

material. It is impossible to purchase the proper sizes and quality of the wire or the tubing. You need German silver wire, which is the hardest that is made, but still is not nearly as hard as is necessary for this work. The only way to get that, then, is to draw it down; so we buy only one size, No. 9, Browne & Sharpe's gauge, a little over one-tenth of an inch in diameter, and draw it down to all the sizes of wire without annealing. If you should buy a certain size of German silver wire for the purpose of cutting a thread for a screw, you would get from one to two-thousandths of an inch in diameter from what you had ordered, because those gauges differ that much in the use of them, even though they are all alike when new. Then you must also consider the boy who measures the wire. Suppose you ask for No. 18, Browne & Sharpe's gauge, he finds a wire that slips into No. 18 easily; the next wire he comes to he cannot quite get it in; then he has to choose between those two. How much difference do you suppose there would be between these?—at least two-thousandths of an inch in diameter. Well, what does that mean? It means that the thread that you would cut on the ordinary small wire that you would use would not be very much more than a thousandth of an inch in height; and supposing the wire that you had ordered to be the proper size for that thread, this wire would not be quite large enough to cut the thread. It is necessary to know exactly what you need. For instance, you know that four-thousandths of an inch would cut a perfect thread in a No. 4 hole of the Martin screw-plate; you measure the wire and get the proper size with a micrometer gauge, but otherwise you could not do it.

Now we come to the tap and drill used for cutting the hole and the thread for making those very delicate nuts. I have heard skillful dentists say that it is impossible for anybody to arrive at that degree of perfection in skill to make a perfect tap and drill. It is certainly one of the hardest things we have to contend with, but there is no reason why it should be very difficult. Why is it we cannot buy them from some jewellery house or other place where they make a business of manufacturing these things? The reason is that there is a slight variation in all of the Martin screw-plates. Every man who is doing this work must have a screw-plate upon which to cut the wires upon the thread which he uses. You want to take your screw-plate and cut the thread on that wire in a few minutes. The Martin screw-plate comes nearer to being similar in size than any other, yet even with the Martin in a number of plates the same hole will vary considerably; therefore the tap that is used to cut the thread on the inside of a nut should be made in the same screw-plate that you used to cut the thread upon the wire upon which the nut is to be screwed. It is impossible to send away and get a tap made that will do the work; so we commence with the raw material