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repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take bis turn.

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(8629) C. H. asks: Will you kindly answer me this question: Ilas the metal selenium the property of offering resistance to a current of electricity when a light is thrown upon it? A. Selenium is not a metal. It is an acid-forming element. Its resistance to the passage of electricity is very great. When a beam of light falls upon a piece of selenium, its electrical resistance is much reduced, but not so that it becomes a good con ductor of electricity.

(8630) O. M. K. asks: Is there a metal or alloy of metals that can be had on the market that will take the place of platinum for sparking points in gas engine cylinders? A. Nothing is known to take the place of platinum for this purpose. Any metal which could be used by reason of its high fusing point is more expensive than platinum.

(8631) W. F. G. writes: I have read in past years some discussions on music, and among others found that someone made state ments as to the proper value of each tone or note as they follow in the scale, a, b, c, d, c, f, g, a. It was stated that the half-tones were not half, but varied from it, he giving the proper value of each in this respect. I cannet recall new who it was nor in what paper I read it. Can you help me out and give me information in regard to it? A. The scale in music based on standard pitch, as determined by the Paris Congress of Music, has an a of 435 vibrations per second. In instruments with fixed keys, such as a piano, cornet, etc., the tones have equal intervals, so that each is a half-tone from the next, sharp or flat, throughout. This is called the scale of "equal temperament." The correct scale is formed from a keynote by multiplying the keynote by the following numbers: 1, 9/8, 5/4, 4/3, 3/2, 5/3, 15/8, and 2 for the ectave. This is called the "diatonic scale." It can be played upon a stringed instrument which can be fingered, and thus the strings made of any length desired. Stone, "Elementary Lessons in Sound," will explain this more fully than our space permits.

(8632) B. C. V. asks: Am interested in the manufacture of phonograph records. What light can you give on the composition and process of manufacture of the former process wax records, also the new molded records? A. The composition of phonograph records is regarded by manufacturers as a trade secret. We have ne fermulæ fer them.

(8633) O. M. S. asks: 1. Why is it that a common electric vibrating bell cannot be made to ring if the ground is used to complete the circuit? The batteries are about 300 feet from the bell and they consist of dry cells? A. You ask why an electric bell will not ring if the ground is used for return. We can see no reason why it should not with suitable battery power. All telephone calls on grounded lines are given in this way, and bells are often used for signal calls on short telegraph lines. The trouble does not lie in the ground in your case. 2. Does the ringing of an electric bell depend upon the amperage or voltage of the current? A. The ringing of an electric bell depends upon the strength of the magnets in it. These depend upon the ampere turns of electricity which flow around the iron cores of the coils, and these depend upon the voltage of the current and the resistance of the circuit. So the ringing of an electric bell depends upon the volts, ohms and amperes of the circuit. 3. Why will a current, which has gone through 1/2 mile of iron wire 1/3 inch in diameter, and measures at the terminals, $\frac{1}{2}$ mile from the battery, 1 volt, not ring a common vibrating bell, which can be rung by a cell with a voltage of $\frac{1}{2}$ volt, the cell being connected to the bell by a few feet of copper A. The resistance of the line wire is enough to cut down the current, so that there is not magnetism enough to ring the bell. 4. I want to make an electromagnet to be operated by a low current and will have the great est magnetic power. Will you tell me what kind and size and how much wire to use? A. There is no general answer to the question.

ke iron cores such as you wish and wind th as coarse wire as you can use in the pace at your disposal and produce strength nough for your purpose. No. 16 or 18 wire should be used.





	
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