat strikes the water near the bird with the end of a long bamboo; and, not touched, but recalled to a sense of duty, the cormorant at once turns to business again. As soon as a fish is caught, a word from the man brings the bird swimming towards him. He draws it into the boat, and it drops its prey from its bill. There is always a straw or string tied round the neck, to prevent the fish from being swallowed, and this string requires the nicest adjustment, lest it may choke the bird—a result which would certainly follow if it slipped lower down on the neck. The sagacity and workman-like method of the birds are shown when they get into difficulties. If the fish caught is too large for one beak to secure, another cormorant comes up to the struggle, and the two with united efforts bring their prize to the boat. On the rivers and canals near Ningpo, Shanghai, and Foo-chow-foo, the employment of these birds is by no means an uncommon sight; but they are never to be seen fishing in the summer months, their work being in the winter, beginning always about October and ending in May. The birds have of course to be subjected to a system of training, which is carried on in the cormorant breeding and fishing establishments, one of which is at a distance of thirty or forty miles from Shanghai.

A still more singular practice is to be found amongst the Chonos Indians, who train dogs to help them on their fishing expeditions in much the same way as the shepherd's dog helps the shepherd. The net is held by two men standing in the water, and the dogs, swimming out far and diving after the fish, drive them back towards it. They enjoy their work just as a good horse, though hard pressed, seems to enjoy the hunt; and every time they raise their heads from the water they tell their pleasure by clamorous barking. The Fuegians, one of the most miserable and degraded races on the earth, train their dogs in a similar manner to assist them in catching birds and sea otters. In times of famine, they kill the old women of their tribe rather than sacrifice their dogs, alleging, as Peschel says, that dogs catch otters, and women do not. They have a wonderful contrivance for killing the sharks which abound off their coasts. A log of wood, shaped so as to appear something like a canoe, is set afloat, with a rope and large noose hanging from one end of it. Before long a shark attacks the supposed canoe, swimming after it, and is caught in the noose, hanging from the stern. It closes on him so that he cannot extricate himself, and the weight of the log keeps him swimming slowly without being able to sink. Then the Fuegians in their canoes, generally steered by women, approach at their leisure and finish the shark with their spears.

All these contrivances of savage nations, or of the strangely civilized Chinese, are meant to kill or seize the fish by natural means. It is much nearer home that we have to look to find the element of superstition prevailing, and useless customs invested with the importance of charms. An in-

stance may be found in the case of the Sicilian fishermen, who, when in search of swordfish, chant a jargon of words the meaning of which even they themselves do not know. The song is supposed to be some old Greek verses, which, by time and use among those ignorant of their meaning, have become so altered as to be almost unrecognizable. The fishermen regard the medley as a sure means of attracting the swordfish, which they harpoon from the boat, when the charm, as they suppose, has brought them within reach.

Far away in northern regions there is a novel method of fishing under ice, which shows more ingenuity than the simple lowering and fastening of a net. A small square hole is cut in the ice, and in this is placed an upright stick, supported by a cross pin run through it and resting at each side on the ice: the end of the stick below this cross pin is short, and to it the line is fastened with the bait and hook attached, while at the top of the stick is a piece of colored rag. Now, though we have called the stick upright, it is meant to fall from that position and lie along the ice, until a fish seizing the bait pulls its lower end, when with a jerk it rises. This contrivance is called a tip-up, from the movement which is certain to follow the seizure of the bait. The fluttering of the colored rag, as the stick rises, tells of capture; and a great number of these self-acting fishers and indicators may be placed near together, each having its own hole in the ice; and each, by the fluttering rag, telling its own tale the moment a fish is caught.

The tip-up not only saves the fisher the trouble of holding his line in position and watching with particular care, but also makes the fish itself strike and announce that it is ready to be pulled out!

With bodies blackened by the sun to the color of the seaweed, the Japanese fishermen are incommoded by neither the rain nor the winds. Like the fishermen of all lands, their restless eyes were wandering from the sea to the heavens. With no guides but the stars by night and the blue edge of the land by day, there was need for keen eyesight and watchfulness. In all the Eastern seas there is no more adventurous race than these men.

We could see the floats of burnt wood which buoyed the ends of our fishermen's lines, and to the nearest of these were sculled. A kind of wood light and buoyant, and with some resemblance to cork, is used for such floats. It grows in the forests thereabouts, and, after being shaped and charred to prevent decay, lasts, without further trouble, for a longer time than bladders or skins. With some impatience the black buoy and the line attached are brought on board. Like an inverted bell-shaped flower pot comes the first earthenware jar, hardly the size of a child's head, attached to the line. Mouth downward, the jar is pulled up from the bottom, and when all the water has been poured out, the fishermen give a look inside. No occupant being found, the jar is once more lowered into the sea by the attached string, which is overrun till the next jar is pulled up, brought on board, and similarly examined. When six or seven are examined, and no occupant is found in any of these, the fishermen show no impatience. But presently from a jar an octopus is jerked upon the floor of the boat, and with some satisfaction the Japanese watch its tentacles wriggle all about the planks and cling round their legs. Changing its hues, the disgusting cephalopod loses its redder blotches for paler patches, and eventually crawls into a darker corner to coil itself away. Pouring the water more carefully from the inverted pots, the fishermen secure a few more of these animals, which crawl and twine about with snakelike contortions. The long string of pots took time to overhaul, but the spoils were reckoned reward for the trouble. When the fishing was completed, and the black floats were again left to mark the spot, our boat was sculled somewhat further down the land.

