

## Microscopic Notes.

At the recent Rochester soirée of the American Microscopical Society, the *Microscopical Journal* says, there were at least a hundred microscopes, and every one of them was besieged by a line of eagerly curious men and women.

In one of the microscopes shown by Professor Griffith was a bouquet of flowers. It was made of the scales of the butterfly, arranged with the most wonderful artistic skill in a space no bigger than a pinhead. Another microscope revealed the Lord's Prayer through a pinhole. The exhibit which attracted the largest share of attention, and which, perhaps, was the most instructive, was a series of nine microscopic objectives interspersed with drawings showing the growth of the starfish at all stages. This exhibit was prepared by Professor Charles Wright Dodge, and it was besieged all the evening by throngs of spectators. You had to "get in line" and gradually work your way along.

Another exhibition which attracted much attention was the circulation of blood in the tail of a fish, shown by William Drescher. This was accomplished in a most ingenious way. A living goldfish was securely fastened in a small vessel containing just enough water to keep it alive. Its tail was projected over the side of the vessel, pressed between two small pieces of glass and firmly fixed under the microscope. The power of the microscope was so high that it resolved the blood, seen through the transparent covering of the fish's tail, into countless little corpuscles, which gave it the appearance of multitudinous grains of sand following each other in and out and round about in endless procession up one aisle and down another, constantly twisting and turning. An extra goldfish lay in a pail of water by the side of the microscope, so that the fish on duty might be relieved should he give signs of failing vitality. Mr. Drescher stated that a fish would ordinarily accommodate the investigator in this way for an hour or an hour and a half. At the other end of the room was exhibited a frog's foot in similar fashion.

Professor Seaman, the secretary of the society, to whose energy much of its vitality is due, exhibited a firefly under his lens. He has made a special study of phosphorescent light in organisms, and says that the number of such insects is much larger than is generally supposed, and that the firefly is by no means alone in his glory.

Professor Rogers, the microscopic mathematician, exhibited one twenty-fifth of an inch ruled off into 100 equal parts—a subdivision of the inch into 2,500 equal parts. Professor Rogers does this work with a machine of his own invention, cutting his lines upon gold with a diamond. He uses gold because it is more easily reducible to a finely polished surface.

Professor Claypole exhibited the gizzard of a black beetle and the eye of a crayfish, which were shown by his twin daughters, who are accomplished microscopists.

Sarah F. Whiting exhibited the eye of a beetle in which a little cross marked on the glass beneath it was reflected 1,000 times. It would be difficult to catch the literally Argus-eyed beetle asleep.

Before the society Professor Rogers read a paper on the "Use of the Microscope in the Workshop." The speaker stated that he had for some years advocated a more extensive use of the microscope in the ordinary operations of mechanical construction. His paper was an enumeration of the different mechanical operations in which he found the use of the microscope profitable. Among those specified were:

First, to divide an index wheel into 1,000 equal parts; second, in setting the ways of a large planer horizontal; third, to ascertain whether a piece of planed work has its surface truly planed before the piece is taken from the planer; fourth, to ascertain whether the planer planed a piece of metal in a straight line; fifth, to plane two surfaces exactly alike; sixth, to set the line between the centers of a lathe parallel with the ways; seventh, to test the turning of a true cylinder; eighth, to test the accuracy of the screw of a common lathe.

As an illustration of the last point, the speaker described his test of a precision screw twenty-one feet in length, made by Pratt & Whitney, of Hartford, for R. Hoe & Co., printing press manufacturers. This screw, considering its great length, was found to be of exceptional accuracy.

Professor Clark Bell, of New York City, read a paper

on "Blood and Blood Stains." Red corpuscles were first discovered in the human body in 1673. Oval and nucleated corpuscles were found in birds and fishes, reptiles, etc., but not in mammals.

## VIBRATORY THERAPEUTICS.

Among all the methods, more or less odd in appearance, applied to the treatment of nervous diseases, there are few more original than the one that has been employed for some time at the Salpêtrière by Professor Charcot; it is the treatment by mechanical vibrations.

