THE PYTHONS OF THE PHILIPPINE ISLANDS.

To the Editor of the Scientific American:

In your issue of August 29, 1891, we notice an article on boa constrictors in which mention is made of the pythons of this region. Thinking that some additional facts might be of interest, we submit the following:

Pythons are abundant in the Philippines, the species being identical with that found in Borneo. During our stay of eighteen months in these islands we have heard many accounts of the enormous size attained by these snakes and recently have obtained three fine specimens. The smallest of these measured nineteen feet eleven and one-half inches in length and eighteen inches in greatest circumference. It had evidently been without food for some time and was in an emaciated condition, but was still a heavy load for two men. The next in size measured twenty-two feet six inches in length and twenty-four inches in greatest circumference. The head was six inches wide at the angle of the jaws and the mouth opened thirteen inches without any of the stretching of the skin or displacement of the bones of which it is capable. The third specimen measured twenty-two feet and eight inches in length, and twenty-two inches in greatest circumference. The gape was the same as in the second specimen. In each case the stomach was entirely empty, and one familiar with such animals can easily form an idea of the enormous increase in size that would take place if gorged with food.

Above the length of nineteen or twenty feet, these snakes increase greatly in bulk for every foot in length, so that a snake nineteen feet long looks small beside one twenty-two feet long. It is difficult to estimate the weight of an animal of this kind, and we had no means of determining it accurately. A quarter of it was a heavy lift for a strong man, and it was all that two men could do to drag it a few feet along the ground, one man being unable to do so. The second specimen displayed its enormous strength by snapping in two by a steady pull one of its fastenings a rattan between one-half and three-quarters of an inch in diameter. The snake being securely fastened by rattans around the neck, two men and a boy who attempted to hold it by the tail were powerless to do so.

From the log in which the third specimen was caught, eighty-nine eggs were taken. They were white and nearly round, about the size of an ordinary base ball, and were covered with a soft leathery shell or skin. They adhered to each other, forming a large mass, which had to be literally torn apart to separate them. So far as observed, all were fertile, each specimen examined containing a living embryo about four inches in length. When discovered the snake was coiled upon its eggs, apparently incubating. Upon being removed from the log the eggs dried up rapidly. As the temperature within the log was noticeably above that of the atmosphere, it is probable that the close coils of the snake prevented evaporation.

A snake of this size could bring down a medium sized buffalo, and could crush out the life of a man in a fraction of a minute; and we have no hesitation in expressing the opinion that it could swallow him. We know of the case of a snake of about this size swallowing a full-grown buck with antlers, a male deer of this species being larger around the belly than is a man around the shoulders.

