

Correspondence.

A Mechanical Imitation of the Human Voice.

To the Editor of the SCIENTIFIC AMERICAN :

Prof. Tyndall, in his work on "Sound," describes various methods of imitating the human voice by mechanical devices. The most successful seemed to be to stretch a piece of sheet rubber, in which was small slit, over the end of a glass tube, and to blow in the other end. I have found that this experiment may be successfully performed by stretching the rubber over the open top of a receiver from which the air is being exhausted by a Bunsen Sprengel pump. As the rubber is stretched and the edges of the slit approach and recede from each other, a decided change in pitch is noted, while the continuous action of the pump permits the experiment to be carried on indefinitely, and adapts it to class room demonstrations.

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Phosphorescence Caused by Decay.

To the Editor of the SCIENTIFIC AMERICAN :

Kindly explain me the following : One night, about 10 o'clock, having occasion to look in the pantry, I saw what afterward proved to be a common piece of pork steak emitting a phosphorescent gleam, not unlike that produced by the striking of matches upon a damp surface. Hardly crediting my eyes, I struck a match (at the light of which the gleam disappeared, of course), examined the meat, and found it had the slightest odor of putrefaction, but not enough to make it uneatable, I thought.

Blowing the match out, I again examined it in the dark, and found that the gleam did not appear on the bony surface of the meat. It is needless to add that I did not eat it.

H. P. P.

[This is not an uncommon phenomenon. At certain stages of decay, both animal and vegetable substances are phosphorescent. The writer remembers, many years ago, seeing a log on a distant hillside which shone at night for an entire winter. It is very often seen in meat as in the case cited above. It is not well to eat food which has reached this stage of decay.

The cause of the phosphorescence is not fully understood. It is probably due to the chemical changes concerned in putrefaction.—EDS.]

Air Expansion Caused by Lightning.

To the Editor of the SCIENTIFIC AMERICAN :

During a severe thunderstorm, the lightning struck a barn not far from the house where I stopped, without setting it on fire. I ran to the barn, which was filled with smoke smelling much like sulphur. Two horses standing in the barn were completely deafened (probably by the report), but since have recovered their hearing.

In the loft huge slivers were torn from the posts on all four sides, and from the rafters also, in places, where it had apparently made its way downstairs and to the ground. One side of the barn was warped outwardly; a window in that side was demolished, but no glass could be found inside, all seeming to have been blown out. It looked as though an explosion had occurred inside of the barn, the outside damage being small. Only a few clapboards and shingles were knocked off.

On examining what I had before considered to be lightning conductors, I was surprised to find them mere dummies, having no electrical connection with the ground. There were two rods, one on each end of the barn, extending about four feet into the air, each upheld by four legs screwed into the shingles of the roof.

On reading up the subject of lightning rods, I find their object is to carry off to the ground the surplus electricity in the air, thereby preventing a discharge taking place in that vicinity, which gave me the idea that perhaps the mock lightning rods had conducted the electricity to their extreme limit, viz., the points of the screws passing through the shingles, thereby heavily charging the loft and causing a discharge to take place therein.

Please inform me whether my theory is at all probable.

H. D.

[The lightning rods were surely in this case worse than none at all, and doubtless served as a path for the discharge into the building. When the electric discharge passed into the barn, it so heated and expanded the air as to blow the windows out and bulge the side walls. The lightning did not do this directly.

A lightning rod has two objects: one, to discharge electricity up from the earth into the air as the cloud approaches and so prevent the stroke, if possible; the other to serve as a path of discharge to the earth from the cloud. For both purposes the rod must extend down into the earth and into wet earth.—ED.]

ONLY seventy years have elapsed since the first railway in the world was finished. During that comparatively brief period 400,000 miles have been constructed, the British empire accounting for about a sixth.

Science Notes.

Our esteemed English contemporary Natural Science will cease publication at the close of the present year. All who are fond of natural history will be sorry to learn this interesting scientific journal cannot be maintained. The cessation of the present journal could be prevented if some one with sufficient time and means would come forward and assume the responsibilities of the present editor, who announces all the stock, appurtenances, and goodwill will be handed over to any scientific man who is prepared to take the responsibility and continue the journal.

