

THE TWELVE-WIRED BIRD OF PARADISE.

Two years were spent by Dr. F. H. H. Guillemard (1883-85), of England, with his steam yacht in natural history explorations in Kamschatka and New Guinea, and the results of his observations are given in two royal volumes, superbly illustrated, published last year in London, entitled "The Cruise of the Marchesa." After infinite labor and expenditure of much time, he at last succeeded in securing two or three living specimens of that most rare bird, *Seleucidés nigricans*, the twelve-wired bird of paradise. The author says:

"The native-prepared skins seen in European museums give no idea of the glorious beauty of the living bird. The subular plumes, whose prolonged and wire-like shafts have given the bird its English name, are of a rich golden-yellow, and the pectoral shield, when spread, shows to advantage its tipping of metallic emerald.

"These exquisite creatures were fed on the fruit of the pandanus, with an occasional cockroach as a *bonne bouche*. In devouring the insects, which they did by throwing them in the air and catching them again, they displayed the wonderful grass-green coloring of the inside of the mouth and throat. The feelings of admiration with which I watched these birds, which are among the most exquisitely beautiful of all living beings, I need not attempt to describe. My reader, if a naturalist, will divine them; if not, no description of mine would ever make him realize the intense pleasure of the first sight of such masterpieces of coloring."

On another occasion, speaking of one of these birds, the author says:

"The bird, a male in full plumage and already tolerably tame, was brought in in its bamboo cage, and although we had previously seen this species alive in the aviary of the Resident of Ternate, we could hardly keep our eyes off our new acquisition, so striking was its beauty.

"He became tame very quickly, and would readily eat from our hands. By day he usually remained more or less quiet, and was fond of resting motionless, with the head sunk low on the chest; but in the morning and evening he moved restlessly from perch to perch with a peculiar bounding hop. His manner of feeding was wonderfully neat.

Any cockroach that ventured into his cage he would catch with lightning rapidity, seizing it across the body with his long, sharp beak. Then giving it a sudden snap, he would throw it in the air and catch it lengthways, displaying the vivid grass-green coloring of his mouth and throat in the operation.

"The only note he ever uttered was a single unmelodious croak. The least fall in temperature seemed to be felt by this beautiful creature, and though every care was taken of him, he died before we got beyond the tropics.

"The method employed by the natives of New Guinea in catching the *Seleucidés* appears almost incredible. Patiently searching the forest until he has discovered the usual roosting place of the bird, the hunter conceals himself beneath the tree, and having

noted the exact branch chosen, climbs up at night and quietly places a cloth over his unsuspecting quarry. The species being exceedingly fond of the scarlet fruit of the pandanus, the roosting places are easily recognized by the dejecta. The plan would, perhaps, by most of us, be regarded as very similar to that counseled by our

they returned again, but this time empty handed. They had discovered a second tree, but one of the Alfuros of the interior had interfered and shot the bird with his blunt arrow.

"In the discussion that ensued our man got the worst of it and retired from the field, having very narrowly escaped being added to his enemy's bag."



THE TWELVE-WIRED BIRD OF PARADISE (SELEUCIDES NIGRICANS).

nurses, in which a pinch of salt is the only requisite; but the noiseless movements of the native hunters overcome all difficulties, and the tree once discovered, the chances are said to be considerably against the bird.

"Finding the tree is, however, not so easy, and the month spent by our natives in the forest resulted in the capture of only one bird. Four days after our arrival

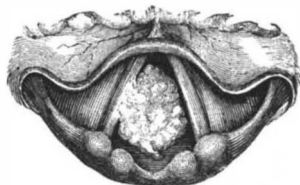


Fig. 2.—VOCAL CORDS ATTACKED BY PAPILLOMA..

is that Virchow has certainly not found the sections under examination to be epithelioma having the nest cells, as that would settle the question; but that he has found the growth to be that of papilloma. He still hesitates to say that the growth is non-malignant, however, and therefore I should draw the inference that he has found cells and other indications which raise a doubt in his mind as to whether the growth is not undergoing a transitional course from the benign to the malignant type, which is very frequently the case, and always to be feared. The fact that four operations have already been performed, with the rapid recurrence of the growth, are alarming features



Fig. 1.—EPITHELIAL CANCER.

