

**A LARGE STATIC MACHINE.**

Messrs. Waite & Bartlett, of this city, have just completed for Dr. F. A. Gardner, of Washington, the largest influence or static machine ever made. It is to be used for generating electricity applied as a therapeutic agent, and it is of sufficient size to admit using it for the treatment of several people simultaneously.

Presuming our readers are familiar with ordinary static machines as described in several numbers of the SCIENTIFIC AMERICAN and SUPPLEMENT, we will confine ourselves to a brief description of this particular machine.

The machine is furnished with a hermetically sealed case made of quartered oak and plate glass. The case is 10 feet long, 5 feet wide, and 7 feet high inside and is supported a few inches from the floor by six legs.

The main shaft, which is of steel, is 2 inches in diameter and turns in ball bearings. It carries eight plate glass plates 60 inches in diameter and 3/8 inch thick. Between the circular glass plates are supported the fixed plates which carry the armatures.

The conductors extend through the casing and are provided with spherical terminals 8 inches in diameter, and with condensers and sliding discharge rods.

A small Toepler-Holtz machine having a 28 inch revolving plate is placed in the casing, and may be brought into connection with one of the armatures of the large machine, when it becomes necessary to renew the charge. The small machine may be driven by hand; an electric motor operates both.

This machine is capable of yielding a 30 inch spark of large quantity. The discharge is terrific. It requires a person of unusual nerve to remain quiet during the disruptive discharge of the machine, and yet the current can be controlled so as to admit of treating the most delicate and sensitive parts of the body.

The machine, taken altogether, is a very creditable piece of work, in which the makers may justly take pride.

**THE KING OF SIAM.**

The close of the season which was marked by the Diamond Jubilee celebration was invested with special interest by the visit of the King of Siam, the latest Oriental potentate to declare himself a supporter and advocate of European culture and progress. The portrait we publish of his Majesty, King Chulalongkorn, and some of his sons, will give our readers a good impression of this highly intelligent and amiable ruler of what may be called the last virgin kingdom of Asia, and that impression will certainly be confirmed and strengthened by closer intercourse. The world has heard a good deal and seen ample proof of Japanese receptivity and go-aheadness. The prediction may be hazarded that now that the Siamese have decided to imitate Europeans, they will show not less intelligence and energy in shaking off the trammels of centuries and in catching up the age. It is both fortunate and gratifying that the present sovereign of Siam, to whose initiative and example the change is mainly due, is inclined to regard this country with a special admiration, and to take English customs as his pattern and example.

Chulalongkorn has had a long experience of the work of government, having succeeded to the throne in 1868, when he was only fifteen years of age, and during that period he has seen his country pass through several grave crises, of which the most serious occurred only three years ago, when it seemed as if French ambition could not be warded off. Everyone acquainted with the diplomatic history of that episode is aware that the good sense and patience of the King played a prominent part in effecting the pacific settlement that was finally attained in the spring of last year by the convention signed by England and France. That convention guarantees the independence and neutrality of Siam, and could not be broken by either of the signatories without bringing the other into the field as the champion of

Siam. Its practical value and significance therefore is that Siam has obtained a breathing space which will enable her to develop her resources, introduce needed administrative reforms, and generally strengthen her position. How clearly the King has seen these facts, and how quick he has been to begin the necessary measures, is shown by his early departure for those foreign lands to which his own has now to assimilate itself.

