The Work of the School of Athens at Corinth.

Three years ago the Ephor-General of Antiquities, in Greece, granted to the American School at Athens the privilege of conducting excavations on the site of the ancient city of Corinth. The director of the school, Prof. Richardson, and his colleague for the year, Prof. Benjamin Ide Wheeler, of Cornell University, agreed, says The Tribune, that no valuable site in the kingdom promised more important results in excavations than this city, which in all Greece was second only to Athens in magnificence, wealth, and population, and had great historic interest. They were well aware of the magnitude of the task, for the ancient city was of very large size, and the ruins are also covered by a layer of earth from 15 to 20 feet thick.

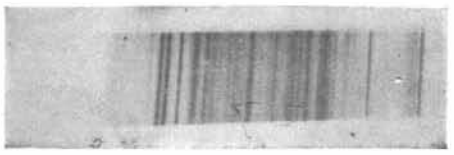
The work in 1896 was of a tentative nature, as the topography was almost unknown, except the two harbors and the Isthmian sanctuary in the suburbs. Twenty trial trenches were dug, and the ancient Greek theater was discovered, with portions of a Roman theater resting upon it; also indications of the proximity of the Agora. In 1897 the work of excavation was interrupted by the war between Greece and Turkey. In 1898 excavations were continued with one hundred and twenty men, and were facilitated by the use of a track and twelve cars. The fountain Pirene, which was the center of the life of the ancient city, was one of the results of these excavations. They also discovered the lintel of the synagogue of the Jews, which, it is assumed, is the very synagogue in which St. Paul taught when he first came to Corinth. The American School has not money with which to continue the excavations at Corinth in the spring, and it will greatly be regretted if work must cease on account of a lack of a very few thousand dollars which is necessary to carry on the work.

SIMPLIFIED APPARATUS FOR SPECTROSCOPIC PHOTOGRAPHY.

BY JOHN HELLYER WHITE.

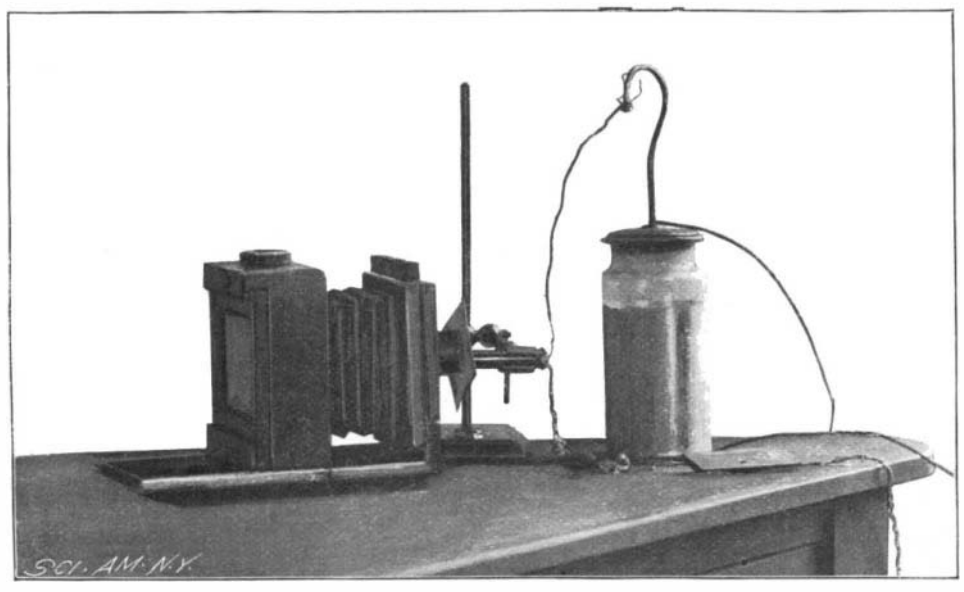
The spectroscope has always been an interesting but somewhat unfamiliar instrument to semi-scientific people, partly because of its expense and partly because of the care and skill that are required to use it successfully. I have made some experiments with apparatus that is very simple and have got very good results with it. It consists of only an ordinary 4 × 5 camera, a small Browning pocket spectroscope, and a stand to hold the spectroscope in place.