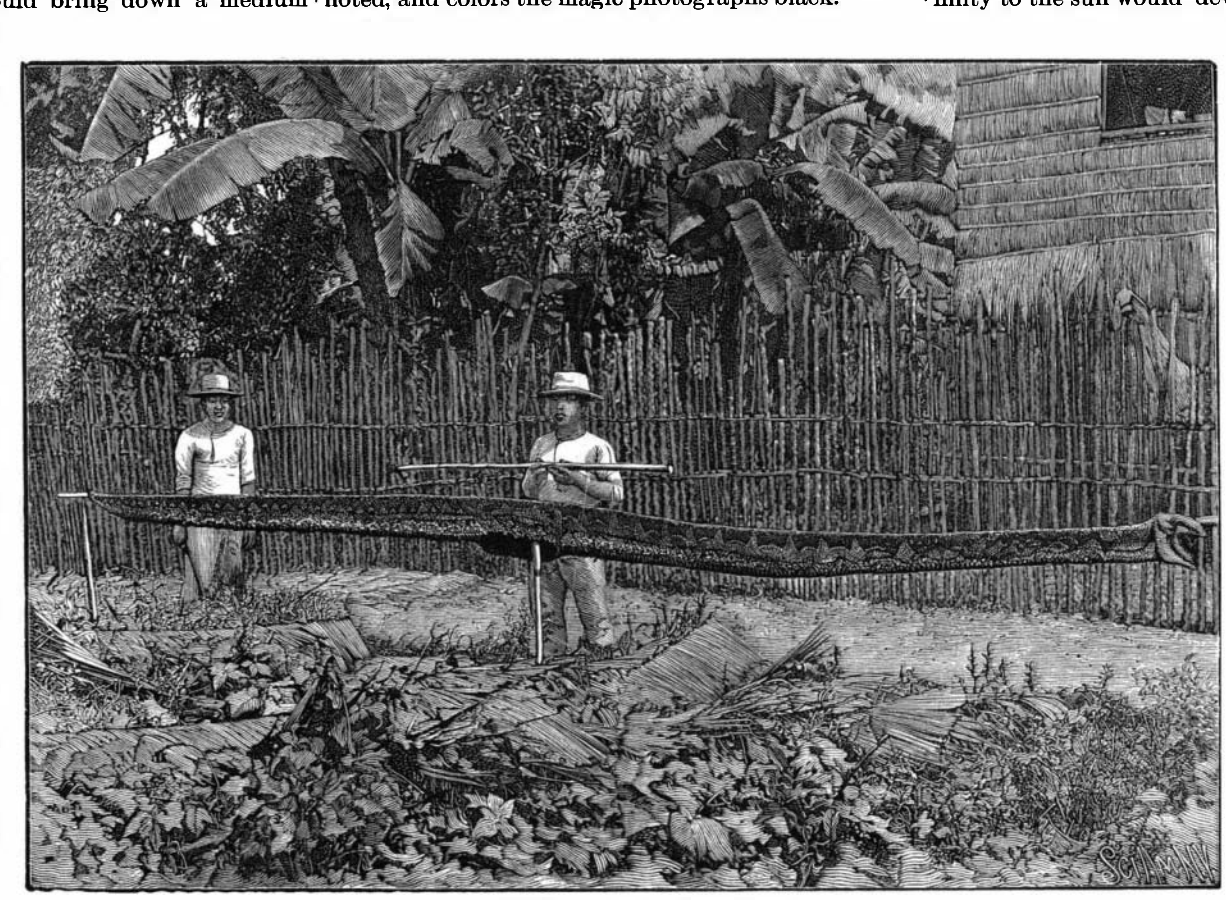
If the stories told here about large snakes can be believed, the specimens described are small indeed in comparison with really large snakes, but we find that such snakes decrease greatly in size when brought in contact with the deadly foot rule. An intelligent half caste recently told us that his brother-in-law had killed, measured, and skinned a snake forty-four feet long. We did not wish to question the man's veracity, but heartily sympathized with the remark of a Spanish gentleman, that forty-four feet were a great many feet.

We inclose a photograph of the skin of the second specimen. The tail does not show distinctly, as it is not extended. The stick held by the man behind is just five feet long, and is held parallel to the skin and near to it.

The specimens described will be shipped to the Minnesota Academy of Natural Sciences at Minneapolis.

D. C. WORCESTER,
F. S. BOURNS,
Menage Scientific Expedition.

Manila, Philippine Islands, March 2, 1892.



A PHILIPPINE PYTHON.

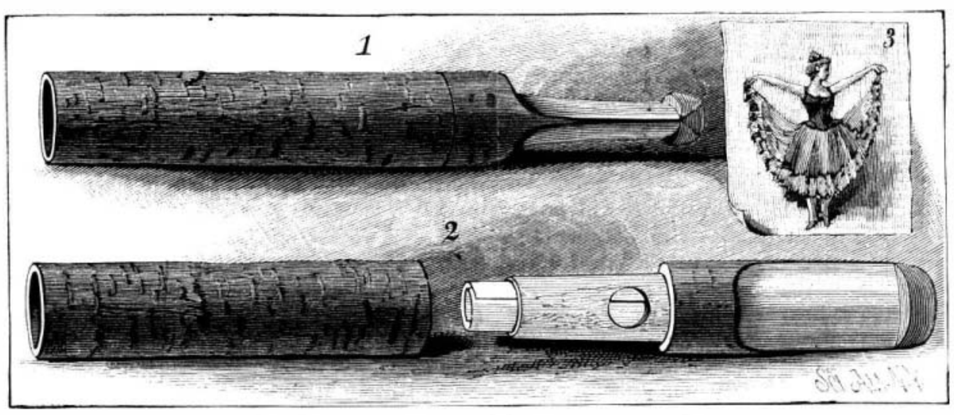
Skin 22 ft. 6 in. long, 2 ft. circumference. From a photograph sent from Manila to the SCIENTIFIC AMERICAN by Messrs. D. C. Worcester and F. S. Bourns, of the Menage Scientific Expedition.