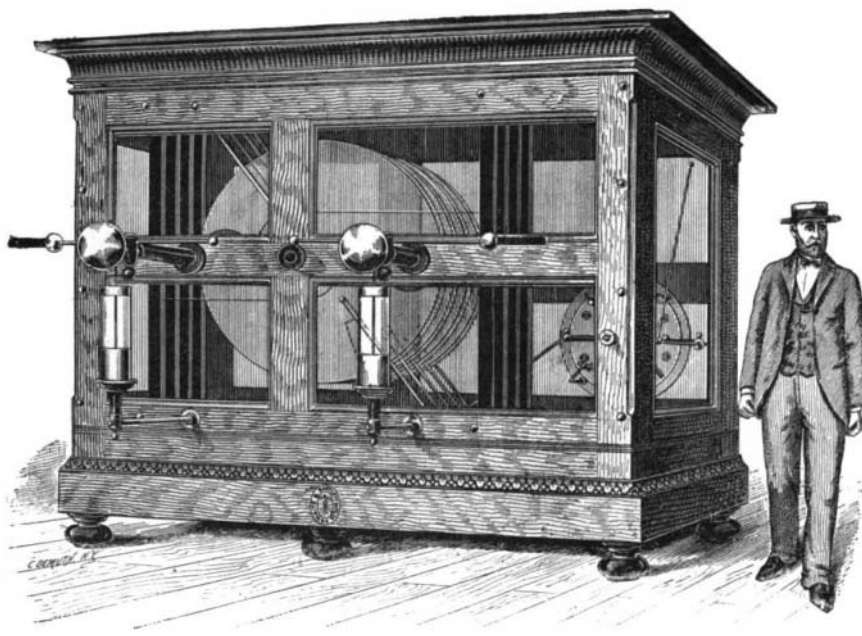
King ordered that only English should be spoken at his table. His Majesty has also specially arranged for the education of his sons in the first place in England.

The Crown Prince Somdet has an English governor, Col. Hume, an officer who served for a long time on the staff of Lord Roberts, in India, and several English tutors have superintended his studies. He is a young and intelligent prince, of whom every one speaks well, and who worthily represented his father during the recent ceremonies. The next son, Prince Borapat, although now a cadet at the Potsdam Military School, also had the basis of his education laid in this country, and when he was sent to Germany to undergo the severe military and educational training to which princes are subjected in that country, he astonished his examiners by the excellence of his papers at the preliminary examination. The board sent the Siamese prince's replies to the Emperor William, who, in turn, passed them on to his sons with the comment, "These are what good examination replies should be like." The third son, Prince Abha, has been specially educated for the sea, and was trained at one of our best naval schools at Greenwich. We believe that he was allowed by the First Lord of the Admiralty to take part in one of the naval examinations, and that he did remarkably well in most of the subjects, and only broke down in "religion," which is scarcely surprising. He accompanied his father on board the Mahachakhri, on which he is rated as a midshipman,

and he was intrusted with the steerage of the vessel through the Suez Canal. Capt. Cumming, the commander of the yacht, reported that he performed this task very skillfully. Enough has been said to show that not merely is the King of Siam a well educated and well informed prince himself, but that he has taken very special pains to make his sons and successors competent to discharge the onerous duties of their exalted position under more severe conditions than in the past. The conclusion is, therefore, obvious that Siam stands on the threshold of important changes, and that in another generation it will have become a very different kingdom from what it was quite recently.