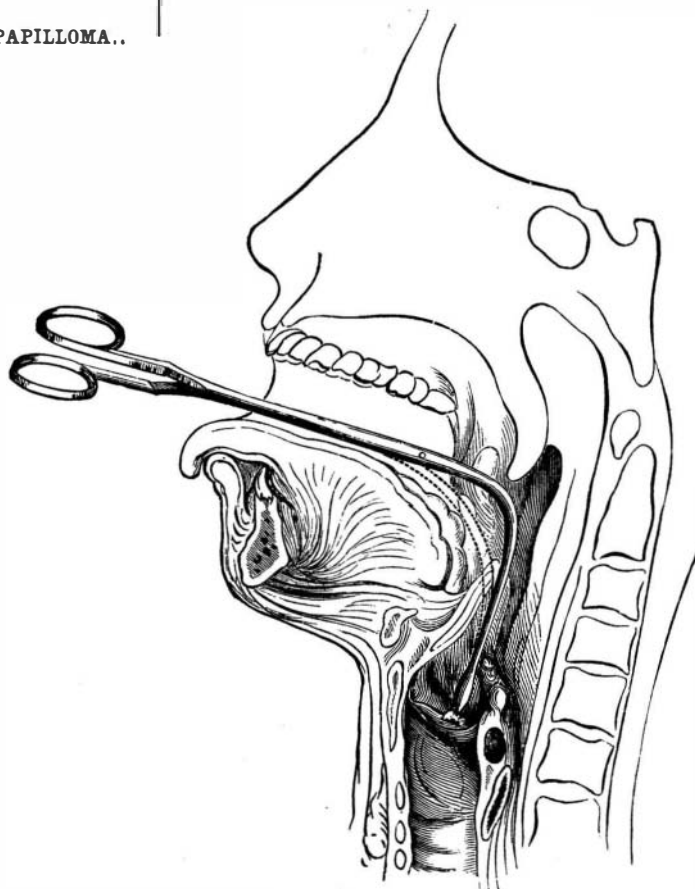


Fig. 3.—REMOVAL OF PAPILLOMA FROM THE VOCAL ORGANS.

of the case. I give a diagram (Fig. 2) showing the vocal cords, with a papilloma on one of the edges. It is from a drawing made by Dr. Morell Mackenzie, who has recently operated on the prince.

Fig. 3 shows the difficult nature of the operation, which consists in cutting off the small excrescence by means of bent forceps. It requires great skill, as the mere touch of the instrument on the vocal membrane causes spasmodic contraction. The surgeon must grab the wart at one movement or fail.

The papilloma is of the nature of a wart, the same as those which come on the hands and face (*cutaneous*); but when located on the inner mucous membrane, particularly in the larynx, the disease sometimes assumes formidable proportions, closing up the air passages and killing the patient by suffocation.

Dr. Mackenzie has so far been very successful in his treatment of papilloma, where the more serious conditions have been absent. Where tracheotomy becomes necessary, the chances of cure are very remote. According to the most recent advices, he is confident the prince will recover.

I may mention that the portion of epithelioma (malignant cancer) from which I made the photograph shown with this article was taken from the corner of the upper lip. It was removed by an operation, but appeared later in the nose, and the sufferer eventually died. It shows the characteristics of this form of malignant cancer very clearly; so much so, in fact, that it cannot be mistaken for any other kind of tumor.

New Cruisers and Gunboats.

The Chief Constructor of the Navy, with his large force of draughtsmen at the Navy Department and Washington navy yard, and Chief Engineer Melville, with his corps of assistants at Cramp's place in Philadelphia, have made quick work of the plans and specifications for the two 19 knot cruisers and two 1,700 ton gunboats, bids for which are to be opened August 1 next. When the advertisement was issued, April 6 last, inviting proposals for these vessels, and stating that the plans, specifications, etc., would be ready for the information of bidders June 1, not a single stroke of work had been performed in connection with the preparation of plans, and it was hardly anticipated by the most sanguine that the department would be able to furnish the bidders with the information at the time specified. It was only two weeks ago that Chief Engineer Melville, with a large force of draughtsmen, began the preparation of plans for the machinery, and it was not many weeks ago that the chief constructor commenced work upon the plans for the hulls. Much to the surprise of everybody interested, and to the gratification of the Secretary, Chief Constructor Wilson announced promptly on the morning of June 1 that he was ready to exhibit the plans of all the vessels, including those for the machinery which Chief Engineer Melville brought over from Philadelphia, in person, on the same morning, and that the detailed specifications were all written out and in the hands of the printer. This is regarded as remarkably rapid work by those at all familiar with the trials and delays connected with such matters. It is true that some of the plans are copies of others already in existence, but even the work of duplicating drawings requires time. The hulls of the 19 knot cruisers are somewhat similar in design to the Newark, which, with the hull and machinery of the gunboats, are, by law, exact duplicates of Gunboat No. 1, now building by Cramp & Sons. The plans of machinery for the 19 knot cruisers are also similar to the designs for the Baltimore's machinery.

The following is a description of the 19 knot cruisers, which are designated by the department circular as Nos. 4 and 5. The plans and descriptions of the Newark, known as No. 1, and Gunboat No. 1, of which the two new gunboats are to be duplicates, we have heretofore published.

NINETEEN KNOT CRUISERS.