There is a serious disease of the nervous system,

you, put you out of order, and shake up your intestines, and after a half minute's experience you would ask for mercy. The invalid, on the contrary, lolls in the chair as you would do on a soft sofa. The more he is shaken the better he feels. After a sitting of a quarter of an hour, he is another man. His limbs are relaxed, the fatigue has disappeared and the following night his sleep is perfect.

Treatment by mechanical vibrations is not limited to this malady alone; it seems to be applicable to quite a large number of nervous troubles, more or less well defined, and the neurasthenia of which offers the completest *ensemble*. Long before the invention of

the vibrating arm chair, Dr. Vigouroux conceived the idea of submitting hysterical patients to the vibrations of a huge tuning fork. In this way he cured anæsthesias and muscular stiff joints. Other physicians, Boudet, of Paris, and Mortimer Granville, applied vibrating rods to the treatment of neuralgias (facial neuralgia in particular) and headaches. Granville devised a small electric hammer, analogous to the hammer of electric bells, and that was applied to the painful point. Under the influence of the shock, repeated hundreds of times within a short period, the pain ceased.

The method was some time ago singularly im-

proved by Dr. Gillis de la Tourette, a pupil of Mr. Charcot. With the aid of Messrs. Gautier and Larat, two confreres well versed in electro-therapeutical studies, he had an apparatus constructed for the treatment of migraines and nervous headaches; it was the vibrating helmet (Fig. 1). Imagine a helmet of the model of that of old times, and very analogous, as to structure, to the conformator of hatters. It is, in fact, formed of steel plates, that permit of its fitting the head perfectly (Fig. 2). Upon this helmet, in lieu of crest, there is a small alternating current motor of peculiar construction that makes about 600 revolutions per minute (Fig. 3). At every revolution a uniform vibration is propagated to the metallic plates, and is transmitted to the cranium that they embrace. The cranial walls thus vibrate in their *ensemble*, and the vibrations are naturally transmitted to the entire cerebral apparatus. The sensation is not disagreeable. The number and intensity of the vibrations, moreover, may be varied according to the tolerance of the subject. In a few minutes a sort of general lassitude is experienced, with a tendency to sleep.

The vibrating helmet has already been applied to a large number of neurasthenic invalids, the majority of whom have experienced good results from it. The process succeeds also against hemiparesis, and as this is quite a common affection for which no surely efficacious remedy is known, the helmet will, in a short time, be seen to come into vogue.—*La Nature*.

## Tomato Diseases.

Tomato plants have been troubled with fungi this season, and consumers are complaining of the high price and poor quality of the fruit. In some localities the young plants were destroyed or much weakened by the bacterial disease known as the Southern tomato blight. This has been followed by the old leaf enemy, *Cladosporium fulvum*, which produces a light brown, almost olive, mould upon the under side of the foliage. Plants with much of this fungus usually bear inferior fruit, and frequently the same enemy appears upon the fruit while it is green and less than half grown; the blossom end turns brown and decay sets in.

The newest enemy, and one of no small importance, is an anthracnose, *Colletotrichum Lycopersici*, which was first observed by Professor Chester, at the Delaware Experiment Station, last season, and described by him in the *Torrey Bulletin* for last December. This fungus produces sunken spots in the fruit, which become soft and dark. It quickly destroys the tomato, and for this reason and by its peculiar appearance it is usually recognized as different from any other known tomato rot. Several times my attention has been called to the ravages of this parasite by growers who observed that it was a new enemy.

The same fungus is to be found upon the foliage, when it causes brown, irregular spots. At this time, when the fruit is well advanced and frosts are expected daily, there is little or nothing to be done, except to see that the vines are finally gathered and burned. There is no question about the contagiousness of the anthracnose. The spores are numerous, and should be destroyed at the close of the season, if not before.—*Byron D. Halsted, Garden and Forest*.

