been in operation upon the steam-boilers at Stevens Institute, and have given perfectly satisfactory results.

In regard to making the tubes alike, it will be well to state that there has been no difficulty in producing a number in which the deflections were equal for equal pressures, and which have been directly applied to a standard chart, without adjustment. It will be readily seen, that, in case there should be slight differences in the deflections, such differences may be allowed for by raising or lowering the tube with reference to the dial. This is equivalent to shortening or lengthening the deflections along the radial arcs. For an indicating instrument, it is only necessary to provide a graduated arc for the end of the tube to move over.

It is evident that the instrument is adapted for a vacuum as well as for a pressure-gauge, and it naturally follows, that, if sufficiently sensitive, it will serve as a barometer, and measure changes of atmospheric pressure.

The model herewith exhibited for this purpose was made by electro-deposition of nickel upon a piece of solder of the proper form, the solder being afterward melted out in oil. The walls of this tube are $\frac{1}{500}$ of an inch thick. When this tube is exhausted of air and sealed, as shown, it gives a deflection of about three inches and a half for an external change of pressure of one atmosphere.

Another application of the pressure tube is in the recording thermometer. The tube may be filled with a very expansible liquid, such as alcohol, and sealed. Variations in temperature produce expansion of the enclosed liquid, which, in turn, gives deflections of the tube to correspond. These deflections may be used to record directly, without multiplying-devices, as shown in one of the models.

The tubes of the pressure-gauges to be inspected have been made by the writer at Stevens Institute, for the purpose of thoroughly testing the novel form. The results have been perfectly satisfactory, and our recent experience in manufacturing has demonstrated the possibility of duplicating the tubes in quantities for a standard chart.

NOTES OF TOMATOES.

PERHAPS the most frequent and noteworthy observation made upon the culture of the tomato during several years of experimentation with the plant at the Cornell Agricultural Station has been the great increase in vigor and productiveness which comes from careful handling and good tillage. It often appears as if this vigor is not only characteristic of the immediate generation, but that it is hereditary for a time to a profitable degree. "Handling" or transplanting of young plants, when frequently and properly done, is invaluable; and, so far as the plant is concerned, three or four transplantings are better than one. In the station work, in order to get the greatest results from tests, the plants are handled in pots, preferably rose-pots, and are transplanted several times. The handling is expeditious, and is not too expensive for the use of any one who grows tomatoes for home use. For market culture they find that two transplantings are usually profitable. Stocky plants, vigorous, and growing rapidly, are better than simply early plants, however; and frequency of transplanting must not be confounded with early sowing and consequent necessity for several shiftings. Tomato-plants — or any plants, in fact — should not be shifted for the simple purpose of preventing crowding or "drawing." Transplanting serves the purpose of maintaining a steady and symmetrical growth, and it should occur before the plant becomes checked from neglect. A good tomato-plant at the time of setting in the field, is one which is stocky enough to hold the weight of the earth and pot when a number of plants are grasped in the hand by their tops, and are carried along the rows. They require no staking when set. A tall and weak plant with a blossom on the top is not considered worth setting. It is a common mistake to set tomato-plants in the field too early. Cold nights, even though several degrees above frost, check the plants, sometimes seriously.

How early the plants should be started for profit is a question which demands attention. A few writers have maintained of late that nothing is gained in earliness and productiveness by early starting under glass. This is undoubtedly true if the early plants are not well grown, but the Cornell experience is quite to the contrary with stocky and vigorous plants. Whether this increase is worth what it costs, is a question which must be answered by every grower for himself.

In every instance the early-sown plants gave earlier fruits than the others; and in every case but one, in which the yields were practically the same, the total yield is much greater. The gain in earliness sometimes amounts to three or even four weeks. The disadvantage of very late planting (middle of May) is particularly pronounced in the results at Cornell, especially in point of productiveness. This productiveness, however, is really a measure of earliness, inasmuch as it simply records the weight of fruit which had ripened up to Oct. 10, when the tomato season was closed by frost. Could the season have been sufficiently extended, no doubt the ultimate productiveness of the varions plantings would have been the same.

It is a common notion that soils containing little or no manure are preferable to well-enriched soils for tomato-growing. It is supposed that rich soils tend to make vine at the expense of fruit, causing lateness of maturity and consequent lessening of yield; and the supposition is prevalent that rich soils tend to make fruits "rougher," or more irregular in shape. A careful test upon these points has been made during the past season at Cornell, with the result that heavy manuring for tomatoes may give decided benefits; yet it is possible that the character of the soil or season may have much to do with the behavior of the plants under these conditions.

The manuring of one plat was excessive, but the gain due to the very heavy dressing was not sufficient to pay for the extra cost. But if excessive manuring did not greatly increase yield, neither did it always tend to an unprofitable production of vine at the expense of yield and earliness, as is commonly supposed.

