cause corresponding variations in the heat at the point of contact of the needle with the cylinder, and this again produces a mechanical movement of the pressing point, as well as of the air surrounding it, sufficient to give forth sound-waves. If such be the case the effect should be different for different metals, those answering best which have the lowest thermal conductivity and also the lowest specific heat. That this is really so, is showing by substituting cylinders of other metals for the bismuth, all other things remaining the same. In this way I have compared lead, tin, iron, copper, carbon, and find that they all give forth the simple loose contact sound when the cylinder is stationary, but that it is only with bismuth that there is any very great intensification of the sound when the cylinder is rotated. Now, by consulting the appropriate tables I find that bismuth is a fraction lower than any other common metal in specific, while heat is much below them all, in thermal conductivity. This seems to bear out my explanation to a certain extent.

THE subject of a depraved taste in animals is an interesting one, which has not been studied as much perhaps as it might. In human beings it would seem to depend on ill-health of either body or mind, but in animals it would seem as if it might be present and the animal enjoy good health. One remarkable instance in an herbivorous animal we can vouch for. It occurred in a sheep that had been shipped on board one of the P. and O. steamers to help to supply the kitchen on board, but while fattening it developed an inordinate taste for tobacco, which it would eat in any quantity that was given to it. It did not much care for cigars, and altogether objected to burnt ends; but it would greedily devour the half-chewed quid of a sailor or a handful of roll tobacco. While chewing there was apparently no undue flow of saliva, and its taste was so peculiar that most of the passengers on board amused themselves by feeding it, to see for themselves if it were really so. As a consequence, though in fair condition, the cook was afraid to kill the sheep, believing that the mutton would have the flavor of tobacco. Another very remarkable case has just been communicated to us by Mr. Francis Goodlake: this time a flesh-eating animal in the shape of a kitten, about five months old, who shows a passionate fondness for salads. It eats no end of sliced cucumber dressed with vinegar, even when hot with cayenne pepper. After a little fencing it has eaten a piece of boiled beef with mustard. Its mother was at least once seen to eat a slice of cucumber which had salt, pepper and vinegar on it. The kitten is apparently in good health, and its extraordinary taste is not easily accounted for. Even supposing it once got a feed of salmon mayonaise, why should it now select to prefer the dressing to the fish?—*Nature.*

NATURAL ENEMIES OF THE TELEGRAPH.—There is, apparently, no apparatus so liable to be interfered with by what we may call natural causes as the electric telegraph. Fish gnaw and mollusks overweight the submarine conductors of the subterranean wires; while there is at least one instance of a frolicsome whale entangling himself in a deep sea cable, to its utter disorganization. It is stated that within the three years ending 1878, there have been sixty serious interruptions to telegraphic communication in Summatra, by elephants. In one instance, these sagacious animals, most likely fearing snares, destroyed a considerable portion of the line, hiding away the wires and insulators in a canebreak. Monkeys of all tribes and sizes, too, in that favored island, use the poles and wires as gymnasia, occasionally breaking them and carrying off the insulators; while the numerous tigers, bears and buffaloes on the track render the watching and repair of the line a duty of great danger. In Australia, where there are no wild animals to injure the wires, which are carried great distances overland, they are said to be frequently cut down by the scarcely less wild aborigines, who manufacture from them rings, armlets and other varieties of barbaric ornament It has been suggested as a means of protection in this case that the posts should be constructed of iron, when the battery could be used to astonish any native climbing them with felonious intent.—*Scientific American.*

PHYSICAL NOTES.

IN an article of great length, extending through the last three numbers of the *Annalen der Physik und Chemie*, which exhibits extraordinary scope of research and ingenuity, the learned Professor Quincke exhausts the subject of electrical expansion. The following results are drawn from his investigation:

1. Solid and liquid bodies alter their volume when they are acted upon, the same as Leyden jars, by electrical forces.

2. This change of volume is not the effect of heat, but is mostly an expansion; though it may also be a contraction, as in the case of the fatty oils.

3. No change of volume was observable in gases under the action of electrical forces. If such occurred it was smaller than $\frac{1}{3000000000}$ of the original volume.

4. There was an instantaneous change of volume in flint glass, but it took longer in German glass, which is a better conductor of electricity. By discharge of the coatings of spherical and tubular condensers, the glass resumes its original volume.

5. There is a simultaneous change of length and volume in tubular condensers.

6. The change of volume and length increases as the difference of potential in the coatings, and inversely as the thickness of the insulating substance of the condenser; and they are nearly proportional to the square of strength of potential and thickness.

7. Under otherwise equal conditions the expansion in volume and length differ according to the insulating substance of the condenser.

8. After the discharge of the coatings of the condensers, there is a residue, so to speak, of this change of volume, which is very small in the case of flint glass, but greater in German glass, and which seems to have some connection with the electrical polarization of the mass of the glass itself.

9. The change of mass and volume does not result from an electrical compression of the insulating substance.

10. In flint glass electrical expansion takes place equally in all directions, as in the expansions produced by increase of temperature, independent of the character and direction of the electrical forces.

11. Electrical change of length and volume takes place in glass nearly in the same way with increase of temperature, as the dialectric constants, or the electrical conductivity of the glass.

12. Action of electrical forces diminish the elasticity of flint glass, German glass, and caoutchouc, but increase that of mica and gutta percha.

13. The electrical piercing of glass and other substances is a result of the unequal electrical expansion of the insulator in different places.

14. By unequal electrical expansion solid and liquid substances are unequally dilated and become double refracting, as other similar substances do when heated.

15. Glass, when equally expanded, shows no electrical double refraction under electrical forces.

16. The relation of substances with positive and negative double refraction (to which Dr. Kerr first called attention), is explained by the way in which different substances change their exponents of refraction with their density and volume.

17. With a constant difference of potential in the coating of a condenser, after long charging, the electrical force varies in different layers of the insulative substance at the same time, or in the same place at different times.

M. BERTHELOT has recently made an apparatus for measuring the heat of combustion of gases by detonation, which consists essentially of a bomb suspended in a calorimeter.

MR. W. E. HIDDEN, the mineral collector, has discovered in Burke County, N. C., a new locality of Furgusonite. The mineral was chemically determined by Dr. J. Lawrence Smith.