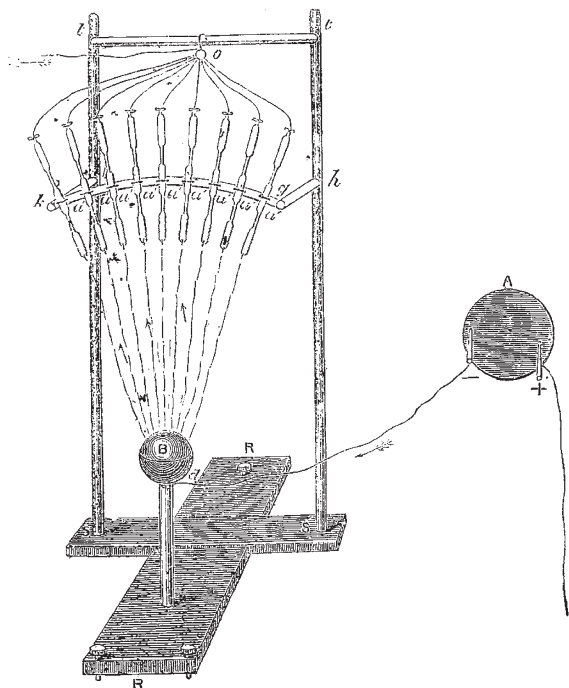


These Geissler tubes represent the upper part of the atmosphere which becomes luminous when the aurora borealis is observed in the northern hemisphere. The phenomena produced by the Lynström apparatus are quite consistent with the theory advocated by Swedish observers that electrical currents emanating from the earth and penetrating into the upper regions produce auroræ in both hemispheres. The experiment differs from the



apparatus of M. De la Rive, who placed his current *in vacuo*, and did not show the property of ordinary atmospheric air of allowing to pass unobserved at the pressure of 760 mm. a stream of electricity which illuminates a rarified atmosphere. The experiment is most attractive, and hundreds of persons witness it every day.

The arrangements for the general daily meetings of the Congress are very good. Every morning the seven sections meet at nine o'clock and discuss the subjects placed on the *ordre du jour*. At three o'clock all the members meet in the Salle des Etats, under the presidency of one or other of the presidents of the various geographical societies of Europe. No discussion takes place at these general meetings, but the presidents of sections report on the discussions which have taken place at the morning sitting. Consequently, all who attend the evening meeting obtain a summary of the transactions of the day. Visitors are admitted to the general meetings only. Sometimes several sections meet together in the morning to deliberate on subjects of common interest, and general deliberations will be proposed at the end of the session.

A subject very much discussed has been the adoption of a first meridian. Struve proposed Greenwich. One of the most interesting questions has been on the substitution of the centesimal for the sexagesimal division of the quadrant, or of the entire sphere. It was decided by twenty-three to seven in favour of the centesimal division of the quadrant, reserving the larger question of its extension to the entire sphere till the matter is brought before the general meeting. The present system found no advocate. M. Bousquet de la Griè's proposal for dividing the compass into 360 points, to be reckoned from left to right, has also been approved.

The question of ascending currents in the atmosphere has been seriously discussed, M. Faye maintaining that only descending waterspouts have been observed. M. Faye's theories, however, have found very little support. The general opinion, as supported by Mohn and others, being that no descending current can be observed without an ascending one, so that there is a circular rotation of the atmosphere in altitude, and the upper strata are in constant communication with inferior strata of the atmosphere.

A commission has been appointed on the question of a great Transiberian railway. The Russian colonel Bogdanovitch spoke in favour of a line by Ekaterineburg and Tiumen, which has the advantage of putting Europe into communication with the large rivers of Southern Siberia. He said that the Russian government had decided upon the construction of a section 1,000 miles long.

Lectures were delivered by MM. Gerard Rohlf, Nachtigall, and Schweinfurth, on the exploration of Central Africa, and these intrepid explorers answered a number of questions in reference to their travels.