Nearly everybody has some sort of a camera, and the spectroscope would be the only extra expense. These small spectroscopes are manufactured by many optical firms, and a very good one can be obtained for ten dollars. With this apparatus I obtained a picture of the solar spectrum nearly three inches long, after an exposure of fifteen seconds. This showed an abundance of lines, the group about the "G" line being especially fine. On orthochromatic plates the exposure was doubled, but a negative was obtained that went from the invisible "M" line in the violet to the sodium "D" line in the yellow end of the spectrum.



SPECTRUM OF ALUMINUM.

The cut of the aluminum spectrum here shown was taken in the Jefferson Physical Laboratory with this apparatus. The accompanying engraving represents the camera with a movable ground glass screen. The spectroscope is at the front supported by a stand. In front of the tube is the source of light, either an electric arc or spark. Of course, when the sun is used for the light, other light is not needed, and the sun is focused on the adjustable slit of the spectroscope with a common double convex lens. Considerable care is needed to keep out all extra light from the plate, and for this purpose several pieces of the black paper that comes wrapped round plates were taken. Cutting a hole through them the size of the barrel of the spectroscope, pushing them up to the camera so that all the light was kept out, proved to be the best method, although black cloth can be used. The electrical apparatus used to take the aluminum spectrum was quite complicated, but before this I used simpler apparatus that is within the reach of everybody. For my spark I used a small induction coil that gave a spark half an inch long. This was operated by a plunge battery of moderate size. I used terminals of the metals I wished to photograph, condensing the spark by means of a small Leyden jar, which was insulated from the ground by a piece of glass, the outside of the jar being connected with one pole of the secondary of the coil and the inside with the other. This Leyden jar condensed the spark from one-half to about one-quarter of an inch, but it also made it very bright. The exposure needed on orthochromatic plates was about ten minutes. In the case of the spark spectrum, the spectroscope was put within three-fourths of an inch of the terminals, in order to get the necessary light. The extreme simplicity and smallness of this apparatus make it especially valuable where a larger apparatus cannot be used.

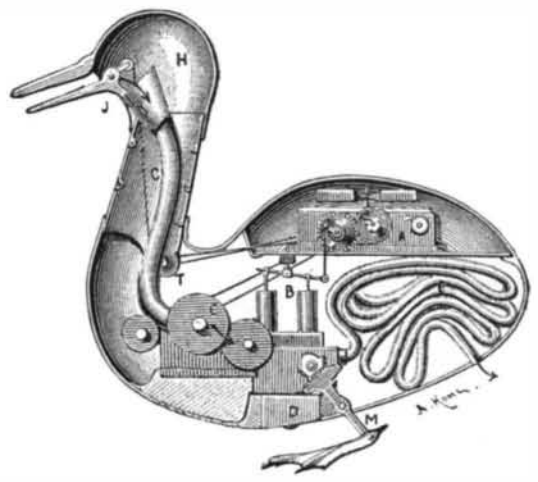


SIMPLE APPARATUS FOR PHOTOGRAPHING THE SPECTRUM

SOME CURIOUS AUTOMATA.

Of all the inventors of mechanical curiosities, Jacques Vaucanson was certainly the king. In the ingenuity of his mind he equaled, if he did not surpass, the most skillful of men.

In the first book of the Odes of Horace, we read that Archytas manufactured a wooden pigeon, which, actuated by a mechanical movement, flew from place to place. This, however, was nothing as compared with



INTERIOR OF VAUCANSON'S AUTOMATIC DUCK.

A, clockwork; *B*, pump; *C*, mill for grinding grain; *F*, intestinal tube; *J*, bill; *H*, head; *M*, feet.

the automatic fly manufactured by John Müller, and which flew around the table during a dinner, and alighted upon the hand of its owner and manufacturer, to the great astonishment of his guests.

Philippe Camus describes an extraordinary automatic group, which was specially constructed for the amusement of Louis XIV. It was a minute coach to which were harnessed several horses, and which rolled over the table. Upon starting, the coachman cracked his whip, and the horses began to prance and then became quiet and started off on a trot. The coach stopped in front of the king, and the lackey jumped from his seat, and, opening the door, handed out a handsomely dressed lady, who walked toward his majesty, saluted him ceremoniously, presented a petition to him, and then re entered the coach. The lackey closed the door and jumped upon his box, the whip snapped and the horses galloped off.