The tomato is one of the most variable and inconstant of kitchen-garden plants. As a rule, varieties differ but slightly from their allies, and a considerable plantation and a critical eye are needed to determine many of even the common sorts. It is certainly true that at least half of the varieties which have been offered in the last few years are practically the same as other varieties.

Varieties of tomatoes are as a rule short-lived. Ten years may be considered the average profitable life of a variety, and many sorts break up and disappear in two or three years. This inconstancy of type is largely due, no doubt, to the haste with which new sorts are put upon the market.

The demand in tomatoes now calls for fruits which are regular in shape, solid, large, and plants which are productive. The old angular sorts are rapidly disappearing in commercial practice. There has been no gain in earliness for the species for many years, if at all, and little if any need be expected. The cherry and plum sorts, with a few of the angular-fruited and wrinkled-leaved varieties, are still the earliest sorts. Yet comparative earliness between commercial varieties is an important consideration. There is also no gain in capability to resist rot: the cherry, plum, and angular sorts are still most exempt, the cherry and plum varieties entirely so.

An experiment was undertaken to determine if keeping qualities are correlated with solidity. Representative samples of many varieties, taken so far as possible in the same stage of maturity, were placed together upon a forcing-house table, and the fruits were removed as soon as they began to decay. It was found that some of the frailest varieties kept the longest. It appears, therefore, that solidity must be measured by a general judgment rather than by any definite expression. This conclusion is quite at variance with common opinion.

Much has been said concerning the superiority of certain varieties for cooking purposes, aside from quality of fruit. There is said to be characteristic differences between varieties in time of cooking and amount of shrinkage. A painstaking cooking test was made with a few varieties, but the results are so variable as to appear to be merely accidental or characteristic of individual fruits. The fruits were cut into thin slices and placed in boiling water. The shrinkages in weight and bulk do not appear to be correlated. In some instances shrinkage was slight, while in other varieties, equally as solid and good, it was great.

Four-fifths of the varieties of tomatoes now offered by dealers possess no points of superiority for general culture. It should be borne in mind that a variety which is simply good is not worth introducing. It must present some point of decided superiority over the best kinds at present known, in order to possess merit. This fact appears to be commonly overlooked in all classes of vegetables, and every year the grower is bewildered with the display of novelties.

HEALTH MATTERS.

IS MAN LEFT-LEGGED? — Dr. W. K. Sibley read a paper before the British Association in which he argued that man was naturally left-legged. Standing working with the right hand, there was a tendency to balance on the left leg. Race-paths were nearly always made for running in circles to the right, and the majority of movements (such as dancing, running, etc.) were more readily performed to the right. In walking it was natural to bear to the right: crowds as well as individuals did so. Troops started off with the left foot; the left foot was placed in the stirrup or step of the bicycle in mounting; the left foot was the one from which a man took off in jumping. The *Medical Record*, to which we are indebted for the above information, goes on to say, that, from measurements made by Dr. Garson of the skeletons of the two legs, in 54.3 per cent the left leg was the longer, and in 35.8 the right. From measurements of 200 pairs of feet, it was found that in 44 per cent the left, and in 21.5 the right, was longer, while in 34.5 they were equal.

THE STOMACH-BRUSH. — A dental journal publishes the following, translated from the German: In 1713 there was published a pamphlet entitled "A Complete Account of the most Useful Stomach Brush which is now to be had at the Brushmakers at the Old Court Sadler's Shop in Broad Street in Colln-on-the-Spree." Many a one may have wished to be able once in a while to have his stomach thoroughly cleaned out, and this speculative brush-maker gave a practicable means to give effect to this wish. In the pamphlet there is a drawing of the stomach-brush: it resembles a pipe-cleaner, but of course is larger. The stalk is made of four wires twisted together, covered with thread, silk, or small ribbons: it is twenty-six inches long. The brush at the under end is two inches long and one and a half broad, and is made of goat's-beard hair; but, when one has been accustomed to use it for three or four weeks, a horse-hair brush is substituted, this hair being somewhat stronger, and so the effect is better. The application of this most excellent brush is very simple. It is pressed through the throat down into the stomach, which, by drawing up and down of the brush, is cleaned. Thereafter cold water or brandy is to be drunk, and the operation is repeated till the cleaning is perfect. The cure is to be repeated every morning. The author says, according to the *British Medical Journal*, "At first you will find it rather troublesome to get the brush down, but when you put it in your mouth and on your palate, draw in breath and wind, and press it gently and gradually down, and, without any particular trouble, it will reach the stomach. After eight to fourteen days' practice, it will come as easily to you as eating or drinking." Of course, the daily application of the stomach-brush is the infallible remedy or preventive of all diseases that can be imagined. "Whoever uses this cure requires no other medicine, for it is good against all — cold, hot, and poisonous fevers, it gives a good appetite for eating, it is good against asthma, hemorrhage, headache, chest complaints, coughs, consumptions, apoplexy, toothache, sore eyes, dysentery, quinsy on the tongue, quinsy in the throat, ulcers, abscesses, cardialgy: it favors digestion, strengthens the heart, drives away pimples on the skin, is against choking in the stomach, etc., makes too fat and asthmatical and swollen-up people thin, and, on the other hand, makes meagre and thin people fat. The great effect, however, is produced only when the use of the brush is combined with that of an elixir. This is compounded of aloes, saffron, rhubarbona, lark-mushroom, wormseed, eugian, myrrh, theriac. After the stomach-washing, forty to fifty drops of the elixir is to be taken in wine, and this preserves for twenty-four hours against all poison and pestilence."