Corundum is composed of the oxide of aluminum (Al_2O_3), but traces of the oxides of other metals are generally present as coloring materials. As in the cases of other minerals of non-metallic luster, the color of corundum varies considerably. Sometimes the mineral is colorless or white, and at other times it is found possessing a blue, pink, red, brown, gray, or other color. The relative weight of corundum compared with equal volumes of many other minerals is high. It has a specific gravity of about 4, while feldspar has a specific gravity of from 2.4 to 2.7 and quartz of 2.5 to 2.8.

Particulars concerning the expedition which will leave England in the course of the next few days for the purpose of visiting the almost unexplored island of Sokotra, situated about 150 miles east-northeast of Cape Guardafui, were given recently in The London Times. The party will consist of Mr. W. R. Ogilvie Grant, of the department of zoology in the British Museum; Dr. H. O. Forbes, the director of the Liverpool Museum; and Mr. Cutmore, taxidermist attached to the latter institution. The Royal Society, the Royal Geographical Society, and the British Association have provided part of the funds for the undertaking. The expedition will sail for Aden, proceeding thence to Sokotra by the Indian Marine guardship "Elphinstone," which, in compliance with a request made by the authorities of the British Museum, has been kindly placed at the disposal of Mr. Grant and Dr. Forbes for the purpose of conveying them to the island and back to Aden on the termination of their stay. The main object of the expedition is to investigate thoroughly the fauna of the place and make large and complete collections in every branch of zoology.

The New York Board of Health has approved of the recommendations suggested by Dr. Biggs, the bacteriologist to the board, that it should make to the Board of Education. Among these are the following: 1. The use of slates, slate pencils, and sponges shall be discontinued in all the public schools. 2. According to requirement, pupils shall be supplied with pencils and penholders, each pupil to retain those received in a box provided for the purpose, such box to be marked with the pupil's name. Pencils and penholders shall not be transferred from one pupil to another without suitable disinfection. 3. All school property left in the school building by a child suffering from any contagious disease, and all such property found in a room occupied by a family in which a case of infectious disease has occurred, shall be taken by the Health Department for disinfection or destruction. 4. Books which are taken home by pupils shall be covered regularly each month with brown manila paper. These regulations would appear to be somewhat stringent in character, but there is no doubt that scope exists for more precautions than are at present taken in our board schools. Notification has done much to minimize the spread of infectious disease, but it is attention to details such as the foregoing that will eventually stamp it out.—The Sanitarian.

Recently there was a "private view" at the Botanical Garden, Edgbaston, of the installation of acetylene gas, which had been introduced into the houses for the purposes of a garden party given to the United Kingdom Band of Hope Conference, and also for the garden party given by the Health Committee to the Sanitary Congress. There was a large attendance of members of the Botanical and Horticultural Society and others, and the various demonstrations and explanations which were given were listened to with much interest. In the course of the evening the honorable secretary of the gardens, Prof. Hillhouse, took the opportunity of saying that in the interests of the society he had studied the light from two points of view—injury to plants from evolved gases and relations with color. He had gone through the houses with the utmost care, and had failed to see the smallest sign of any of those injurious effects which the combustion of coal-gas had upon plants, and in this conclusion the veteran curator of the gardens, Mr. Latham, entirely agreed. The second point for inquiry received an equally satisfactory answer. The most critical colors, so far as artificial illuminants were concerned, came out of the ordeal with success. The mixed shades of mauve and magenta, such as those of the bougainvillea, were, at least, as perfectly displayed as with the arc light, while the various shades of yellow, from pale to deepest chrome, which were possessed by such a flower as the allamanda, could hardly be more distinguishable in ordinary sunlight.

Miscellaneous Notes and Receipts.

Removing Mineral Oil or Wax Spots.—For removing these spots, which are very hard to eradicate, especially when they have penetrated deeply into the fiber, owing to ironing of the said bodies, aniline is recommended. This remedy is used in the following mixture: Aniline, 1 part; soap, 1 part; water, 19 parts.—Der Seifen Fabrikant.