We had then time to learn something more of this fishing for tako, as the octopus is named by the Japanese fishermen. Through our friends, we learn that the tako needs no bait to entice it to enter the earthen jars used by the fishermen to entrap it; but crawling about on the bottom, or shooting itself through the sea by the expulsion of water, it finds in the dark earthen jar "a comfortable house," and so occupies it until the fisherman finds it and captures it. The tako is largely eaten in Japan, where all the products of the sea are accounted equally wholesome with those of the land; and beneath an ugly skin the flesh of this speckled monster is thought very good, cooked in several ways, and eaten with or without soy or vinegar. Nevertheless, as if to vindicate the dread its constantly changing hues excite, the eating of the octopus is not unattended with danger. Through some poisonous taint, either occasionally or always present, but modified by the process of cooking, people sometimes die from eating this animal. And yet the knowledge of this interferes but to a trifling extent with the use of food having such a questionable reputation—indeed, at certain seasons, it is largely used by the Japanese, when the cuttle fish are far more plentiful and also more wholesome. Caught by trolling a small wooden fish barbed with hooks, they make good sport, chiefly to the older fishermen, who are not active enough to go off to sea.—*Chambers' Journal.*

DECISIONS OF THE COURTS.

Supreme Court of the United States.

CORSET PATENT.—MORITZ COHN, APPELLANT, VS. THE UNITED STATES CORSET COMPANY, JOHN H. LANE, AND WILLIAM LYALL.
[Appeal from the Circuit Court of the United States for the Southern District of New York.—Decided October Term, 1876.]

A patent is invalid if the invention claimed is found to be patented, or described in a printed publication prior to the patentee's invention or discovery thereof; and it is enough if the thing patented is described, and not the steps necessarily antecedent to its production.

Thus, when the invention claimed is an article, it is not necessary, in order to render the patent void, that the prior publication should also contain a description of the process by which such article was made.

Unless the earlier printed and published description does exhibit the later patented invention in such a full and intelligible manner as to enable persons skilled in the art to which the invention is related to comprehend it without assistance from the patent, or to make it, or repeat the process claimed, it is insufficient to invalidate the patent.

Mr. Justice Strong delivered the opinion of the court.

A careful examination of the evidence in this case has convinced us that the invention claimed and patented to the plaintiff was anticipated and described in the English provisional specification of John Henry Johnson, filed in the office of the Commissioner of Patents on the 20th of January, A. D. 1854. That specification was printed and published in England officially in 1854, and it is contained in volume second of a printed publication circulated in this country as early as the year 1856. It is, therefore, fatal to the validity of the plaintiff's patent, if, in fact, it does describe sufficiently the manufactured article claimed in his specification. The plaintiff's application at the Patent Office was made on the 30th of January, 1873. In it he claimed to have invented "a new and useful improvement in corsets." After reciting that previous to his invention it had been customary in the manufacture of corsets to weave the material with pocket-like openings or passages running from edge to edge, and adapted to receive the bones, which are inserted to stay the woven fabric, and which serve as braces to give shape to and support the figure of the wearer, but that it had been necessary, after the insertion of the bones into said pocket-like passages, to secure each one endwise by sewing, he proceeded to mention objections to that mode of making a corset. He specified two only. The first was that it involved much hand labor and consequent expense in sewing in the bones, or securing them endwise in the woven passages; and the second was that the arrangement or placement of the bones in the passages had to be determined by hand manipulation, and that it was therefore variable and irregular, such as frequently to give to the corset an undesirable shape or appearance near its upper edge. These objections he proposed to remove, and to produce a corset in which the location or position endwise of the bones shall be predetermined with the accuracy of the jacquard, in the process of weaving the corset stuffs or material, thereby effecting the saving of labor and expense in the manufacture. He therefore declared his invention to consist in having the pocket-like openings or passages into which the bones are put closed up near one end, and at that point at which they are designed to have the end of each bone located. * * * Amendments were then made until his present patent was at last granted, dated April 15, 1873. In the specification which accompanies it, the patentee admits that he acted at a uniform distance from the edges, and he disclaims also a hand-made corset with pockets of varying lengths stitched on, and his claim is: "A corset having the pockets for the reception of the bones formed in the weaving, and varying in length relatively to each other as desired, substantially in the manner and for the purposes set forth."

