substances could be more unlike; but that chlorine should supply the place of hydrogen in a chemical compound was a conception which the dualists scouted as absurd.

By the second investigation, as by the first, although Dumas gave a most fruitful conception to chemistry, he only took the first step in developing it. His conception of chemical types was very indefinite; and Laurent wrote of it a few years later, "Dumas's theory is too general; by its poetic coloring, it lends itself to false interpretations; it is a programme of which we await the realization."

The third great investigation of Dumas was his revision of the atomic weights of many of the chemical elements, and in none of his work did he show greater experimental skill. His determination of the atomic weight of oxygen by the synthesis of water, and of that of carbon by the synthesis of carbonic dioxide, are models of quantitative experimental work.

That exuberance of fancy to which we have referred made Dumas one of the most successful of teachers, and one of the most fascinating of lecturers. It was the privilege of the writer to attend the larger part of two of his courses of lectures given in Paris in the winters of 1848 and 1851, and he remembers distinctly the impression produced. Besides the well-arranged material and the carefully prepared experiment, there was an elegance and pomp of circumstance which added greatly to the effect. The large theatre of the Sorbonne was filled to overflowing long before the hour. The lecturer always entered at the exact moment, in full evening dress, and held to the end of a two-hours' lecture the unflagging attention of his audience. The manipulations were entirely left to the care of a number of assistants, who brought each experiment to a conclusion at the exact moment when the illustration was required. An elegance of diction, an appropriateness of illustration, and a beauty of exposition, which could not be excelled, were displayed throughout; and the enthusiasm of a French audience added to the animation of the scene.

To the writer, the lectures of Dumas were brought in contrast to those of Faraday. Both were perfect of their kind, but very different. Faraday's method was far more simple and natural, and he excelled Dumas in bringing home to young minds abstruse truths by the logic of well-arranged consecutive experiment. With Dumas there was no attempt to popularize science: he excelled in clearness and elegance of exposition. He exhausted the subject which he treated, and was able to throw a glow of interest around details which by most teachers would have been made dry and profitless.

In the early part of his life, Dumas was a voluminous writer, and in 1828 published the 'Traité de chimie appliquée aux arts' in eight large octavo volumes, with an atlas of plates in quarto. But, besides this extended treatise, two volumes of lectures are his only important literary works. He published numerous papers in scientific journals, which, as we have seen, produced a most marked effect on the growth of chemical science. But the number of his monographs is not large, compared with those of many of his contemporaries; and his work is to be judged by its importance and influence rather than by the extent of the field which it covers.

It was to be expected that a man working with such eminent success in so many spheres of activity, and at one of the chief centres of the world's culture, should be loaded with marks of distinction of every kind. It would be idle to enumerate the orders of knighthood or the learned societies to which he belonged; for, so far from their honoring him, he honored them in accepting their membership. It is a pleasure, however, to remember that he lived to realize his highest ambitions, and to enjoy the fruits of his well-earned renown. France has added his name in the Pantheon

**'Aux grands hommes la patrie reconnaissante.'**

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## *THE MONK-SEAL OF THE WEST INDIES, MONACHUS TROPICALIS GRAY.*

An old English navigator and privateer, William Dampier, while straining his eyes for Spanish galleons in the Caribbean Sea during the season of 1675, was astonished at finding many seals sunning themselves on the Alacrane Islands: he was surprised, for he did not look for these animals in tropical waters, and hence he made voluminous notes of them.[1] To this memorandum we are obliged to turn for all the knowledge that we have to-day of the rare form of which we offer the accompanying drawing. The specimen from which it was taken is now believed to be the only one in existence; for the one which was in the British museum, collected in 1843 by Gosse and Hill, has been destroyed. The one which we figure is now in the new National museum at Washington: it was recently taken on the coast of Cuba, bought of some Cubans by Professor Felipé

