Artificial Stone.

The *Suffolk Chronicle* contains a notice of the manufacture of artificial stone in large masses, upon a plan lately discovered by Mr. Frederick Ransome, of Ipswich. The composition of the stone is not given, but it appears that the principal binding material is the indestructible silicate of lime. Blocks weighing a ton and a-half may, it is stated, be completely solidified and hardened in the brief space of two hours, whereas by Mr. Ransome's original process, only small blocks could be made, after a long period for drying and hardening in the kiln. The *Chronicle* quotes a report by Dr. E. Frankland, F. R. S., of St. Bartholomew's Hospital, who says the "patent concrete will be found equal to the best of Portland, Whitby Hare Hill, and Park Spring stones in its power of resisting atmospheric degradation, and if the newness of Ransom's stone (the specimen experimented upon not having been made a fortnight) be taken into consideration, together with the well-known fact that its binding material, silicate of lime, becomes harder and more crystalline by age, I am induced to believe that Mr. Ransome has invented a material which, with the exception of the primary rocks, is better capable of giving permanency to external architectural decorations than any stone hitherto used." We are informed, moreover, that such is the confidence entertained in the imperishable properties of this material, it has been selected by Mr. Fowler, the engineer, for the facing of the Stations of the Metropolian Railway now in progress. We may also state that its capabilities of resisting strain and sustaining pressure have been found to be nearly three times that of Portland stone; thus, it may be fairly assumed that these qualities, combined with facility of production and the inexpensive nature of the materials used, must ensure for it general adoption in the construction, as well as in the embellishment, of buildings generally, and in works of art. Mr. Ransome has made enlargements and introduced fresh machinery at his works to carry on an extensive manufacture, but it should be observed that the process is so simple that the stone can be manufactured on the spot where the demand arises.

Thallium.

Mr. Crookes, whose discovery eighteen months ago of this new element by the spectroscope we have already announced, has since prepared numerous compounds of it, some samples of which are to be seen in the Chemical department of the International Exhibition. We were shown some time since a specimen in its pure metalic state, obtained by Mr. Crookes, but as no detailed statement of its characters, nor of the nature and actions of its salts, have been as yet published, although a short abstract has been displayed with the specimens since the opening of the Exhibition, it may be interesting to our readers to know what this new element—the only one discovered by an English chemist since Sir Humphrey Davy's detection of the metallic bases of the alkalies—is like. It is a dense heavy, rather lustreless metal, very like lead, to which metal it is also very similar in its physical properties, but is a trifle heavier, and tarnishes perhaps a little quicker. Its colour, however, is not identical. In chemical properties it is similar to mercury, lead, and bismuth. Mr. Crookes is continuing his researches, and we are glad to state that the Royal Society has voted him a grant of 50*l.* towards the expenses of these costly investigations.—*London Review.*

The Atlantic Telegraph.

The paddle-wheel steam surveying vessel *Porcupine*, 3, Master Commander Hoskyn, at Devonport, appointed on the application of the directors of the Atlantic Telegraph Company to take soundings in the Atlantic, will be provided with a donkey-engine on deck to assist the men. The machines which will be used are those called the "Bull-dog" machines. They are constructed on the principle best adapted for bringing up portions of the bottom. Brooke's apparatus will also be employed. The *Porcupine*, it is expected, will, in the first place proceed to that part of the Atlantic where there is what is popularly called a cliff in the bed of the Ocean, at which point it is supposed the former cable was broken. At the head of this declivity, about 200 miles from Ireland, there is a depth of 550 fathoms, and at the foot 1,750 fathoms, showing a difference of 1,200 fathoms. But this decline extends over a distance of eight miles, so that the fall is only one in eight. Other portions will, no doubt, be sounded. It is stated that in the event of a second attempt to establish telegraphic communication across the Atlantic, some place on the coast of Ireland, further north than Valentia harbour, will be selected for the purpose of obtaining a more convenient bed for the reception of the wire.

Effect of Small Elevations on the Mean Temperature of the Air.

M. Becquerel shows that there exists a vast difference between the temperature of the atmosphere close to the ground, and that measured at an altitude of 60 to 70 feet above it. The soil, its nature, colour, and the objects which cover it, all influence the temperature within the above limits. It had long been observed that vegetation varies according to height, and that certain plants which cannot be cultivated in the valleys, will thrive very well on the tops of the adjoining hills. Often, also frost will injure the flower of the vine, and respect that of the almond tree close by, which grows at a higher altitude. The director of the Botanical Gardens at Montpelier, has observed that laurel, fig, and olive trees die away in the lower parts of his garden, but are spared a few metres higher up, though in both cases protected by the same contrivances. M. Becquerel states that the mean temperature of the air at the "Jardin des Plants," during the year 1861, increased regularly from one metre to 33 metres above the soil, and this circumstance has prompted him to endeavour to fix the altitude of which the temperature represents the real average at a given spot. He has remarked the curious fact that at 6 a.m., all the year round, the temperature is the same at any altitude not exceeding 21 metres; 6 o'clock a.m. is, therefore, a critical period of the day, the temperature of which must stand in a certain relation to that of the month or year, and this relation he expresses by certain co-efficients, which vary according to the different seasons, and reach their maximum in summer, and