

finger. But under any circumstance, by close application and habit, in the natural state of the body, it can be detected, and verifies the tracings made by the instruments, and which, without this proof might be held in suspicion.

The arterial tension varies according to numerous conditions which has been fully proved and appreciated by an instrument invented by Ludwig called kymographion, or registering manometer; but the disadvantage to the use of this instrument is that it requires a previous dissection.

The many indications which have been made apparent by these instruments have been still more strongly confirmed by the sphygmograph, which writes or traces by means of a long lever the slightest and almost inappreciable modifications in the pulse of man, either in a state of health or disease, and which to the unaided hand would be quite imperceptible; it also gives its force, its fullness, its irregularities, and movements, with extreme precision.

The first idea of being able to appreciate the different varieties and modifications of the pulse by means of an instrument was due to a French medical man named Herrison, but a German was the first who actually registered the arterial pulsations. Vierordt constructed the first sphygmograph in 1855, but its lever being too heavy, it traced the oscillations too evenly, consequently false'y; but, we now owe to Dr. Marey the credit of having brought the instrument to perfection, and he has thus rendered to physiology, and even to pathology, a lasting service.

As is usual with almost all important discoveries or inventions, the author or constructor of a new instrument is sure to be severely criticised, so with the distinguished physiologist, for Dr. Marey has not escaped the lash of the envious critic.

Certain medical men appear to think that, because the Sphygmograph has given characters to the pulse, which had not hitherto been recognised by Galien, Burden, Solano, Fouquet, and others, that it must evidently lead to error.

But such reasoning is contrary to progression and altogether opposed to the advancement of all human sciences. Is it any slight to the opinions of, or disrespect to the great authorities

above named, to state that an instrument can be made more delicate and sensitive to the slightest alterations in an artery, than the tips of their fingers.

#### PHYSIOLOGICAL SPHYGMOGRAPHY.

The sphygmograph traces two lines, one ascending the other descending, which unite together by angles more or less acute.

The length of the ascending line is indicative of the largeness (or fullness) of the pulse.

The acuteness of the summit of the angles shows that the tension is feeble, and that there is a great difference of the tension between the periods of systole and diastole.

In a pulse where there is but feeble tension, dichotism is but little apparent.

In the foregoing observations we have confined ourselves entirely to the conclusions which M. Marey has arrived at, and they have elucidated in a very remarkable manner, the numerous points or features which belong to the circulation.

#### PATHOLOGICAL RESEARCHES.

The sphygmograph, applied to the study of diseases, has not yet produced such fruits as we have every right to look forward to in the future; its study is too recent to suppose that the results already obtained, should be complete; nevertheless, this instrument has confirmed in a singular manner, all that has been discovered or appreciated by the finger, but in a much more clear and precise manner.

At a single examination it will diagnose with great exactness which orifice of the heart is diseased, and what is the nature of its alteration. It has also pointed out certain affections of the heart, which the most careful examination by auscultation and percussion would scarcely allow of detection; in consequence of the free border of the lung being placed before the organ. At all events, whether the indications of disease given by this instrument are correct or not, it does not prevent us from employing the ordinary means of exploration.

Hitherto, none of the diseases of the heart, or modifications in the circulation, have prevented the onward march of the pen of the sphygmograph.

An aneurism changes the circulation. If the aneurismal tumour is in the course of the ar-