They are to be twin screw cruisers, 310 feet long on the water line, 49 feet 1 3/4 inches extreme breadth, 18 feet 9 inches mean draught, displacing 4,083 tons. Machinery of 10,500 i. h. p. under forced draught; maximum speed, 19 knots; rig, that of a three-masted schooner, spreading 5,400 square feet of sail. They will have a double bottom extending through 129 feet of the length. The framing in this portion is on the bracket system. Before and abaft the double bottom, above the protective deck, Z bars form the transverse frames. The protective deck, which is 19 inches above water line amidships, is flat across the top, with sides which slope down to a depth of 4 feet 3 inches below the water line. The horizontal portion is 2 inches thick, the slope being 3 inches, reduced at both ends to 1 1/2 inches. It extends uninterruptedly forward and aft, and protects the machinery, magazines, and steering gear, the machinery being further defended by the disposition of the coal bunkers. The main hatches in this deck are protected by armor bars and have coffer dams extending to the upper deck. The guns are carried on the gun, forecastle, and poop decks.

ARMAMENT.

The main battery consists of twelve 6 inch B. L. rifles, all on center pivot mounts, with two inches segmental

steel shields, and arranged on sponsons, so as to obtain the greatest possible arc of fire. The forecastle, the poop, and the bridges have been as much as possible availed of to shelter the guns. The two guns forward and the two guns aft converge their fire a short distance from the ends of the ship, and the broadside can be concentrated within 100 feet of the side. Four above-water torpedo tubes are provided on the berth deck, and two direct ahead under-water torpedoes in the bow. The secondary battery is composed of four 47 millimeter revolvers, four 57 millimeter single shots, two 37 millimeter revolvers and one short Gatling. Coal capacity, 850 tons; complement of men, 300.

DETAILS OF CONSTRUCTION.

The vertical keel is 17 1/2 pounds per square foot and 39 inches in depth amidships, the flat keel plates 20 pounds and 17 1/2 pounds. The stem is cast steel, shaped and supported for ramming. The stern post and rudder are also steel castings, the latter 15 inches in diameter at the head. Numerous watertight frames are worked in the double bottom, and throughout the vessel the cellular principle is carried as far as practicable. At a height of about four feet above the protective deck the berth deck is placed, the space between the two being greatly subdivided and mainly utilized for coal stowage, so that the protection to the water line is no doubt as complete as can be obtained in any armored ship. The outside plating is generally 17 1/2 pounds. Lap work is used below the protective deck, but above the plating is flush. The lap work is double riveted at the edges. The inner bottom is in the main 12 1/2 pounds. Bilge keels 24 inches in depth extend for 150 feet of the length. When in action, the vessel will be directed from a steel conning tower 3 inches in thickness, cylindrical in form, located on the forward bridge. There will be a wooden pilot house located on the forward bridge just abaft the conning tower, and arranged to overlook the latter. The tower will be fitted complete with steering wheel, speaking tubes and engine room telegraph. These will be carried below the protective deck through a steel tube 2 1/2 inches thick and 12 inches in diameter. A steam steerer will be located beneath the protective deck.

The arrangements for pumping and drainage are very carefully considered. The system followed may be described as a development of that employed in the Chicago. Pumps are connected with all the important compartments. All the principal water tight doors and the sluice valves are arranged to work from the berth deck.

The ventilation is much more elaborate than in the small vessels. Natural ventilation is favored as far as possible, but, in addition, all living and other spaces below the main deck are carefully ventilated on the exhaust system, the blowers being entirely distinct from those used for producing the force draught in the fire room. Large ducts extend forward and aft on the protective deck, receiving smaller ducts from the various rooms and compartments. Where these ducts pass through bulkheads, automatic valves are fitted to prevent the flow of water from one compartment to the other by way of the air pipes. The coal bunkers are well ventilated, the fresh air supply to the bunkers being obtained through pipes carried up into the hammock berthings.

The ceiling in the hold will be of yellow pine battens, and on the berth deck 2 1/2 pound steel plate will be used, secured to the reverse flanges of the frames by quarter-inch round-headed brass screws. The ward-room will be finished in sycamore, without pilasters, but with suitable mouldings and panels.

There will be two complete electric lighting plants arranged to work on the same circuit, and lights are to be disposed so as to fully illuminate all parts of the ship, including coal bunkers, magazines, shell and ammunition rooms, running lights and lights for use on the upper deck and aloft. The total number of lamps will be about four hundred.

For a second extra knot would be required about 6,000 horse power more, making about 25,000 horse power necessary to develop a speed of 21 knots.—*Army and Navy Jour.*

The Natural Sodas of the West.

During the year 1885, says Mr. J. D. Weeks, in the "Mineral Resources of the United States,"* for the first time, a systematic effort was made to work the soda deposits of Wyoming, and to establish a market for the product in the growing and prosperous towns of the West. No attempt has been made to manufacture anything but the commercial caustic soda, for which quite a ready sale can be had. Lack of railway facilities has held back the development of any beds but those near Laramie.