MAGIC PHOTOGRAPHS DEVELOPED BY SMOKE.

Among the novelties recently introduced here, we find a curious thing in photography. It consists of a cigar or cigarette holder, accompanied with a small package of plain white photographic papers about the size of a postage stamp. If one of these papers be placed in the interior of the holder, before an orifice arranged for the purpose, the tobacco smoke will come in contact with it, and develop thereon a portrait or other object.

Fig. 4.—DEVELOPING THE PHOTO.

The process employed is very simple, and consists in preparing a small photograph on chloride of silver paper, and dipping it into a solution of bichloride of mercury, so as to bleach it and cause it to disappear.



PHOTOGRAPHIC CIGAR HOLDER.

It is necessary to prepare the photographs without gold. The bichloride of mercury changes the photograph partly into white chloride of silver and partly into protochloride of mercury (which is also white), and thus renders it invisible on the white paper.

The image may afterward be made to appear by the action of hypochlorite of soda, or by that of ammoniacal vapors. Tobacco smoke, which contains vapors of ammonia, succeeds very well, as we have above noted, and colors the magic photographs black.

In the annexed cut, Fig. 1 represents the cigarette holder closed; Fig. 2 shows it open, exhibiting the orifice and showing one of the small plain papers inserted in the holder, and Fig. 3 shows the paper after the image has been developed upon it.

An Electrolytic Experiment.

In *La Lumiere Electrique* for March 19 the following electrolytic experiment is described; it is due to Herr Arons, and was shown by him to the Berlin Physical Society. If we place a hollow copper cylinder between the electrodes of a sulphate of copper voltameter, copper will be deposited on the cylinder where the current enters it and dissolved where it leaves. If the cylinder is free to turn about a horizontal axis, it will commence to rotate as soon as the current passes, owing to the surface next the anode becoming weighted. It is possible to arrange matters so that the specific gravity of the cylinder is only a trifle greater than that of the solution, and hence the pressure of its axis upon the supports may be indefinitely reduced. The containing vessel used by Herr Arons was a glass box. The copper cylinder, which occupied nearly the entire width of the containing vessel, was 4·5 cm. long and 10 cm. in diameter, and the walls were about 1·8 mm. thick. The spindle was formed by a glass rod 1 mm. in diameter, secured to ebonite plugs fixed into the cylinder; the spindle rested on ebonite supports, attached to the walls of the containing vessel. The cylinder turned slowly and continuously under the influence of currents varying from 0·1 to 1 ampere. Experiments showed that the speed of rotation was very nearly proportional to the current.

The Solar Heat.

An interesting paper on "Solar Heat" is given in a recently issued volume of the "Transactions" of the Astronomical and Physical Society of Toronto by Dr. Joseph Morrison. Two theories have been advanced to account for the source and maintenance of the heat of the sun. One ascribes the heat to the energy of meteoritic matter falling on the sun, the other asserts that the supply of heat is kept up by the slow contraction of the sun's bulk. Taking the "solar constant" as twenty-five calories per square meter per minute, Dr. Morrison calculates that the linear contraction of the radius of the sun which is requisite to keep up the present rate of radiation is 0·000004972 feet in one second, or 156·9 feet in a year, or 29,716 miles in a thousand years. "Now 450 miles of the sun's diameter subtends at the earth an angle of one second, and therefore it would require 7,575 years for the sun's angular diameter to be reduced by one second of arc, which is the smallest angle that can be accurately measured on the solar disk." With regard to the meteoritic theory of solar energy, a calculation shows that a quantity of matter which weighs one pound falling freely from infinity to the sun would develop by its kinetic energy 82,340,000 units of heat. From this it can be found that the heat radiated could be developed by the annual impact on the sun of a quantity of meteoritic matter a trifle greater than 1-100th of the earth's mass, and having a velocity of 382·6 miles per second.

