

kind, inasmuch as they readily transmit the invisible rays. By employing the light of the powerful galvanic battery of the royal institution, and lenses and prisms of quartz, the author obtained a spectrum six to eight times as long as the ordinary visible spectrum, and crossed from one end to the other with bright bands. The interposition of a plate of glass shortened the spectrum to a small fraction of its original length, the highly refrangible portion being entirely absorbed. The discharge of a Leyden jar gave a spectrum which was at least as long, but which was not perfectly similar to the others, as it consisted only of insulated bright bands. Stokes remarks finally that in winter, even in bright sunshine, he could obtain no such extended spectrum; as the spring advanced, the light constantly improved; he could not, however, see so far into the spectrum as at the end of last August. The Earth's atmosphere was evidently not transparent for the very highly refrangible rays of the sun's light.—*Pogg. Ann.*, lxxxix, 627.

TELEGRAPHIC INVENTIONS.—The *Official Venice Gazette* states in a special article, that the Olympic Academy of Vicenza, having carefully examined the discovery made by their fellow-citizen Tremeschini of electric telegraphy by secret transmission, has publicly declared it to be a successful invention. The commission appointed to test its efficacy was composed of the councillor-delegate, of the Podesta, the superior commissary, and the Academic council. The first experiment consisted in sending and receiving a despatch in the common way, without secrecy. In the second experiment a despatch was sent secretly, and the answer received in the same manner, by the aid of the new apparatus. In the third a despatch was sent openly, and the answer received secretly, to show that the secret apparatus might be used or suspended at will. The results of the inquiry are said to show—first, that the apparatus of Tremeschini may be applied to Morse's telegraph; secondly, that when the despatch is sent secretly it can only be received so, any fraud in that respect being subject to immediate detection; thirdly, that secrecy may be suspended or applied at pleasure.

THE ROYAL OBSERVATORY at Brussels has just been placed in electric communication with the Royal Observatory, Greenwich, for the purpose of facilitating the determination in a direct manner of the difference of longitude between the two establishments. This operation is one of extreme delicacy, as well as of great importance to geodesy. The electric communication is made in such a manner that every oscillation of the pendulum at Brussels will be represented with accuracy at Greenwich, and *vice versa*. The observations are to commence this week.

PUBLIC HEALTH—LEAD, COPPER OR ZINC PIPES.—The Minister of Commerce, Agriculture, and Public Works in France, has just issued a circular to all Préfets calling upon them to put a stop to the use of lead pipes in Breweries. The Minister in his circular states that "Experience proves that beer, by simple contact with lead, takes up an appreciable quantity of the metal, and thus acquires poisonous properties. Lead pipes are not only used in breweries; but a custom has arisen in taverns, and in houses where wine is sold, of using a small pump, which communicates with the barrels in the cellar by means of a leaden pipe. The use of the pipe in this instance is peculiarly objectionable, inasmuch as the action of the pump is at intervals only. A whole family was poisoned by using for some time a pump of this kind for drawing up their ordinary consumption of wine. The Préfet of the North, who had already taken the initiative in adopting measures necessary for putting a stop to the methods used in his department for the refining of beer, has, following the advice of the Council of Public Health, just prescribed the use of lead, copper, or zinc pipes for the drawing or transmission of this liquid."

PREPARATION OF VALERIANIC ACID FROM FUSEL OIL.—Gruneberg recommends the following proportions as the most advantageous, 2½ lbs. of bichromate of potash are to be introduced into a retort, and 4½ lbs. of hot water poured upon the salt. A cooled mixture of 1 lb. of fusel oil and 4 lbs. of sulphuric acid diluted with 2 lbs. of water is to be allowed to flow very slowly and in a thin stream into the liquid in the retort, and the whole is then to be distilled. The distillation goes on quietly, and 9 ounces of oily valerianic acid are obtained.—*Journal sur prakt. Chemie*, ix, 169.

