

tion." We are told that "the various gases which constitute ordinary coal-gas do not all burn together in the flame; . . . thus hydrogen is the first to burn, taking fire readily as soon as it issues from the burner, while the combustion of heavy hydrocarbons does not commence until they enter the hotter portions of the flame." Again Owen Merriman says: "the amount of light developed by any coal-gas flame is *directly proportional* to the degree of intensity to which the temperature of the carbon particles is raised." The italics are ours. In a note on page 23 there is some confusion as to the effect of the admission of air into a Bunsen burner. "A continuous wind blowing upon the flame destroys its luminosity altogether, because the heat intensity of the flame is *lowered below the temperature necessary to decompose the hydrocarbons*; consequently these latter burn without the preliminary separation of carbon, and a non-luminous flame is produced—exactly as in the Bunsen burner." The reader would gather from this that the flame of a Bunsen was colder than an ordinary flame, and by the same argument the blast of a blow-pipe would render a gas-flame colder instead of hotter. And again on page 43 a similar mistake is made when we are told that a too long flame is bad because the gas is "brought too early into intimate contact with air, and so oxidised, or fully consumed, *before its carbon has been raised to the temperature necessary to enable it to give out light.*" We point out these few blemishes in the hope that the author may correct them in a future edition of the work, to which we wish a hearty success.

BIRDS'-NEST SOUP

IT is scarcely probable that the famous birds'-nest soup which Chinese cooks at the Health Exhibition offer to favoured visitors will ever become a popular dish in England. The tasteless, gelatinous compound is not suited to our palates. Perhaps this is not to be regretted, as the supply of material for this mysterious compound is far from being inexhaustible. There appears to be only one place in the world where it can be obtained in any quantity, and this has recently been visited by Mr. Pryer, a naturalist of Yokohama, who communicates his observations to the *Japan Gazette*, an English journal published in that settlement. Leaving Elopura, the infant capital of the infant colony of British North Borneo, in March last, Mr. Pryer ascended for some thirty miles the Sapugaya River, which flows into Sandakan Bay, on which the town is built. Passing through the mangrove and nipa swamps which line the banks, he arrived at noon on the second day at his destination—the celebrated birds'-nest caves of Gomanton. These caves, which are two in number, called by the natives the Black and the White Caves, are situated in a limestone cliff 900 feet in height, which the traveller came on quite suddenly in the centre of the forest. The porch, Mr. Pryer writes, is rather over 100 feet wide by 250 high, and the roof slopes up for 110 feet more, so that the height of this magnificent natural cathedral is 360 feet. The interior of the Black Cave is well lighted, as there is a large circular hole in the roof on the right, and a smaller one on the left, forming two aisles. The walls and roof are rugged, and beautifully coloured, shading from black to brown, gray, dark yellow, red, and green. The nests of the bats and swifts were seen hanging in clusters from the sides and roof, and here and there in seemingly the most inaccessible places were the rattan stages, ladders, and ropes of the nest-gatherers. These latter reached their perilous heights by means of many smaller caves in the cliff above. The White Cave is 400 feet higher up than the Black Cave, and at the entrance to this the nest-gatherers live under a guard of the North Borneo Company's soldiers. After some examination Mr. Pryer was able to discover the material which forms these mysterious

nests, and from which they derive the qualities which render them so highly prized in China. They are made from a soft fungoid growth that incrusts the limestone in all damp situations; it grows about an inch thick, outside dark brown, but inside white. The birds make the black nests from the outside layer, and the best quality of white nests are, of course, from the inside. It is taken by the bird in its mouth, and drawn out in a filament backwards and forwards like a caterpillar weaving its cocoon. At nightfall takes place what the natives style with much justice the most wonderful sight in all Borneo, and it might be added, one of the most wonderful sights in the world—viz. the return of the swifts to their nests, and the departure of the bats for the night. About that time a rushing sound was heard, and peering over the abyss into the Black Cave Mr. Pryer saw columns of bats wheeling round and round the sides in regular order; soon they began to circle up, rising into the air in a corkscrew flight. Having reached a certain height, a detachment would break off and fly away rapidly. He counted nineteen flocks go off like this, each flock consisting of many thousands, and then they commenced to pour away in a continuous stream until it was too dark to see them any longer. Soon after the bats emerged from their cave, the swifts began to return to theirs, first in tens, then in hundreds, and at last they too streamed in continuously, and when the traveller went to sleep at midnight they were still flying in in undiminished numbers. Rising before daylight the following morning, Mr. Pryer witnessed a reversal of the proceedings of the previous night, the swifts going out and the bats coming home. The latter, he says, literally rained into their chasm for two hours after sunrise; looking up to the bright sky, numbers of small specks appear, flash down perpendicularly with great rapidity, and disappear into the darkness. From specimens of the bat which were secured, they were found to be all of one species, the caudal membrane extending only half down the tail, which is free for an inch and a half, giving the animal, when the wings are folded up, very much the appearance of a mouse. The wings are very long and narrow, and it flies with great speed. Two species of birds of prey—one a kite, the other a hawk—the *Haliastur indus* and the *Machceramphus alcinus*, prey on the bats and swifts when swarming into and out of the caves. A detailed examination of the latter was rendered disagreeable by enormous quantities of guano, the deposit of centuries. Its depth is not known, but a long spear does not touch the bottom when thrust in to the hilt. All the roof of the dark parts of the cave was occupied by birds who keep up an intermittent twittering, sounding, from the immense number of them, like the surf beating on a rocky shore. Near the centre of the largest cave the explorer was shown a small beam of light from a funnel at the top of the rock, exactly 696 feet above his head. The nests are gathered from these enormous elevations by means of flexible rattan ladders and stages. On these two men take their station; one carries a light four-pronged spear about 15 feet long, and just below the prongs a lighted candle is fixed. Holding on to the ladder with one hand, the spear is managed with the other, and the nest transfixed, a slight push detaching it from the rock. The spear is then withdrawn until the head is within reach of the second man, who takes the nest off the prongs and puts it in a pouch carried at the waist. According to statements made by the headman of the place, the annual value of the nests taken varies from five to six thousand pounds sterling. This, it is to be presumed, means the value on the spot; their value on reaching China must be far higher. The caves have been worked for seven generations without any apparent diminution, although three crops are gathered in the year. Notwithstanding the dangerous nature of their occupation—for even samphire-gatherers work in the open—accidents are very rare amongst the natives employed in