Water Dearer than Fuel.

In Balakany, near Baku, the center of the Russian petroleum industry, is witnessed the anomaly of the water used for the steam boilers in the several establishments costing more than the fuel. As a matter of fact, the water is bad and dear, costing about half a crown per ton; while a ton of astatki, that is the residuum of the distillation of the crude naphtha, which is the combustible naturally utilized, is sold at a price equivalent to eighteen pence per ton of coal.

AN alloy of 78 per cent gold and 22 per cent aluminum is the most brilliant known.

The Management of Cemeteries.

It seems to be a pretty general belief that in almost every field of human effort demand precedes supply. But in matters where a refined public taste is concerned, the supply of good work precedes and creates the demand. For many years the best pictures produced by American artists have not been those which sold the best, and, of course, those which sell the best most truthfully represent the condition of the public taste. Again, our appreciation of the best foreign works of our time has been largely due to dealers who imported the pictures of such men as Corot, Rousseau, and Daubigny, before we even knew their names, and long before we could understand and properly estimate their art. It is true that in the long run dealers may have profited by this experiment, but the public has profited by it far more, and it is just that we should feel grateful to them as to unselfish benefactors. What we wish to do now, however, is to call attention to another illustration of this truth which has been suggested by the published report of the *Proceedings of the Convention of the Association of American Cemetery Superintendents*, which was held last autumn in Chicago.

To some eyes there may seem no hint of artistic things or questions in this title. But our readers are aware that we consider the right treatment of the rural cemetery, an institution which is almost peculiar to America, rests on important and interesting artistic principles. And yet it is evident from this report that the greatest obstacle in the way of such treatment is the persistent bad taste of the public. We might suppose that our cemeteries are not more beautiful because it is hard to find people to make them beautiful. But the case is really the reverse of this. Many at least among the persons who are employed to care for them know what aspect they ought to wear, and are eager to give them this aspect, but their employers bar the path. If the bad taste of the committee or trustees who control a cemetery is not to blame, then it is usually the bad taste of the majority of individual lot owners.

Of course, we should not assert this simply on such statements as that "the superintendents of cemeteries have to bear with many things that they do not like in catering to the public." If no explanations with regard to points of difference were given, we might conclude that the superintendents rather than their patrons need an education in good taste. But the various addresses given at length in this report bear such clear witness to the correctness of the views of prominent cemetery superintendents, and to the conflicting views of their patrons, that one cannot help feeling confident as to the source from which improvement may be expected.

For example, Mr. G. H. Scott, of Rose Hill Cemetery, Chicago, in discussing how large a part nature should play in the cemetery, said: "What may be considered natural in a cemetery? In the first place, grass and trees. There should be an abundance of grass and a sufficiency of trees and shrubs, with as few pathways as possible, and no more driveways than are absolutely necessary. A cemetery lot with mounds or graves not higher than three inches above grade of plain sod, well clipped and trimmed, gives that appearance of neatness, simplicity, quiet, and beauty which every such lot should have. The prevailing anxiety on the part of lot owners to surpass each other in the erection of costly monuments, vaults, and stonework generally, is detrimental to the natural appearance of a cemetery. Another encroachment upon the natural appearance of a cemetery is carpet bedding. To take the natural and well trimmed sod from a grave and cover it with a carpet bedding of plants and flowers, giving it the appearance of a patchwork crazy quilt, is, to say the least, absurd, and certainly not in keeping with the natural appearance of a cemetery representing the peaceful resting place of the dead. Not so with plants of wild flowers and hardy herbaceous perennials. They are things of nature. This class of plants are inexpensive, will live over winter, flourish without care, become larger in size and increase in beauty every year, and should be dispersed over the ground so as to give them a natural appearance. A cemetery should be a place for meditation, a place where the living, pleased and satisfied with its natural appearance of peace and quiet, and free from the busy hum of human toil and artistic dazzle, may anticipate the time when they, too, must succumb to the inevitable, not mournfully, but cheerfully. Besides, if cemeteries generally were kept more natural in appearance, their cost of maintenance would be less."