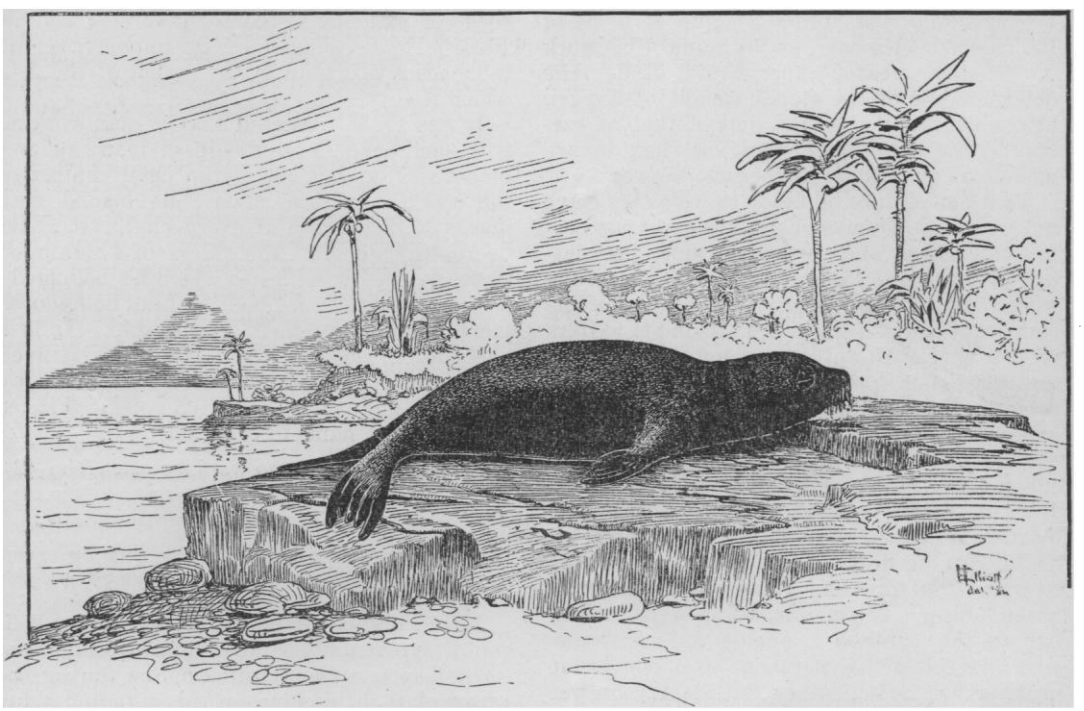
[1] Dampier, Voyage round the world, ii. 2, 3d ed., 1705, p. 23.

Poey of Havana, and by him presented to the Smithsonian institution.

The color of the body of this tropical seal is an intense ebony black, with the hair remarkably short and stiff. The length of this creature is about four feet, with a circumference of the body near the fore-arms of three feet. Although Dampier seems to have been impressed by the large numbers of these seals in 1675, yet, as long ago as 1843, it was excessively rare, — as much so as it is to-day. This fact declares the industry and zeal of the old 'oyle' hunters, who were busy in slaughtering the Monachus long after Dampier set the example.

In the *Jamaica almanack* for 1843, Mr. Richard Hill published a memoir on a seal inhabiting the Pedro Kays, a reef of rocks lying off the south coast of Jamaica. This has been transcribed by Allen, and it seems to apply directly to the animal which we figure. Allen sums its distribution up as follows: "It therefore appears that the habitat of the West-Indian seal extends from the northern coast of Yucatan, northward to the southern point of Florida, eastward to the Bahamas and Jamaica, and southward along the Central-American coast to about latitude 12°. Although known to have been once abundant at some of these localities, it appears to have now well-nigh reached extinction, and is doubtless to be found at only a few of the least frequented inlets in various portions of the area above indicated." Being still well known to many of the wreckers and turtle-hunters, it seems strange that it should have remained almost unknown to naturalists.

Perhaps this figure and notice may serve to stimulate the attention of some one of the many fruit and sponge vessel owners now cruising in West-Indian waters, who, detecting the presence of another specimen, may secure it, and forward the rare and valuable trophy to those who would appreciate and preserve it.



HENRY W. ELLIOTT.

Smithsonian institution, May 21.

## *THE TOEPLER-HOLTZ MACHINE.*

THE Toepler-Holtz induction electric machine is too well known to need description; but, as no explanation of its action is to be found in any book which has come under my observation, the following explanation may be of interest to teachers: —

Consider the machine before you, the revolving-plate in front.