

The Pileated Woodpecker.

(*Hylocichla pileatus*.)

To those of the readers of the SCIENTIFIC AMERICAN who have never been in Florida, before describing the habits of the pileated woodpecker, let me first attempt to describe as near as possible a genuine Florida swamp. Imagine, if you can, a vast wilderness extending for miles in every direction, made up of tall cypress trees and water oaks, draped with a profusion of Spanish moss, which lends a gray aspect to the whole scenery, interspersed here and there with a maple, and the cabbage palmetto in profusion, and the whole interwoven with a strong network of creeping vines, thorn bushes, roots, and fallen trees, with anywhere from six inches to two feet of water covering the whole, and broken here and there by some deep creek or inlet, then you have before you some faint idea of a tropical swamp.

It is in such a place as this that the pileated woodpecker may be found most abundant, and where I have been for the past week closely studying him. To one who has spent an hour in trying to obtain a shot at a golden winged woodpecker, and at length given it up with the opinion that that *Colaptes* was "something more than mortal," let me say that he cannot be compared with my pileated woodpecker; for he is the very essence of cunning and craft in his maneuvers. I have sometimes spent an entire afternoon in trying to get near enough to one to observe his habits, and at dusk found myself as far away from the object of my pursuit as when I started. But rather than weary you with a detailed description of my long crawls on hands and knees through mud and water, with repeated failures, let me put before you the bird himself, clinging to the side of the decayed trunk of a tree a few yards in advance, and entirely unconscious that my untiring efforts to reach this coveted spot have at last been crowned with success.

There he is, hammering away as though his life depended on his getting that one grub. Suddenly he stops, turns his ear to the tree, and listens attentively for the sound of his prey crawling through the wood; soon he hears him, and uttering a low, guttural cluck of satisfaction, he proceeds with his work of excavation. All at once he stops, throws his head back from the tree, and gives utterance to a long, loud, piercing call, similar to that of *Colaptes auratus*, but in a much stronger and louder tone, best represented by the syllables "Wa-wa-wa-wa-wa-wa-wa," very rapidly and loudly repeated, and then pursues his work again. I have heard his call answered by a distant one, sometimes continuing it for two or three minutes, it evidently being a source of communication between the two, for several times on this occasion I have seen one that was near me suddenly leave his position and fly away in the direction of the call. Their hammering is unlike that of the smaller species of woodpeckers, for instead of the rattle of *P. pubescens*, for instance, it is a steady thump, thump, thump, and may be heard a long distance. When pecking on a decayed trunk, it is hollow and muffled; but when on the live tree, it is more sharp and loud. Strange as it may appear to some, I was misled several times on my trip into believing that a woodsman was near by chopping, when in reality it was only one of these forest birds at work on some hard stump or limb.

But to return to the one in front of me: He has tired of his present location, so off he flies to another. How heavily he flies, and with what a rushing noise! Another quarter hour's careful crawl, and I am near enough to watch him again. At first he does not find a place suitable for his work, but runs up the tree, then drops down, swings himself around, first to one side, then to another, when all at once he commences work, and I know that he has found the spot where he will make a meal. How the chips fly! big ones, too, and the ground is soon covered with evidences of prowess. The slight noise I make startles him, and in an instant he is off for safer quarters. Notice when alarmed how swiftly he flies, and after the usual woodpecker fashion. Soon I hear him at work where he has alighted, and after careful maneuvering, again obtain a position near enough to observe him. This time he is on a log, and, from his manner, evidently has found a rich harvest there. How hard he hammers away! One would think that he would knock himself to pieces instead of the log; but should you dissect his head, you would find it supplied with muscles that are very strong and hard, and admirably adapted to just such work. He pauses occasionally in his work to give utterance to his call, and how it does ring through the silent woods, silent save what bird life there is in it!

At my right stands an old dead tree, with a large excavation in it that some brother woodpecker has made. Examining it, I find it measures over two feet long, about eight inches wide, and six inches deep, in a tree scarcely one foot in diameter. On another near by is more of the same work—a ring extending half way around it, two inches wide and three deep, and the ground under it covered with chips. This bird does not depend entirely upon what he is able to find within the tree he pecks at; but I find him on a small knoll covered with decaying leaves, where he is alternately pecking and scratching for the grub or worm he first

listened for, and then commences his work to get him. Occasionally he pauses to listen as he turns his ear to the ground, the same as when on the tree, only to renew his pecking and scratching; but I judge his success in finding food rather poor, for he soon flies to a tree, and is hard at work again there.

