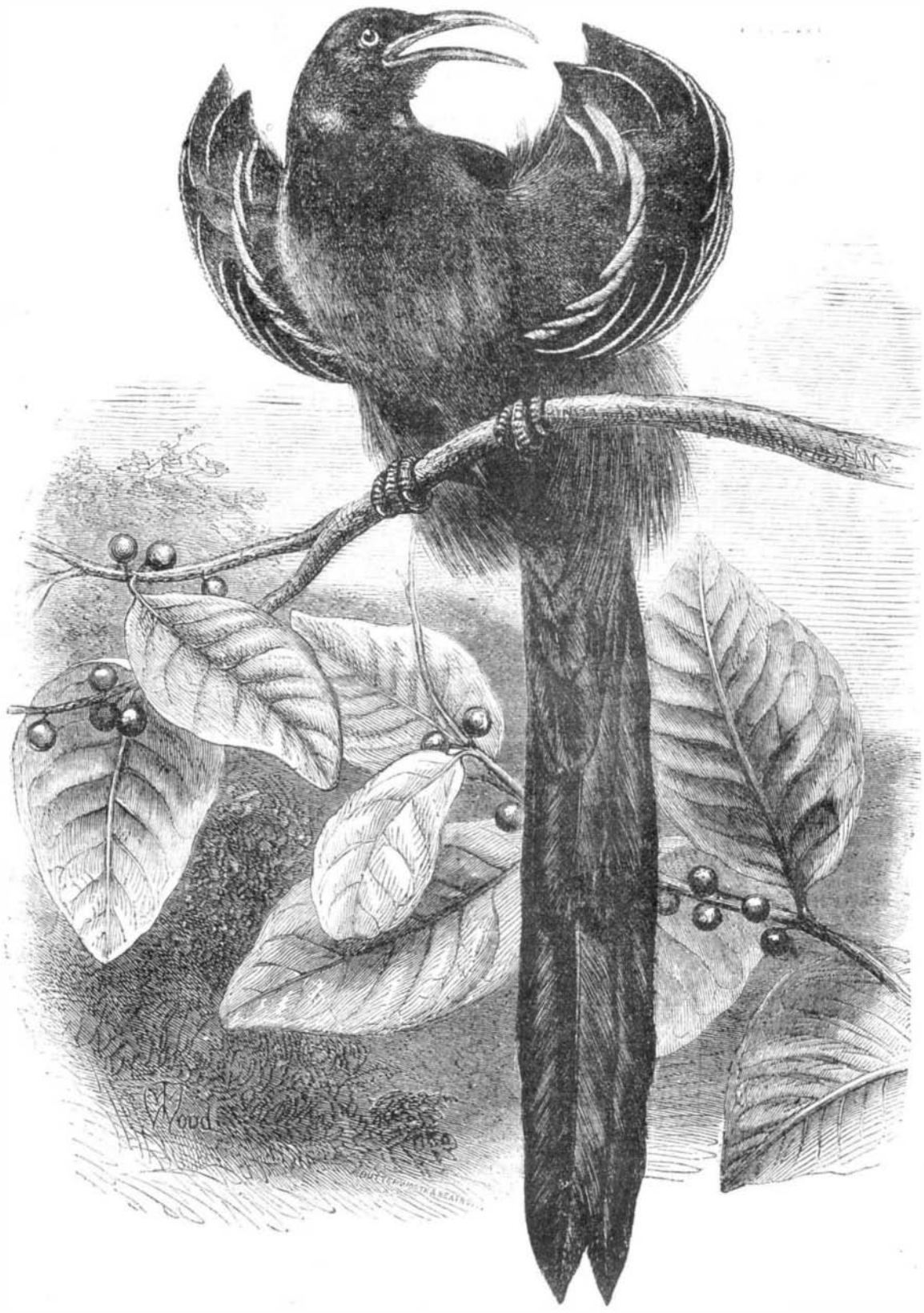
A NEW BIRD OF PARADISE.