On Sunday about 300 members, amongst them a number of ladies, visited Compiègne to see the museum of Cambodian antiquities, collected by M. Delaporte, a lieutenant in the French national service, and exhibited in the ex-imperial palace inhabited by Napoleon III. M. Delaporte published in 1873, at Hachette's, a large work in two folio volumes, with an immense number of illustrations, and a graphic atlas in chromolithography. The King of Cambodia, having been admitted to a French protectorate, sent a number of antiquities to Compiègne, where M. Delaporte has organised the museum which was visited on Sunday. M. Delaporte himself was in attendance to explain the manner in which all those astonishing relics of an unknown part had been brought to light. These monuments have undergone a systematic destruction, it is supposed, in the fifth century B.C., and are mostly concealed in the centre of immense forests which have grown since that time, and situated in infested districts which are mostly inhabited by tigers and poisonous snakes. It was M. Jules Simon who had the honour to grant the mission whose results have been so fruitful, and the zeal elicited by explorers was so great that the credit of 10,000 francs granted was almost sufficient to collect a quantity of stones which fill the basement of the Palace.

Of the juries appointed by the Geographical Congress five have given their awards, while the remaining two have not yet come to any decision. Letters of distinction, the highest reward the Congress can bestow, have been conferred upon England—namely, in Group 1 upon the Topographical and Trigonometrical Office of India and the Ordnance Survey Office of Southampton; in Group 2 upon the Hydrographic Office; in Group 3 upon the Meteorological Office, the office of Geological Survey of Great Britain, and the Royal Geographical Society of London; in Group 4 upon the Palestine Exploration Fund for maps and plans and photographic reliefs. Letters of distinction have also been conferred in the United States upon: Group 2 the Navy Department; Group 3 the United States Signal Service, and upon Mr. William Martin for a description of the island of Hawaii. Numerous first-class medals have, moreover, been conferred upon Englishmen and Americans.

THE MANATEE AT THE ZOOLOGICAL GARDENS

OF those mammalian animals which, instead of making their customary abode the land, reside in water either fresh or salt, the Seals and Porpoises are best known by sight to the public at large. These two just named animals are representatives of two great zoological groups, the Pinnipedia and the Cetacea, the relationships

between which are not at all intimate; in other words, notwithstanding the similarity in their habits, they must have been derived independently from different, probably terrestrial, mammalian ancestors, which themselves were not intimately related. The Pinnipedia include the Seals, Sea-Lions, and Walruses, animals closely allied to the Bears, Dogs, and Cats. The Cetacea include the Whales, Dolphins, and Porpoises, which are so much modified that their correct affinities are still matters of doubt.

There is, however, still another aquatic mammalian group or order which at the present time includes among its members only two well-marked forms or genera; these being the Dugong and the Manatee. The order is that of the Sirenia, and its members differ in their organisation considerably from both the Seals and the Whales, more nearly approaching the latter, and appearing to be most nearly allied to the Ungulate Herbivora.

The Manatees—of which there are two well-defined species, one found in and at the mouths of the rivers discharging themselves on the eastern coast of intertropical America, and the other on the opposite side of the Atlantic Ocean, on the shores of Western and Southern Africa—are large-sized somewhat seal-like herbivorous animals, sometimes reaching 17 feet in length, differing from the Seals and resembling the Whales in not having any indications of hinder extremities, at the same time that the caudal portion of the body is expanded into a horizontally-flattened tail. In them the contour of the face is peculiar, the whiskered snout being much flattened, like a pointed cone with a considerable portion of the end cut off transversely. The large nostrils are situated within a short distance of one another, at the upper portion of the truncate edge; they are closed by valves during the time that the animal is submerged. The eyes are peculiarly small and inconspicuous. The external ears are wanting. The mouth is small, without front teeth, and is placed low down, the gape being close to the anterior end of the animal. The neck, from its extreme shortness, can scarcely be said to exist as such.

Neglecting the tail, the body, which is very sparsely covered with hair, has the shape of a much elongate barrel, slightly flattened above and below. The skin is very like that of the Hippopotamus. Far forward, just behind the head, the two fore-limbs project laterally from below. The elbow is conspicuous, though placed not far from the side, and the fore-arm together with the hand, form a flat oval flapper devoid of any indications of fingers, except that at the extreme edge rudimentary nails are developed. These arms are used by the animal as claspers, which can be flexed over the chest; employed as locomotor organs at the bottom of the water, or made to assist in the prehension of food. In the female the mammae are pectoral, and the consequent general configuration has probably led to the fabulous descriptions of the existence of "mermaids."