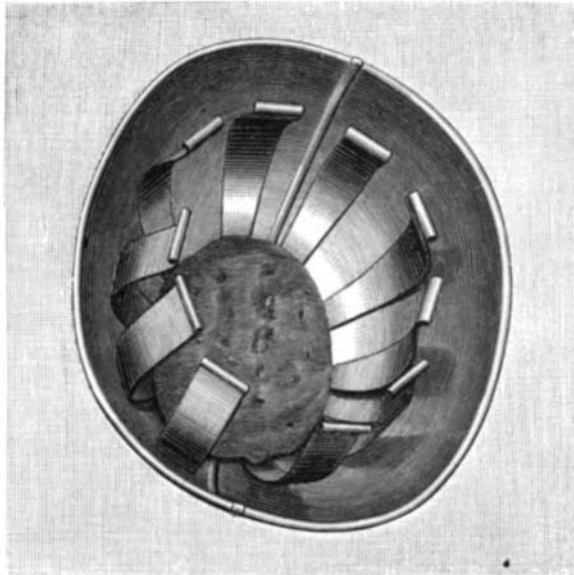


Fig. 2.—INTERIOR VIEW OF THE HELMET.

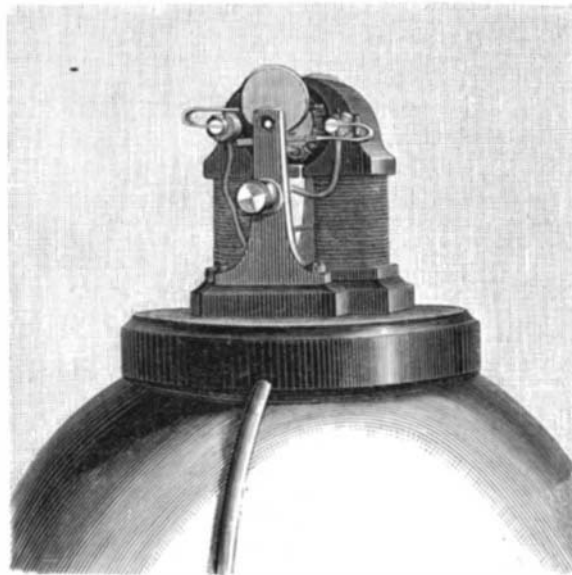


Fig. 3.—DETAILS OF THE ELECTRIC MOTOR.

characterized by an incessant trembling of the hands, a stooping attitude, and an odd gait, that makes it seem as if the invalid was going to precipitate himself head foremost. It is the trembling palsy, also called Parkinson's disease, a sort of painful nervous disorder that deprives the unfortunate who is afflicted with it of rest and sleep. Mr. Charcot a long time ago learned from some invalids who were troubled with this infirmity that they derived decided relief from long rides on a railroad or in a carriage. The more the vibrations caused in the compartments by the train running at full speed, and the more the carriage was jolted over an uneven pavement, the more the relief experienced. At the end of a day's journey they felt better and experienced an inexpressible comfort. One of them conceived the idea of having himself wheeled about for hours in one of those heavy carts used for carrying paving stones. Contrary to the experience of all travelers, those afflicted with trembling palsy



Fig. 1.—METHOD OF USING THE VIBRATING HELMET.

felt fresher and more active on alighting from the cars. The longer the trip lasted, and the worse the line, the more durable was their improvement.

Such testimony, coming from various sources, was not lost. It was for Mr. Charcot the starting point of a most curious therapeutical application. It was impossible to think of having the invalids carried by rail from Dunkirk to Marseilles, or of making them pass their days in omnibuses. So Mr. Charcot had an arm chair constructed to which a to and fro motion was given by means of an electrical windlass. These motions produce a series of very strong trepidations. It is the motion of the sieve for the sifting of industrial materials. There could be nothing more insupportable for a well person than such shocks, which demolish