Three species of birds of Paradise, hitherto unknown to ornithologists, have recently been discovered in the islands of the Malayan archipelago, the aboriginal home of all the tribe. We illustrate herewith one of the thin billed kind, named (after the eminent naturalist Elliott) the *epimachus Ellioti*.

Before presenting this interesting novelty to our readers, we may glance for a moment at the other members of the family to which it belongs. It is but of late years that birds of Paradise have reached us in a perfect state, although for more than a century the natives of the Molucca Islands seem to have been aware of their value, and to have employed them as articles of commerce. The British Museum, in common with other collections, still contains examples of Paradise birds with mutilated wings and without feet; and this was so generally their condition that two skins of *Paradieea papuana*, in that national collection, were thought to be splendid examples in their day, since they actually possessed the latter.

The specimen we herewith illustrate forms a second species of the genus *epimachus*, the only representative of which was *e. speciosus*, from New Guinea, a bird which, if remarkable for its plumage, was at least one of the oldest and best known of the birds of Paradise. It is therefore of great interest to procure a second and thoroughly distinct species after the lapse of so many years. It is easily distinguished from its ally by its violet or purple tail, in addition to its small size: and, regarding its plumage, we quote (says the London *Field*, from which we take the illustration) the following remarks from Mr. Elliott's work:

The *epimachus Ellioti* is only about two thirds the size of its large relative (*e. speciosus*); but it is possessed of far more brilliant colors in its plumage, and in the sunlight must present a beautiful appearance indeed, as its rich velvety feathers show off their changeable hues of purple and green, with the metallic colors of the tips of the side plumes flashing on the eye as the bird raises them tremblingly over its wings. The broad tail feathers, with their amethyst dyes, look not unlike watered silk, and are of a velvety softness, as is indeed the entire plumage of the body.



A NEW BIRD OF PARADISE.

Essential Oils.

Essential oils are volatile, and may be distilled without decomposition; they are the product of flowers, plants, fruits, or the juice of certain odoriferous woods. Essential oils differ from the fixed oils obtained from fatty substances; for while the latter are compounds of glycerin and fatty acids, the former are generally hydrocarbons, but sometimes contain also oxygen and sulphur. The fixed oils combine with alkalies to form soaps, but the essential oils do not. All essential oils have powerful odors, and many of them have a hot, aromatic taste. The odor is sometimes agreeable, and at other times repulsive. The most fragrant are oil of rose, jessamine, tuberose, orange flowers, heliotrope, violet, bergamot, and lavender. Paper is rendered permanently transparent by an application of fixed oils; but only temporarily so by the use of volatile preparations. Essential oils are soluble in alcohol and ether; but only partially so when immersed in water. Many of them are found ready formed in plants, and give the peculiar odor to the leaves, flowers, and fruits which make the acquaintance of our olfactories.

The volatile oils are, in many instances, isomeric, that is, composed of the same elements and the same proportions, but with different properties. Chemical science, however, has not yet been able to convert the one into the other, most probably on account of the different groupings of the same number of elements.

Oil of lemon and oil of orange peel are obtained by placing the rinds in a linen cloth and subjecting them to a powerful pressure between iron plates. The vessel in which the pressure is applied should have a discharge pipe at the bottom. The oils thus obtained are impure, but extraneous matter is separated by careful filtration. Orange flowers, or neroli, has the same chemical composition as the above, but is possessed of more fragrance. In obtaining the last named, more care is necessary, and the petals are subjected to distillation with the vapor of water. Oil of orange flowers, when fresh from the still, is almost colorless; but by age and exposure it soon acquires a red color. It is easily rendered soluble in alcohol, and is extensively used in the manufacture of cologne water. Oil of rose is the most expensive as well as the most fragrant of all the essential oils. There are two varieties of this article, one of which is obtained from the East Indies, and is the product of the *rosa moschata;* the other comes from the Levant, and is obtained from *rosa sempervirens.* In the east, the petals of the rose and other flowers are collected, immersed in spring water, and afterward exposed to the direct rays of the sun. In the course of a few days yellow drops of oil collect on top, and are taken up by a bunch of cotton tied to the end of a stick. When sufficient is gathered in this way, the oil is pressed out of the cotton. In some sections the whole flower is subjected to distillation, the calyx remaining entire as it is plucked from the stem. In Egypt the petals of flowers, and especially roses, are subjected to distillation with water in copper stills. Some manufacturers of essential oils place alternate layers of rose leaves and sesame seeds in a vessel, where they are allowed to remain about a fortnight, when fresh layers of roses are added, and this operation is repeated several times, or until the seeds have absorbed sufficient oil, when they are subjected to pressure, the rose oil collecting on top, and the oil of the sesame seeds separating and settling to the bottom. Oil of rose is a thick yellow liquid, which solidifies at a low temperature, and becomes a viscid mass. When concentrated, its odor is so strong as to cause headache, and it is only when diluted that its fragrance can be best appreciated. Its sweetness is not injured by the action of sulphuric acid.