Moving on cautiously, I come upon a company of six of these birds all hard at work, but from their maneuvering conclude that the mating season is at hand; for suddenly one leaves his perch and darts at another, and away the pair go through the woods, with loud screams, rapid flight, sharp turns, and loud whirring noise, but are back again soon, and renew their work as hard as ever for insects, only to repeat the same maneuver again and again, until the pair goes chirping away together, leading me to believe that each has found a mate, and the selection of some hollow tree for its nest will soon follow. This "hollow" is usually at a great height in some almost inaccessible tree, standing in the loneliest and thickest part of the swamp. I am told that the breeding season commences before long, in which case I hope to be successful in finding the much coveted nest and eggs. On dissecting the stomachs of a number of these birds, I find the food to consist of grubs, insects, larvæ, small beetles, etc., and in one case I found two immense caterpillars in the stomach of one bird, besides thousands and thousands of the above mentioned lepidoptera.

Description.—Male: 18 inches in length, 28½ inches in extent. Iris yellow. Upper mandible plumbeous blue; lower mandible the same, but lighter at base. Tarsus black. Toes and claws black. Top of head, including the whole crest, scarlet; a long cheek patch of scarlet. General color dull black; a large space at the base of wing quills white, more or less tinged with sulphur yellow; the feathers of the sides and belly often edged with dull white, and sometimes some of the primaries and tail feathers are tipped with the same; a long white stripe from nostrils extending along sides of the head and neck, spreading on sides of breast; also tinged more or less with sulphur yellow, ending in a large patch of white under the wings, decidedly tinged with the same color. Nasal feathers white. Female differing from the male in having the forehead for about an inch a yellowish brown color instead of scarlet, but the whole crest extending from between and back of the eyes is bright scarlet, and in my specimens the crest is handsomer than that of the males. It also lacks the red cheek patch; in other respects she is similar to the male.

E. M. H.

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THE HYPNOSCOPE.

Sir William Thomson, in a lecture to the Midland Institute delivered some months ago, on the Six Gateways of Knowledge, pointed to the possibility of a

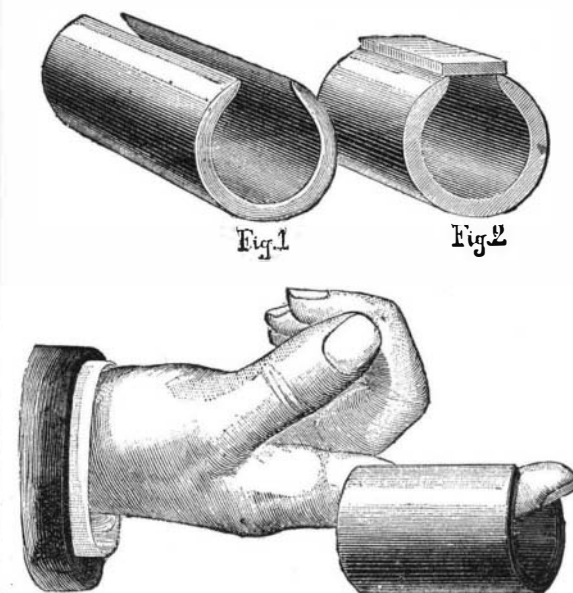


Fig. 3

THE HYPNOSCOPE.

magnetic sense, which might give a sensation of magnetism quite different from the sensations of heat, force, and so on. Soon afterward Professor W. F. Barrett recounted some experiments which came under his notice, and which tended to prove that certain persons were capable of feeling the presence of magnetism as developed by the core of a powerful electro-magnet. Dr. J. Ochorowicz has investigated the subject still further, and observed that all persons sensitive to the magnet are hypnotizable in a corresponding degree. In studying the matter he uses an instrument termed a hypnoscope, which is simply a tubular magnet slit up the side, the edges of the slit forming the poles, which are preserved by an oblong armature. Such an apparatus need only be 3 or 4 centimeters in diameter, and 5 or 6 centimeters long; weighing 150 to 200 grammes. Made of Alvar steel, it is very strongly magnetic, and will sustain twenty-five times its own weight. Figs. 1 and 2 show the magnet without and with its