We have taken these sentences out of their context and massed them so as to show, as briefly as possible, Mr. Scott's idea of what the treatment of a rural burial ground should be. And from the speech of Mr. Higgins, of Woodmere Cemetery, Detroit, we may take a few more sentences with a similar purpose. "What," he asks, "are the essentials of a perfect cemetery? Beauty and harmony. Harmony, as I here use it, should not be considered as flatness or want of variety, but as a lack of elements of discord which it is difficult to overcome. Thus a small Niagara would not be desirable in the proposed site for a burying ground, neither beetling cliffs nor wild gorges. Picturesqueness may occasionally be properly sought after in the improvement of parks or private grounds, but is scarcely productive of that air of quiet repose which should be one of the main characteristics of the last resting place of man. . . . The two crying evils of all cemeteries are our present great ugly headstones and our unsightly grave mounds. It seems to me, however, that in some cemeteries which are working toward the lawn plan, they lay too much stress on prettiness and bring with it the puerilities, polish and showiness of highly kept front yards or showy lawns, and that too much money is expended in ornamentation and display. Now, neatness is one thing, display an entirely different thing. I believe that the nearer we keep to nature in our methods of cemetery improvement, the better results we shall obtain and the more economical will be our management of affairs. We must bear in mind that cemeteries are designed for burying places for the poor as well as for the rich, and that extravagance in ornamentation or wasteful methods of care defeat the very purpose for which they were intended."

Surely these ideas are sound. They are the truly artistic because the truly fitting principles in accordance with which rural burial grounds should be designed and maintained. It is pleasant to know that persons holding executive positions in our cemeteries entertain such ideas, and we should be glad to know that they were less frequently hindered from acting upon them by their employers.—*Garden and Forest.*

The Chemical and Physical Properties of Rosin Oil.

Until recently it was generally believed that the use of rosin oil was almost entirely confined to the manufacture of printing inks and cart grease and the adulteration of other and more expensive oils. Although large quantities of it were manufactured, but little found its way into the retail market, at least under its own name. There is now, however, some probability of an increased consumption taking place owing to the rediscovery of its properties as an insulator; and it will not, therefore, be out of place to say something concerning its nature and properties, if only to dispel the vague atmosphere with which the subject has been surrounded and to show how completely any dogmatic statements that have been made, or may be made, must be modified by a consideration of the quality of the oil referred to.

In the first place, rosin oil is so called because it is the heavier part of the products of the destructive distillation of rosin, which, in its turn, is the residue left by distilling crude turpentine, spirits of turpentine being the volatile portion. The ordinary vitreous body, varying in color from light yellow to almost black, known as rosin consists of a mixture of abietic acid and abietic anhydride, together with a small quantity of sylvic acid. When distilled, these bodies are broken up, yielding a mixture of hydrocarbons, accompanied by a larger or smaller proportion of unchanged rosin acids and anhydrides. The relative amount of these constituents is determined by the design of the stills and the manner in which the distillation is conducted. The more carefully prepared and refined the oil is, the lower is the proportion of rosin acids, and in the laboratory rosin oil may be obtained with but a few per cent of substances other than hydrocarbons. The specific gravity of rosin oil of commercial quality may vary from 0·98 to 1·10, while its power of rotating a beam of polarized light is similarly variable, being generally dextro-rotatory, but sometimes lævo-rotatory, or nearly absent. These facts are sufficient to indicate the variable character of commercial rosin oil, and the futility of discussing its electrical properties without defining the character of the sample used is tolerably apparent. In the various communications which have lately been made concerning rosin oil insulation, this necessity has not been sufficiently kept in sight. The only satisfactory method for settling once for all the kind of oil best fitted for this purpose would be to examine the insulating capabilities of numerous samples, and simultaneously determine their composition by analysis. If this were done, and it were ultimately found that rosin oil could be as advantageously used as some of its advocates appear to think, there would be afterward no difficulty in obtaining supplies of precisely the same quality as those which had been found efficient. The maker would be given a definite standard to work to, and could, by the aid of his chemist, match that standard as nearly as would be necessary.

