THE TELEPHONIC RECEIVER.

Mr. Preece has presented to the Royal Society the result of his investigations upon radiophony. They relate to the phenomena produced by the action of intermittent rays upon discs and vases of different substances. Confirming and pursuing the investigations of Mercadier in France, and of Tyndall, he has come to the conclusion that the sounds produced under these conditions are due to calorific effects, and not to light.

Caoutchouc and ebionite (hardened caoutchouc), are absolutely opaque, but they act as diathermics or tranparencies for calorific rays; the radiating heat can act through a screen of these materials.

It has been proved by delicate experiments, that six vibrations or more can be produced during a second, by the intermittent action of the heat, producing a dilitation of the disc's mass. The phenomena, therefore, produced by Bell and Tainter are not due to an absorption of heat, changing the volume of the affected substance.

Mr. Preece made use of a specially constructed chamber and is convinced that the sounds are produced by the contained air, and not by the discs or surfaces of the chamber. In it is placed a mechanism which recalls that by which the "moulinet" of Crook's radiometre is moved under the influence of the heat.

He has proved, finally, that the absorbing for the heat of the gas, contained in the chamber experimented on, influences the production of the sounds. These experiments have been repeated upon bottles blackened with camphor smoke, both on their exterior and interior surfaces.

Mr. Preece has thus been led to think that a wire of platinum, traversed by an intermittent current, can become a source capable of producing on suitable walls calorific rays, which have the power to cause sounds through the heating of the gas on contact with these walls.

The experiment was crowned with success; it was made at first by sending currents into a spiral of platinum by means of a stop-wheel turned with the hand, and when a good microphone was substituted a reproduction of the wood was effected.

Thus has been realized a receptive telephone founded upon an entirely new principle.—(*La Nature*).

ALTERATION OF MILK.

M. Fauvel, in the capacity of chemist to the municipal laboratory of Paris, has discovered that the milk employed for babes often undergoes an alteration which has hitherto been unsuspected. In his investigations he has noted the presence of cryptogamic vegetations. These are found in the tubes of glass and caoutchouc, which enter into the construction of the small feeding apparatus, especially so in the swelling of the rubber which the infant sucks. The new microphite can be easily cultivated in whey, and the author has thus observed the various stages of its development. This, however, is but the first of M. Fauvel's intended investigations. This discovery is important from a hygienic point of view. These observations were confirmed by the fact that twenty-eight out of thirty-one cases presented these symptoms. (*La Nature.*)

NOTES.

FIRE BALLS.—There are many persons who persist in their statement that fire-balls exist only in imagination; but here is the authentic statement of Henry O. Forbes, who, in a letter to *Nature* thus describes the phenomenon.

"I was standing in a window on the second floor of the Hôtel Braganza (in Lisbon), which stands close to and high above the Tagus, and had an unbroken view of the river. There occurred a flash followed by an instantaneous crash, but the tail of the flash, however, gave origin to two balls, which descended separately and not far apart, towards the river, and when quite close to, or in contact with the water, burst in rapid sequence, with explosions which might have been the crack of doom."

PHOSPHORESCENCE.—Mr. W. Crookes, after submitting the action of precipitated aluminum to the action of electric discharges in a Geissler tube, announces that a phosphorescence similar to that obtained from the ruby was developed. This is, evidently, the reproduction of the phenomena obtained, a long while ago, by M. Edw. Becquerel by means of the solar light. Mr. Crookes, indeed, adds that the aluminum, if sufficiently electrified, passes from an amorphous state into a crystalline structure, a fact quite credible, and that it assumes at the same time a rose shade kindred to that of the natural ruby, a tint very difficult to understand.

EFFECTS OF TEMPERATURE UPON MAGNETISM.—Mr. John Trowbridge has just completed the following experiment in the physical laboratory of Harvard University. He submitted a bar of iron to a great cold of 60° cent. below zero, obtained by evaporating CO^2. He proved that the decrease of magnetism, suspected by Wiedeman, if the bar be at a lower temperature than that allowing magnetic impregnation, is indeed a demonstrated physical fact. The bar, which had been magnetized at 20° C. below zero, had lost almost ⅔ of its magnetism after 47 minutes of exposure to this cold. He also observed that, by keeping a bar of steel for a certain time at a temperature of 20° cent., 50 per cent of its primitive magnetism was restored.

PREECE ON FAURE'S BATTERY.—Mr. Preece, the electrician, is not favorable to Mr. Faure's battery. He remarks that although it possessed considerable force its resistance was very feeble and it could therefore give a powerful current. He dwells especially upon "time" as a factor in electric experiments. A strong current of one minute duration can be readily obtained, but for purposes of lighting, something more durable is needed. It is a pretty thing, but for to-day it is not practical.

THE AURORA BOREALIS.—The idea that the Aurora Borealis gave forth a distinctly audible sound was hitherto regarded as absurd. Physicists, however, are beginning to acknowledge it as a fact. "*Nature*," of London has a few letters on the subject. There seems to be two opinions as regards the nature of the sound produced. One party pretends that the noise is analogous to the rustling of silk, the other party compares it to the sound of crackling flames. The question however will shortly be solved by means of baloon ascensions that are now being made.

ACTION of Light upon Phosphorescent Bodies.—M. Clémandot.—The author maintains that phosphorescence is a purely physical phenomenon, due to a vibratory action exercised chiefly by the blue ray of light. He connects these phenomena of vibration in phosphorescent bodies with those which light occasions in organized bodies.

NOTE.

I wish some one would begin with the start given by the paper on polarization of sound, in "SCIENCE" for May 14, and thoroughly go through the subject of Etherial Physics.

The mechanics and elementary laws of action of the Ether substance are needed.

The seemingly rotary or spiral course pursued by the particles conveying light and electricity, as shown in the polarization of light and in that of magnetism, are especial subjects of choatic conception. And there is more beyond! SAMUEL J. WALLACE.

NOTICE TO CORRESPONDENTS.

The writer of a paper "*On Ether*" received by us, will much oblige by forwarding his name and address.