VACCINATION ON THE LEG. — A French practitioner, in the course of a large number of revaccinations, was struck with the fact that the operation was far more successful when performed on the leg than when the arm was selected. He has since availed himself of an opportunity of verifying his first impression; and last year, having to revaccinate 177 school-children, he chose the left leg in 99, and the left arm in 78, and carefully compared the results obtained, dividing them into three groups according as the eruption was typical, doubtful, or absent. Of the 99 cases vaccinated on the leg, as we learn from the *Medical Press and Circular*, 23 were typical, 31 doubtful, and 45 unsuccessful, being equivalent to a percentage of 23.2 and 31.3 respectively. Of the 78 children vaccinated on the arm, the numbers were 11 typical, 25 doubtful, and 42 failures, equal to 14.1 and 32 per cent respectively. The percentage of failures was 45.45 on the leg, as compared with 53.84 on the arm.

AFRICAN JUMPERS. — Dr. Bennett of Griqualand writes in the *South African Journal* an account of a peculiar nervous affection which is met with among the Griquas and other natives and individuals of mixed descent living in Griqualand. He suggests that perhaps the affection is similar to that prevalent among the French Canadians, and known there by the name of "jumpers." Dr. Bennett says, "The affection is entirely confined to the male sex, and I have never seen or heard of a case in the female. The victims of this strange form of neurosis go through the most extraordinary and grotesque antics on the slightest provocation. A whistle, a touch, a shout, — any thing, in fact, sudden and unexpected, — will 'set them going.' Some will stiffen their limbs, make hideous grimaces, and waltz about as if they had no joints in their body. Others will jump wildly about like dancing dervishes, imitating the particular sound that had acted as an exciting cause. Some, again, will make use of the most obscene expressions on a transient impulse, correcting themselves immediately afterward, and expressing their regret for having used such language; while others, on the spur of the moment, will do any thing they are told to do. If they should happen to have a piece of tobacco in their hand, and one should suddenly shout, 'Throw it away!' they will do so at once, running away for a short distance, and trembling all over their body. I remember one case in particular: it was that of a 'bastard' boy, a mason by trade. He had been handed a piece of tobacco, and the person who handed it to him shouted out suddenly, 'Throw it away: it is a snake!' He first danced about wildly for a short time, and then ran away as fast as he was able; but he had not gone far, when he fell down in a 'fit,' and it was some time before he recovered."

SMALL-POX. — Dr. Lewentaner of Constantinople, writing in the *Bulletin Général de Thérapeutique*, No. 32, 1889, speaks very encouragingly of the success attending an antiseptic method of treating this disease, which he tried in several cases. The advantages of this method of treatment are summed up by *The Medical Record* as follows: 1. All the children treated in this way recovered, although the ordinary mortality of the disease is forty per cent. 2. The duration of the disease was decidedly shortened, the period elapsing from the commencement of the eruption to the falling-off of the crusts being twelve or thirteen days. 3. The disease ran its entire course almost without fever. 4. The danger to those around the patient is greatly lessened. In Dr. Lewentaner's cases there were other children exposed, but, notwithstanding that they were not vaccinated, they did not contract the disease. 5. The simplicity of the method, as compared with the treatment by baths and cold applications, has much to recommend it. 6. Æsthetically, also, the antiseptic method of treatment offers great advantages, since it prevents absolutely all pitting.

HEREDITY OF ACQUIRED CHARACTERISTICS. — Professor William H. Brewer of Yale read a paper on the above subject at the recent meeting of the National Academy of Sciences in Philadelphia. He combats the view of Weissmann, who has published a volume in support of the proposition that characteristics acquired by individuals are not transmissible. Weissmann supports this proposition by experiments on mice, whose tails he cut off for successive generations, without inducing a tailless diathesis in their offspring. Brewer discussed four kinds of variation: 1. Variation