collecting the nests. There is an almost inexhaustible supply of guano in the caves, and the number of bats and swifts in them is so enormous that if they are undisturbed a regular quantity may be taken out yearly. Should the visitor to the Health Exhibition who obtains some of this far-famed and mysterious soup have little relish for it, as is not unlikely, he will at any rate have the satisfaction of knowing that he has before him a dish the principal ingredient of which was formed by the little swifts and bats which inhabit the Gomanton Caves in the centre of the magnificent tropical forests of North Borneo. There is probably no other article of food in the Health Exhibition, or in all Europe, more extraordinary in the mode of production, or in the method and circumstances under which it is obtained.

ON THE EVOLUTION OF FORMS OF ORNAMENT¹

II.

THE leaf in *Dracunculus* has a very peculiar shape: it consists of a number of lobes which are disposed upon a stalk which is more or less forked (tends more or less to dichotomise). If you call to your minds some of the Pompeian wall decorations, you will perceive that similar forms occur there in all possible variations. Stems



FIG. 12.

are regularly seen in decorations that run perpendicularly, surrounded by leaves of this description. Before this, these suggested the idea of a misunderstood (or very conventional) perspective representation of a circular flower. Now the form also occurs in this fashion, and thus negatives the idea of a perspective representation of a closed flower. It is out of this form in combination with the flower-form that the series of patterns was developed which we have become acquainted with in Roman art, especially in the ornament of Titus's *Thermae* and in the Renaissance period in Raphael's work. [The lecturer here explained a series of illustrations of the ornaments referred to (Figs. 12, 13, 14).]

¹ From a paper by Prof. Jacobsthal in the *Transactions* of the Archaeological Society of Berlin. Continued from p. 251.

The attempt to determine the course of the first group of forms has been to a certain extent successful, but we meet greater difficulties in the study of the second.

It is difficult to obtain a firm basis on which to conduct our investigations from the historical or geographical point of view into this form of art, which was introduced into the West by Arabico-Moorish culture, and which has since been further developed here. There is only one method open to us in the determination of the form, which is to pass gradually from the richly developed and strongly differentiated forms to the smaller and simpler

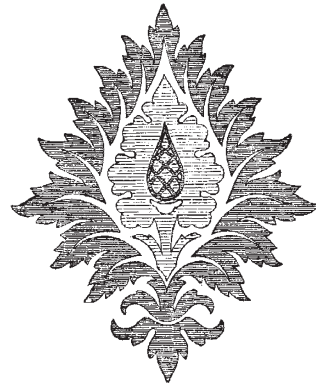


FIG. 13.

ones, even if these latter should have appeared contemporaneously or even later than the former. Here we have again to refer to the fact that has already been mentioned, to wit, that Oriental art remained stationary throughout long periods of time. In point of fact, the simpler forms are invariably characterised by a nearer and nearer approach to the more ancient patterns and also to the natural flower-forms of the *Araceæ*. We find the spathe, again, sometimes drawn like an *Acanthus* leaf, more often, however, bulged out, coming to be more and more of a mere outline figure, and becoming converted into a sort of background; then the spadix, generally conical in

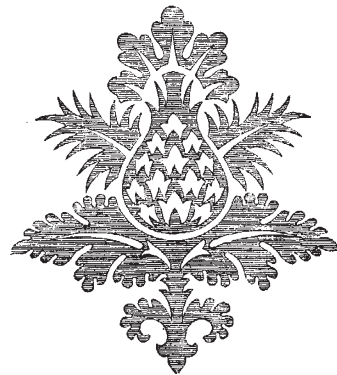


FIG. 14.

shape, sometimes, however, altogether replaced by a perfect thistle, at other times again by a pomegranate. Anberville in his magnificent work "*L'Ornement des Tissus*," is astonished to find the term pomegranate-pattern almost confined to these forms, since their central part is generally formed of a thistle-form. As far as I can discover in the literature that is at my disposal, this question has not had any particular attention devoted to it except in the large work upon Ottoman architecture, published in Constantinople under the patronage of Edhem Pasha. The pomegranate that has served as the original of the pattern in question is in this work surrounded with leaves