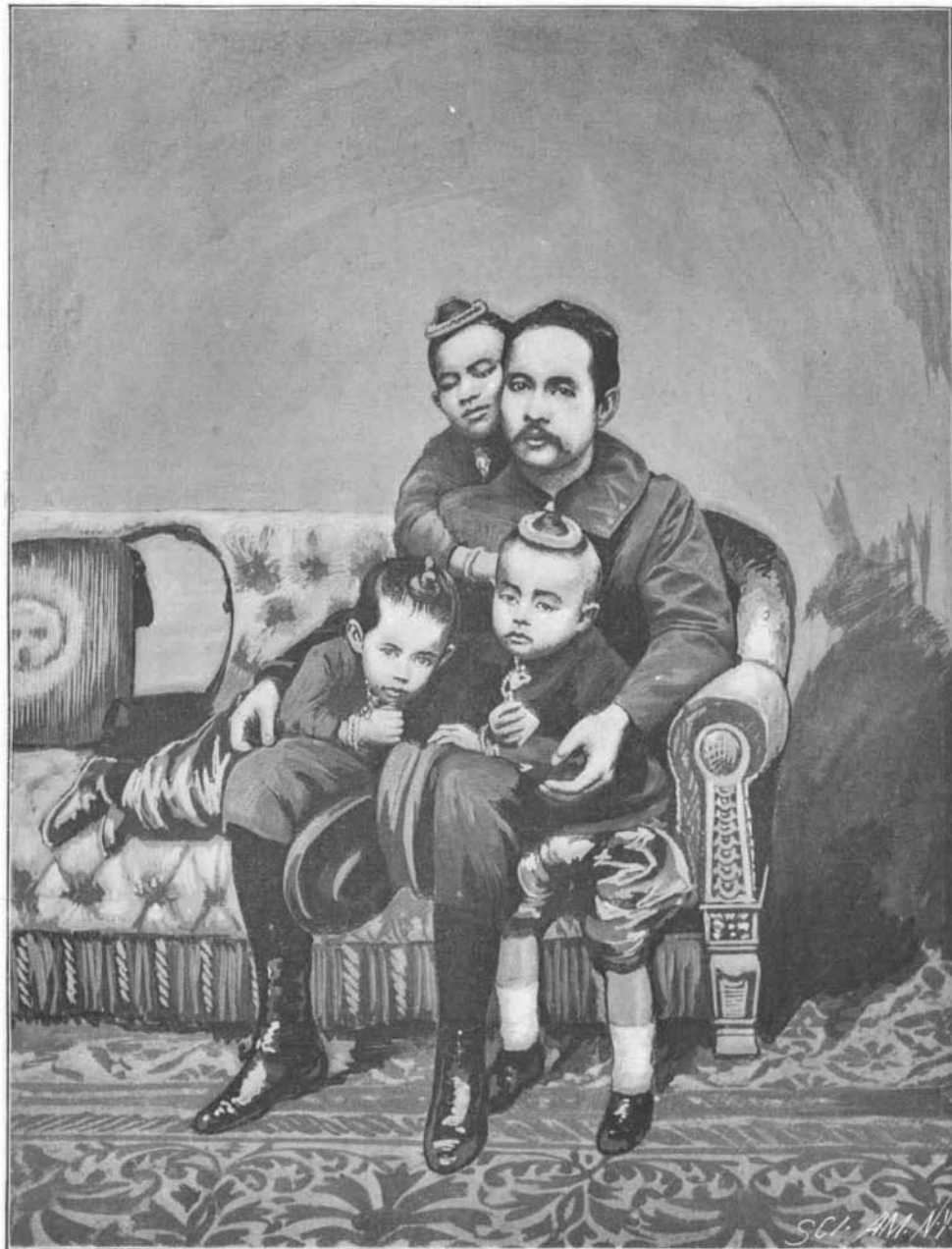
This change can undoubtedly be accelerated by the encouragement and co-operation of the English authorities and capitalists, and seeing that our intercourse with the country goes back 300 years, and that the latent wealth of the kingdom is immense, we should fall very far short of our traditions if we held back from utilizing so promising an opening. The serious object of the King's visit is to study our manufactures and mechanical processes, and to introduce such of them as are feasible into Siam. Then there follows the question of attracting foreign capital for the construction of railways and the working of mines. Foreign capital is undoubtedly timid of embarking on any ventures in Asiatic countries; but Siam offers a secure as well as a specially favorable field, and the support of the King and the chief members of the royal family provides a sure guarantee that is absent elsewhere. It is therefore reasonable to count on a special measure of success in this respect as the direct outcome of the King's visit. Commercial men can scarcely fail to realize and appreciate the possibilities of trade in the Menam, or of the development of the southern provinces of Siam, where tin and gold are known to abound. But political considerations not less strongly point to the advantages that must accrue from the development of Siam, and from placing her, as it were, firmly on her own feet. We are the supporters of Siamese autonomy, but as much cannot be said of the French, who are always complaining of the Siamese, and who seem to regret the convention that ties their hands, although we only yielded to them on the Upper Mekong with the object of effecting a pacific and satisfactory arrangement on the town, Menam.

We cannot forever stand in the path before a decrepit Siam, and therefore that country has to regenerate itself and to establish its



GIGANTIC HOLTZ MACHINE.

If the King has visited Europe from those high and meritorious considerations, it must also be admitted that his decision brings within our ken a very charming personality. No Oriental potentate will leave a more favorable impression behind him than the Siamese ruler, whose character, disposition, and deportment will attract unqualified admiration here as placing his Majesty at once en rapport with English gentlemen. The King's knowledge of English, which dates back from the time of his childhood, when he began his studies under an English governess, is very considerable, and will undoubtedly simplify his relations here, and at the same time contribute to a more perfect and harmonious understanding. It is stated on good authority that during the voyage to Italy from Bangkok on board the royal yacht Mahachakhri, the



THE KING OF SIAM AND CHILDREN.