NEW BOOKS AND PUBLICATIONS.

STRENGTH AND CALCULATIONS OF DIMENSIONS OF IRON AND STEEL CONSTRUCTIONS. Translated from the German of J. J. Weyrauch, Ph.D. New York city: D. Van Nostrand, 23 Murray and 27 Warren streets.

Another translation of this same work has already been briefly noticed in these columns; and we expressed the view that the contents of the volume were not in such practical form as would adapt it to the uses of the working engineer. The present translation seems to us much less open to that objection, and certainly it contains an immense amount of useful data, entirely outside the formulae, besides examples tending materially to elucidate the latter. The book is rendered much more practical; and its whole arrangement is, to our minds, better and well calculated to render its various topics more accessible to the student. As regards the intrinsic merits of Professor Weyrauch's work, and in our previous strictures on the other translation, we intended no disparaging reflection upon them; they are undoubtedly great, and the volume should be carefully studied by all engineers. It is based on a general view of the results obtained in the extended course of experiments made in Europe and in this country to determine the properties of iron and steel. As these trials have shown the somewhat startling fact that (to quote Professor Weyrauch) "the method hitherto employed in calculating the dimensions of iron and steel constructions have been entirely wrong," it is hardly necessary to point out the importance of any work which deduces a formula which gives all "the requisites for a simple and rational determination of dimensions."

VICK'S HORTICULTURAL PUBLICATIONS.—The enterprising Rochester seedsman, James Vick, has just issued his annual "Illustrated Catalogue" and "Guide Book," which are of interest to every farmer, in fact, to every class of persons living in the country. Mr. Vick's publications have always been signally well printed; but this year they seem to be more handsomely executed than heretofore. They contain useful information for vegetable growers, flower raisers, and amateur farmers. Coming first among the list before us, the largest, handsomest, and most expensively executed is the "Flower Vegetable and Garden," a book of 165 pages, full of engravings, some of which are full-page colored chromos of fruits and flowers. The next in importance is the "Illustrated Catalogue of Seeds and Bulbs," and then the "Floral Guide." These three distinct publications can be had of the publisher for 75 cents; and we know of no other way of obtaining so much practical knowledge and information for so small a sum as is afforded in these publications.

EVERY MAN HIS OWN LAWYER.—A new edition, revised and improved, of Wells' "Lawyer," comprising forms for drawing legal papers of all kinds and embracing a synopsis of the leading statutes existing in each State, has just been issued. The original edition of this work, and the several subsequent ones, have aggregated an enormous sale, and are to be found in a great many offices and households throughout the country. But the lapse of time has wrought such changes in the statutes of various States that the author has found it desirable to revise the whole book. The professional man, the farmer, the mechanic, the manufacturer—in fact, all classes of the community—will find the work useful for reference, and of great assistance in drawing deeds, making transfers of property, granting powers of attorney, or conferring licences, and a handy and reliable adviser, saving lawyers' fees to the possessor and teaching him his legal rights. The book is printed in both English and German. The price for English edition, by mail, is \$2.25; for the German edition, \$2.50. Sold by the author and publisher, J. G. Wells, No. 1 Great Jones street, New York city.

Recent American and Foreign Patents.

Notice to Patentees.

Inventors who are desirous of disposing of their patents would find it greatly to their advantage to have them illustrated in the SCIENTIFIC AMERICAN. We are prepared to get up first-class WOOD ENGRAVINGS of inventions of merit, and publish them in the SCIENTIFIC AMERICAN on very reasonable terms.

We shall be pleased to make estimates as to cost of engravings on receipt of photographs, sketches, or copies of patents. After publication, the cuts become the property of the person ordering them, and will be found of value for circulars and for publication in other papers.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED LAST.

Charles E. Cree, Marlborough, Mass., assignor to himself and J. E. Curtis, of same place.—In this last the block is firmly held in place and prevented from slipping back while the shoe or boot is being lasted, so that the shoe or boot will have its full intended size. The block is wholly within the last, having no projecting part to come in contact with the upper while upon the last; and the last and block are kept together, except when being removed from the boot or shoe, so that the block cannot become lost, and no time will be wasted in looking for and sorting out the blocks of the lasts to be used.

IMPROVED WEIGHING SCALES.

Hosea Willard, Vergennes, Vt.—This invention is designed to improve the lever and beam scale for which letters patent have heretofore been granted to the same inventor under date of July 25, 1876, so that the construction of the same is simplified, and the gross or net weight taken in quick and perfect manner. This improved scale is used advantageously for weighing coal from boats, and other purposes, as the scale may be applied to the hoisting apparatus, and go with the bucket to the place of deposit, the indicator regulating the loading of the bucket, and determining thus the weight of a boat load with great facility, and without loss of time or labor.