Vaucanson did better still. His automatic duck was, to connoisseurs, an object of admiration. The bird waddled off in search of food, and picked up and swallowed the seeds that it met with. These seeds, says an article in the Biographie Universelle, passed into the stomach through a series of triturations that facilitated the introduction of them into the intestines and caused them to accomplish all the phases of digestion.

It was impossible to distinguish this duck from a living one. It splashed about in the water and quacked at pleasure.

Vaucanson's mechanical flute player also was a marvel. It was a life-size figure clothed in the fashion of the period, and standing alongside of a broken column, upon which it slightly leaned. It was capable of playing a dozen different airs with remarkable ease. To effect this result, there was a system of weights that actuated a bellows placed in the interior of the automaton, and, through an invisible tube, forced air to the flute, where it acted in the usual way upon the stopple of the opening. In order to obtain the modulations, and, consequently, a complete air, the fingers of the automaton were movable and closed the holes of the flute hermetically when at rest, and also rose and replaced one another through the traction exerted by wires and cords that were tautened and relaxed by the play of a toothed cylinder.

About sixty years ago, a jeweler of Boulogne constructed a wonderful automatic prestidigitator. This figure, correctly dressed in black, performed various sleight-of-hand tricks with remarkable dexterity, and, when it was applauded, gracefully saluted the spectators to the right and left. One of its tricks was the following: It struck a table several times and made an egg come out of it. It then blew upon the latter, when out of it came a bird that flapped its wings and sang, and afterward entered the egg again. This trick finished the exhibition.—Lectures pour Tous.

Queen Victoria's Yacht.

The new royal yacht for the Queen of England was commenced on December 23, 1897, when the first keel plate was laid at the government dockyard at Pembroke. The name for the new yacht has not been chosen as yet, and the Admiralty have not, until recently, given out any particulars of the new vessel; but now, however, they have done so. The new yacht will be 380 feet long; her beam is 45 feet; the draught is to be 18 feet, and her displacement is to be 4,600 tons.

It will be seen that this yacht is much larger than W. K. Vanderbilt's yacht "Valiant." The new royal yacht is as large as the cruiser "Baltimore," larger than the "New Orleans," and much larger than the "Hohenzollern," the German Emperor's yacht. The latter boat is really nothing more than a cruiser, with apartments for the Emperor. The new royal yacht will be a yacht pure and simple. The hull is to be steel sheathed with wood and covered with copper. She will have three funnels and two masts; her twin screws will be driven by triple-expansion engines; steam will be supplied by eighteen Belleville boilers, which will work at a pressure of 300 pounds, which will be reduced at the engines to 250. It is expected that the yacht will be driven at a speed of 20 knots an hour with the engines making 140 revolutions a minute. It is expected that the new vessel will cost in round numbers about $1,500,000.

The Current Supplement.

This week's number of the SUPPLEMENT, No. 1203, contains a large portrait of the much-talked-of Dowager Empress of China. Prof. Lewes has a popular and valuable article on Acetylene, giving all the information that has been obtained up to date regarding this peculiar gas. There are several illustrations of interesting electric motors, and an illustration of a compound French locomotive of high speed. An account of the construction of the Gatling cast steel gun and an explanation of the test recently given, by Mr. Gatling himself, is of interest. There is a striking illustration of the new artists' Vienna Exhibition building. An illustrated article on Archæological Museums explains the best mode of lighting exhibits. There is an extensive report of the recent meeting of the Geological Society of America, as well as the report of an interesting lecture on the "Diseases of Nations," which describes rather fully the causes at work tending to their ultimate downfall. The "Evolution of the Song Bird" is treated at length, and interesting illustrated articles on the "Utilization of Unio Shells for Buttons" and on "The Principles and Practice of Bulb Growing" are of present practical value. There are also the usual notes on electrical, railway and engineering matters and useful formulæ.

Contents.

(Illustrated articles are marked with an asterisk.)