In dealing with rosin oil, one of the most noteworthy qualities that are apparent on inspection is its great viscidity. It is to this, and to its immiscibility with water, that its applicability for the purposes of insulation is chiefly due. It is, therefore, plain that in addition to a purely chemical examination, the determination of the important physical property of viscosity would have to be undertaken. Thanks to the advances that have been made in the methods of examining lubricating oils, there is no difficulty in effecting this. Besides determining the viscosity at ordinary temperatures, it would be very desirable to do so at higher temperatures, as it by no means follows that oils of the same viscosity at any given temperature have the same coefficient of decrease as the temperature is raised. There is a further point which seems to have been also overlooked. Rosin oil when exposed to air undergoes change. How noteworthy that change may be has been opportunely illustrated by some figures given in a paper by Mr. F. H. Leeds, which was recently read before the Society of Chemical Industry. The results of three of the samples examined are given below:

	Original oil.		Oil after exposure to air.	
No. of Sample.	Rosin acids.	Hydro-carbons.	Rosin acids.	Hydro-carbons.
A	31·07	68·93	24·90	75·10
B	22·20	77·80	16·09	83·91
C	9·72	90·28	4·29	95·79

The results show that a considerable amount of alteration has taken place. There is an apparent decrease under the column headed rosin acids (which strictly means total saponifiable matter, including probably anhydrides and esters) and an increase under the head of hydrocarbons. It is unlikely, on purely chemical grounds, that a conversion of the former into the latter takes place. Probably the explanation of the change is to be sought in the volatilization of the lighter acid constituents, and the consequent enrichment of the mass in heavy non-volatile hydrocarbons. In the paper in which these results appear, other differences are recorded and discussed, but, being at present still unsettled, do not immediately concern us. One deduction is, however, plain, namely, that an oil may undergo profound alteration by exposure, and may well alter in character to such an extent as to become more or less useful in tangible degree. It can, therefore, never be safe to assume that, because a specimen of oil has at one time given certain results, it will necessarily possess identical properties after the lapse of time, particularly if the conditions under which it has been kept have involved its exposure to the atmosphere. This again opens up a field for investigation, in that not only do all kinds of rosin oil change, but that the tendency of oils of different qualities to alter by exposure varies greatly. It is probable that samples consisting almost wholly of hydrocarbons would prove the most resistent, and, if found to be also high in insulating power, would be preferable on that account. Direct experiment is, however, much needed.

Wonders of Electricity.

At the Crystal Palace, London, a private view lately took place of some new electrical experiments illustrating recent discoveries of Professor Elihu Thomson. The demonstrator was Dr. J. A. Fleming (Professor of Electrical Engineering at University College). As a preliminary to the experiments Dr. Fleming made a few remarks, in the course of which he informed his hearers that he was about to deal with an alternating current which changed its direction of flow 125 times a second. The original current, a continuous one, was generated a mile and a half away from the palace, and was on arrival changed into one of alternating character, and was used to excite an electric magnet which stood on his lecture table. The current was now switched on, and the lecturer held a copper ring over the pole of the magnet. A strong and perceptible repulsion was the result—so much so, that directly Dr. Fleming released the ring it flew several feet upward into the air. Lighter rings, he explained, could be held captive by short cords, and would then float in the air above the magnet which repelled them in this wonderful way against the force of gravity. The next experiment was a very beautiful one. A glass jar of water was placed on the pole of the magnet, and in the water was set floating an incandescent lamp, in circuit with a coil of wire, which, with the help of cork, formed a kind of round boat below it. This arrangement sank to the bottom of the jar, but directly the current was applied to the magnet it rose up to the surface, while at the same time the little lamp burst into radiance. If, while this experiment was in progress, a copper shield were placed between the magnet and the vessel of water, all action ceased, for the copper acted as a screen. Many other curious experiments were shown, including one which plainly indicated that this form of magnet would differentiate between a good and a spurious coin. The metal of the former being pure, or nearly so, formed a good conductor, and was, therefore, held between the poles of the magnet; but a bad coin, not possessing that necessary qualification, immediately fell down when placed in position.

A REDUCTION in some of the fees for British patents has been passed by the English government. The reduction takes effect upon the taxes that accrue during the latter part of the term for which the patent is granted, but does not lessen the cost of making the application.