There are said to be over one hundred varieties of essential oils, very similar in chemical properties, but differing greatly in taste and smell. The oil is hidden away in little cells which require to be broken before the flower exudes its real fragrance. Violet, heliotrope, and several other delicate perfumes are subjected to infusion and absorption in melted tallow or lard, and in this manner their oil is secured.

Jessamine, tuberose, and other flowers that are injured by heat are subjected to absorption alone. This process is extensively used in several parts of France, and is termed *enfleurage.* Oil of camphor is obtained from the wood or gum by distillation with water; it is subsequently purified by repeated sublimation. The wood, however, is the most generally used for this purpose. It is insoluble in water, but easily soluble in alcohol, ether, and the fixed oils. Oil of turpentine is obtained by distilling the crude juice alone or in water, and is made pure by repeated rectification with water. It is a colorless liquid with a strong aromatic but disagreeable odor. It is of great value in the arts, and for medicinal purposes. Oil of juniper has a different composition, but is obtained from fresh berries after being pounded thoroughly and macerated several hours in water. The subsequent process of distillation is much the same as in respect to turpentine. Oils of sassafras and hemlock are obtained in a manner similar to the distillation of most woods and barks, but require very careful preparation, as well as application of the required means to obtain satisfactory and profitable results.—*New York Mercantile Journal.*

Dry Plate Photography.

Mr. H. Houlgrave gives the following formula: He mixed thirty grains of crystallized bromide of cadmium and fifteen grains of pyroxylin with one ounce of ether and one ounce of alcohol, cotton giving a powdery collodion, not succeeding like one that gave a tough film. In a level stereo-developing glass dish, he poured one ounce of the above, and, after leaving it for about two hours to set, he filled up the dish with his bath solution of silver, of about seventy grains strength. After a time he raised the film with a silver fruit knife to allow the solution to flow underneath, and left it to soak a little longer. After pouring off the bath solution he poured on his first washing water, which, from constant use, contained about five grains of silver to the ounce. This was left on the film about half an hour, and then saved for future use. The dish was then filled up with rain water, leaving it two or three hours, and washing again until all milkiness had disappeared. After well draining, the film was hung up to dry by artificial heat, as it took too long to dry otherwise. The pellicle was then of a very horny nature, and could be cut and kept till wanted; of course the washing had to be conducted in the dark room. With one ounce of the pellicle, he made two ounces of emulsion by adding equal quantities of ether and alcohol, and to that quantity he added forty minims of a sixty-grain tannin solution. When the pellicle dissolved—which took some time unless constantly shaken up—he coated his plates, placing them at once in his drying box without any further washing, using no substratum. He preferred an edging of india rubber solution before pouring on the emulsion. In development he first moistened his plates with pure alcohol, washed with water, and then developed with a three-grain solution of pyrogallic acid, adding one drop of a twenty-grain solution of bromide of potassium and one drop of a sixty-grain solution of bicarbonate of ammonia.

DURING the past ten years, the screw has entirely replaced the paddle in transatlantic navigation, the weight of marine engines has diminished one half, the steam pressure has quadrupled, and the consumption of coal has decreased two thirds.