New Embalming Process.—An essential advantage of this new embalming method lies in the use of non-poisonous substances. Moran, in Paris, employs a mixture of 40 grammes of saltpeter, 40 grammes of potassium carbonate, and 1 liter of glycerine, which he injects into the aorta in such a quantity that a slight swelling becomes perceptible on the surface of the body. The corpse of a child preserved in this manner is said to have remained perfectly intact after having been kept for two years.—Neueste Erfindungen und Erfahrungen.

Copper Resinate.—This is produced as follows, according to the Farben Zeitung: Dissolve 8.55 kilogrammes of ammonia soda (18 per cent) in 90 liters of water, and heat the whole to a boil. Now throw in gradually and in small quantities 45 kilogrammes of good resin, stir diligently, and allow to boil until the resin has completely dissolved and has transformed into resin soap. Next dissolve 23.4 kilogrammes of copper sulphate (blue vitriol) in 18 liters of boiling water, and pour the resin soap into it. The cupric resinate now separates as a thick mass, which floats on the liquid. Gather, press out in a cloth, and dry, whereupon the resinate will be ready for use.

Fast Printer's Ink.—For the production of printing ink fast to washing, take 5 parts of acetic acid and dissolve therein 1 part of lunar caustic. Stand away this solution for one day, and add 20 parts of copal varnish, to which a little lampblack is added. Since the brown shade of the lunar caustic coloring predominates after repeated washings, especially if the wash is exposed to the sun, it is advisable to give the print a greenish appearance by moistening it lightly with a few drops of water in which a little potassium iodide has been dissolved. This ink should be used as fresh as possible, and the lunar caustic dissolved in acetic acid and the copal varnish solution should, therefore, each be kept in a closed flask, from which the quantity necessary for the print is taken each time in the said proportion.—Papier Zeitung.

Japanese Alloys.—In Japan some specialties in metallic alloys are in use, on whose composition the following details are at hand: Shadke consists of copper with 1 to 10 per cent of gold. Articles made from this alloy are laid in a pickle of blue vitriol, alum, and verdigris, until they acquire a bluish-black color. Gui-shi-bu-ichi is an alloy of copper containing 30 to 50 per cent of silver. It possesses a peculiar gray shade. Mokume consists of several compositions. Thus, about thirty gold foils (genuine) are welded together with shadke, copper, silver, and gui-shi bu-ichi, and pierced. The pierced holes are, after firm hammering together of the plates, filled up with the above named pickle. The finest Japanese brass consists of 10 parts copper and 8 parts zinc, and is called "siachu." The bell-metal, "karakane," is composed of copper, 10 parts; tin, 10 parts; iron, 0.5 part; and zinc, 1.5 parts. The copper is first fused, then the remaining metals are added in rotation.—Journal der Goldschmiedekunst.

Diathermanity of Various Insulating Materials.—An interesting comparison of the insulating action of various materials has been instituted by Prof. Carpenter, says the Schweizerische Bau Zeitung. If the loss of heat of a non-enclosed pipe is taken at 1, the following rotation of figures is obtained for the effect of the insulating agents: Pale gray lead paint coat, 1.267; asphalt coat, 1.135; two layers of asbestos paper, 0.777; one layer of asbestos board, 0.594; four layers of asbestos board, 0.503; a wooden pipe, 0.320; magnesia, applied as paste, 0.224; slag wool, felt, 0.209; asbestos, mixed with felt, 0.208; slag wool, fibrous, 0.203; asbestos with sponge, 0.180; two layers of asbestos paper, 2.5 millimeters felt, 0.170. Consequently, the escape of heat seems to be increased by lead paints and asphalt paint. Remarkable is the slight increase in the imperviousness in using four layers of asbestos board, as compared with the results obtained by the use of only one layer.

AN improved form of hydrometer, by means of which the effect of capillarity is eliminated, is proposed by the Rev. H. O'Toole, of Blackrock College, writing in The Scientific Proceedings of the Royal Dublin Society. It is similar in principle to Nicholson's hydrometer, but, instead of one bulb, it has two connected by a narrow stem of the same material and sectional area as that which supports the weight. It is first loaded till the lower bulb is immersed and then loaded till both bulbs are immersed. The additional weights put in at the second observation represent exactly the weight of a quantity of liquid equal in volume to the upper bulb between the two points of immersion.