armature, and Fig. 3 illustrates the way in which it is used. After the armature is drawn off, the index finger of the person to be tested is thrust into the tube of the hypnoscope in such a way that the latter hangs from the finger by its poles, which are connected through the finger. After two minutes the magnet is drawn off, and the finger examined. Dr. Ochorowicz states, of a hundred persons chosen at hazard, and examined in this way, seventy will observe no change, but thirty will experience changes of two sorts, subjective and objective. For example, 20 per cent. declare they feel a pricking sensation as of needles entering the skin; 17 per cent., a cold air or a sensation of heat and dryness. These two sensations may co-exist, one being felt in the right arm, and the other in the left. The cold air resembles that felt in front of an electrostatic machine. Some 8 per cent. of the total will probably feel disagreeable sensations, and a smaller number of sensations of swelling, heaviness of the hand, and irresistible attraction. The objective changes are either involuntary, insensibility (anæsthesia), paralysis, contraction of the muscles. These changes disappear after a few minutes by light friction, but without that will last several minutes, or even hours. Subjects of this class can be hypnotized in a single séance. Whether these effects are really magnetic, Dr. Ochorowicz considers doubtful. Magnetism, he thinks, does not explain all. It is only the substratum of another action so feeble from a physical point of view that it is not discoverable by our instruments of research. What this other action is, whether a new force or a new manifestation of force, he does not in the present state of our knowledge venture to say.

Gaseous Fuel and Smoke Prevention.

Under the title of "The Smoke Nuisance in Towns, and its Prevention," Herr R. Weinlig read a paper, at Magdeburg, last September, of which an interesting summary lately appeared in *Engineering*.

The whole question, says our contemporary, is treated in detail. Some statistics are given to show the enormous increase in the quantity of coal produced during late years; England being stated to have doubled and Germany to have quadrupled their output in the last 24 years. In dealing with the subject of smoke prevention, the author stated his opinion that very decided legislative interference is necessary; but he does not consider that this can be extended to domestic fires, though their importance as large contributors to the evils upon which he dwells cannot be denied or underrated. He considers that the one great cure for smoke from this source will be found in the introduction of gas firing, gas being supplied cheaply from central stations. This will certainly come to pass in due time, as it is well known that a suitable gas can be produced at a price of 3 to 5 pfennige per cubic meter (about 20 to 35 cents a thousand feet); and at such a price, firing with gas is fully as cheap as firing with coal.

Tests made by Dr. Fischer, of Hanover, show that in the ordinary domestic stoves in use not more than 20 per cent of the fuel consumed is really utilized for warming the rooms; whereas, with stoves burning gas, 80 per cent and more of the possible effect is obtained. In a certain sugar manufactory at Elsdorf, no steam engines have been used for several years. Gas is made at a cost of about 20 cents per thousand feet, and is used for lighting and for driving gas engines. At the iron works of Herren Schultz, Knaut & Co., in Essen, water gas is made at a cost of about 8 to 16 cents a thousand feet, and serves both for fires and for lighting. For the latter purpose a ring is fixed over the burners, having rods or pencils of magnesia attached. These are made glowing hot by the non-luminous gas flame, and emit an excellent light.

These and other examples prove that cheap gas production is not any longer a mere experiment, and that we may reasonably hope to see its universal introduction. But we shall never be free from the smoke nuisance till we have no more burning of coal direct in grates. The use of gas, which has already done so much in some directions, will probably gradually do the rest. Large works of all kinds will more and more take to producing gas and using it for all purposes. Smaller works and private houses will, in due course, have gas supplied to them at such a price as shall render it cheaper than solid fuel under any conditions. Domestic heating and cooking appliances for use with gas have made enormous advances of late, chiefly by the untiring ingenuity and invention of Mr. T. Fletcher, of Warrington. It remains only to "educate" the public and the gas companies a little further, and someday we shall have cheap gas laid on everywhere, and our descendants will hardly realize that we once had loads of dirty coal shot into our houses, endured no end of dust and dirt inside, and poisoned the air outside. If ever the difficulties are practically solved which at present prevent the introduction of electric lighting into our houses, then, when the gas companies find their present occupation gone, they will turn all the sooner to the other great field that awaits them; and so all the sooner will our smoke nuisance disappear by a much more satisfactory method than government interference and compulsion.