The soda property, generally known as the "Union Pacific Lakes," lies about 13 miles nearly due south of Laramie, and is reached by a branch of the Union Pacific Railway. The property embraces some 2,000 acres, including five "lakes," in all but one of which the soda is solid. These lakes are connected, and seem to drain one into another. All of the soil near Laramie is more or less impregnated with the sulphate of

soda; and the common sources, it is believed, are springs, water from which bears large percentages of soda salts.

The physical condition of the soda in the lakes varies much with the season. In wet years the soda is almost fluid, while in dry years in all but one of the lakes it is solid, and in this one it occurs as a saturated solution. In the solid lakes the soda contains many thin layers of mixed clay and soda.

The soda, when taken pure, contains large quantities of water, which fact interferes seriously with its employment in the manufacture of sodium hydrate. The soda works near Laramie were built by the Union Pacific Railway, and leased to Mr. Howard Hinckley. The process used is the old "black ash," with stationary furnace. The capacity of the works is about two tons of sodium hydrate per day. The capacity of the furnace is three and a half tons of sodium sulphate per day. Rescreened coal from the Rock mine is used, and the limestone necessary is obtained near Laramie. The "black balls" formed of the fused soda, coal, and lime are broken up, and washed in four lixiviating pans, and the liquor is then taken to two setting vats. Thence it is drawn to the "causticizer," which is a large circular tank, in which are two perforated vessels containing caustic lime, around which the solution of sodium carbonate is agitated. After causticizing, the liquor is passed through three long, circular iron settlers. The clear liquor is then drawn to the "V-pan," where waste heat is used to aid the evaporation of the solution. The slightly concentrated liquor is then drawn to the "boat pan," which is set upon the reverberatory furnace. The evaporation is continued as long as possible, and the new concentrated solution is then drawn to another room, into the "finishing pot." This is a large cast iron pot set directly over a furnace. Here, all remaining traces of water are driven off at a low red heat. The hydrate at this stage is generally nearly black. Small quantities of fused niter are added to whiten it. The hydrate is then loaded into sheet iron vessels and shipped. Some of the Laramie caustic soda has been used by the Denver Soap Company, which reports favorable results from the use of it. The works at Laramie are not well adapted to the most economical handling of the soda. Improvements are being made by which the number of men employed will be greatly reduced and the composition of the "black balls" made more uniform.

The Laramie works produced from July to January, 1885, about thirty tons of caustic soda. Defects in the plant caused great delay and loss of some of the caustic soda, and the works were therefore closed for a time until alterations could be made. The lessee of the works states that good reports of the caustic soda have been made by users of it.

The "Downey Soda Lakes" are situated about 18 miles southwest of Laramie, and are three in number, covering, approximately, with the land included, 520 acres. In one lake the deposit is 11 feet thick; in the others, it is from 5 to 6 feet. The soda from these lakes is similar to that from the Union Pacific ones, and there seems to be an underground connection between the two groups.

The soda deposits in Carbon County are situated in the Sweetwater Valley, near Independence Rock, and nearly fifty miles due north of Rawlins. These deposits contain both carbonate and sulphate of soda, and are generally known as the "Dupont Lakes." They are four in number, and vary from 6 to 2,000 acres in area, and are held by United States patents in the name of L. Dupont. There are five claims, known as: New York soda mine (160 acres); Philadelphia soda mine (80 acres); Omaha soda mine (20 acres); Wilmington soda mine (180 acres); Wilkesbarre soda mine (20 acres). Five acres of the Omaha mine are covered with carbonate and sulphate of soda mixed with a little sodium chloride, and sand blown from the surrounding soil. Several bore holes put down showed an average thickness of about six feet.

The Wilkesbarre claim is about a mile west of the Omaha, and the soda is in solution.

The Wilmington claim is located a quarter of a mile west of the Wilkesbarre, and here, too, the soda is in solution. Its depth has never been determined. It has been sounded with a forty foot rope without finding bottom in the center.

The New York and Philadelphia claims are both upon one lake, which is solid, and is four miles west of the Wilmington. A bore hole at a distance of 50 feet from the shore showed 4 feet of soda, and another at a distance of 230 feet from the shore passed through 14 feet of solid soda without touching bottom.

Fifteen miles from these deposits, in the Seminole Mountains, good limestone occurs, containing 2 per cent of magnesia. Near the limestone is a good 8 foot vein of coal.

A comparison of analyses shows that the percentage of carbonate of soda is greater in the Dupont than in the Union Pacific and Downey deposits; but the Sweetwater country is still out of reach of transportation, and until a railroad is built in this direction, the deposits must remain undeveloped.

* Government Printing Office, 1886.