PHOTOGRAPHY ON TEXTILE FABRICS.—Messrs. Wulff, of Paris, have placed before the French Institute some specimens of photography on linen, oil cloth, chintz, &c. This discovery will be of great importance for architectural ornamentation and other useful purposes. Such pictures can be cleaned by wiping, nay, they can be washed, and a portrait on linen or long-cloth can be forwarded in a letter. As

moreover, these photographs can be obtained at a cheaper rate than those on metal or paper, the art will become more popularized. Messrs. Wulff keep their procedure yet secret, but it is thought that they operate on a preparation of iodized collodion.—*Bailler*,

PREPARATION OF FERROCYANHYDRIC ACID.—Liebig gives the following simple method of preparing this acid. When a saturated solution of ferrocyanate of potash is mixed with its own volume of fuming muriatic acid added in small portions at a time, a snow-white precipitate of pure ferrocyanhydric acid is thrown down. These are to be washed with muriatic acid, dried upon a brick, and dissolved in alcohol; from the alcoholic solution the acid may be obtained in beautiful crystals.—*Ann. der Chemie und Pharmacie*, lxxxvii, 127.

A NEW COMET.—On the morning of the 2nd December, a comet was discovered by Mr. Klinkerfues, of the Göttingen Observatory, on the border of the Constellation Perseus, near the foot of Andromeda. At four o'clock, a. m., on the 3rd, its right ascension was in lh. 37m. 20s. and its declination 51 deg. 37 sec. north. The diurnal motion in right ascension was 2m. towards the west, and in declination of 1½ deg. towards the south. Mr. Klinkerfues was the discoverer of the third comet of the present year, which became so conspicuous at the end of August in the north-western heavens.

SEPARATION OF NICKEL FROM COBALT.—Liebig has found that when a current of chlorine is passed into a cold solution of the double cyanides of cobalt and potassium and of nickel and potassium, the liquid being kept alkaline by the addition of caustic soda or potash, the nickel is completely converted into sesquioxide and precipitated, while the cobalt remains in solution as unaltered double cyanid. The sesquioxide of nickel may be washed and the nickel weighed in the form of protoxyd; it is perfectly free from cobalt. The solution after passing the chlorine must still be alkaline. The smallest trace of Nickel gives an inky black color when dissolved in cyanid of potassium, and treated with chlorine. This method of separating cobalt and nickel has perhaps some advantages over Liebig's second method which it will be remembered, consists in boiling the mixed double cyanids with oxyd of mercury, which precipitates the nickel but not the cobalt.

FOSSIL HUMAN SKULLS—WONDERFUL IF TRUE.—The German Association for the Advancement of Science, lately held at Tübingen, appears to have been a most successful gathering. In the course of the proceedings, Prof. Karnat announced that Germany had coal enough to supply herself, and all the rest of the world, for the next 500 years. This is important if true; but the great fact elicited at the meeting was the clearing up of the mystery of the fossil human teeth exhibited at the preceding year's meeting, which were found, it will be recollected, in the Swabian Alps, in strata of the mammoth period, and doubts expressed as to their being human teeth, as a man was not believed to have existed in the time of the mammoth. Since the meeting in 1852, however, a number of perfect human skulls have been found in the same locality with the teeth in them, which discovery if correctly reported, would naturally lead to the conclusion that a race of human beings was in existence contemporaneously with the mastodon, and other of the larger antediluvian animals.—*Mining Journal*.

THE NOVA ZEMBLA BOTTLES.—Colonel Sabine on the part of the Committee of the Royal Society appointed to inquire into the probable origin of some bottles recently found on the shores of Nova Zembla, reported:—

"That the Committee had availed itself of the assistance of the Committee for managing the affairs of Lloyds, and had received from Captain Halsted a report, which is subjoined: and that the Committee have further requested that the Agents for Lloyds on the coast of Norway may be directed to obtain specimens of the bottles stated to be employed by the Norwegian fishermen, to compare with the bottles received from the Admiralty. The evidence relating to the bottle exhibited in the Vestibule of Lloyds, appeared to prove conclusively that it was of Norwegian make and similar to those used by the Norwegian fishermen for the past five years as floats for fishing nets.

Miscellaneous Intelligence.

KING'S COLLEGE, LONDON.—The following appointments have been made by the Council of King's College, London, consequent on the vacancy in the List of Professors created by the removal of the Rev. F. D. Maurice. The Rev. Dr. McCaul is elected into the Chair of Ecclesiastical History,—in addition to that of History and the Old