In shape the tail is unlike that of any other animal, being spatulate. It most resembles that of the Beaver, but is a direct continuation backwards of the body, and is covered with an unmodified skin. As in the Whales and Beavers, the vertebral column forms a bony axis of support for the flattened muscular and fibrous expansion covered with thick cuticle, which forms the propelling mechanism.

The skeleton is of an extremely dense texture and very massive; the skull and ribs more resembling ivory than bone. In the number of the vertebrae which form the neck there is also a peculiarity, not shared even by its ally, the Dugong. In all mammalia there are seven cervical vertebrae, the same in the Giraffe as in the Elephant, in the Kangaroo as in Man. In the Manatee there are, however, only six, as in one other mammal only, namely, Hoffmann's Sloth. The ribs, as well as being very dense, are broader than is usually the case. As in the

Whales there are no bony traces of hind limbs, a rudimentary pelvis being alone found.

As far as the soft parts are concerned, it may be mentioned that the apex of the heart is deeply cleft, more so than in the Elephant and the Seals. This is the case also in the Dugong. The arteries in many parts break up into innumerable minute branches before they become distributed, to form the so-called *retia mirabilia*. The lungs run a considerable distance along the back of the animal, nearly reaching the root of the tail, instead of being entirely included in the thoracic region.

The half-grown female Manatee which has just reached the Zoological Society's Gardens, is the first living specimen which has been seen in this country. It came from the coast of Demerara, and was three weeks on the journey, during which time it was in a big swinging tank constructed to hold it. Two previous unsuccessful attempts were made in 1866 to forward living specimens to Regent's Park; in one case the animal did not die till within two days of its reaching Southampton. The valuable memoir by Dr. Murie in the eighth volume of the Society's *Transactions* was based on the dissection of these two specimens, which were preserved immediately they died in a condition fit for minute investigation.

The living animal appears to be in a good state of health, its movements are much less active than those of the Seals, and as food it takes vegetable marrow and lettuce in preference to anything else.

A third member of the order Sirenia was the *Rhytina*, a toothless animal, sometimes reaching 24 feet in length, discovered by Steller during Behring's expedition in 1741 on the shores of the island which bears his name. The slaughter of these creatures for their flesh was so recklessly conducted that they had all disappeared in 1789, and have never been seen since. There are three skeletons of this extinct species (*Rhytina stelleri*) in existence, all in Russia.

THE WÖHLER FESTIVAL

THE 31st of July was a festive day for Chemical Germany, and for the numerous admirers of the celebrated senior of German chemistry, Prof. Wöhler of Göttingen; not only as the seventy-fifth anniversary of his birth, but also as the supposed fiftieth anniversary of his entering upon his professional duties. In 1825 Dr. Wöhler became teacher of chemistry to the Berlin "Gewerbeschule;" in 1831 he exchanged this position for a similar one in Cassel, and from 1836 up to the present day he has been forming generations of chemists who flocked to Göttingen attracted by his fame. We need not remind our readers of the numerous discoveries of this great and genial man, of which the artificial formation of urea, the production of aluminium, his researches on cyanic and cyanuric acids, on boron and silicon, his joint researches with Liebig on uric acid and benzoyl-compounds, and many others, are known to all chemists, and have opened new roads to science.

From eight o'clock in the morning until noon of the above-mentioned day, one deputation relieved another to express their thanks and congratulations. The Faculty of Science of Tubingen sent a diploma of Doctor of Science, so that similar to the triple crown of the Head of the Roman Church, three doctor's degrees, that of Medicine, of Philosophy, and of Science are now worn by the Head of German Chemistry. The German Chemical Society at Berlin was represented by three members of its council, two of this deputation being pupils of Dr. Wöhler. They presented an appropriate address in a handsome cover of malachite, an allusion to the services rendered by the great chemist to the allied science of mineralogy. In the evening many of the undergraduates of the University (now eleven hundred in number) expressed their admiration in the time-honoured shape of a torch procession.