

DEPARTMENT,
January 29, 1884.
I visited certain of
the instruments of the
observatory during the past
winter, and having obtained
the most recent
methods of observation.
I report upon the knowl-
edge not arranged with
respect to the
each instrument being
gathered at various

information was gath-
ered at Geneva, Vienna, Ber-
lin, and the workshop of the Messrs.
I had the opportunity of
seeing the 30-inch refractor,
and of discussing it
with the Messrs. Clark.
I received the very cordial re-
sponse of the various obser-
vatories, and was afforded me for the
purpose. In every case the
result of an examination of

at exhaustive discus-
sion might have been ex-
pected at my disposal it was
to make the tests which
shall therefore confine
myself to the points
important to persons
about to design or purchase

OF.
ed, that to which most
recently completed for the
Messrs. Grubb, esq., of Dublin.
I am at the present time,

being of one inch greater aperture than that of the Naval Observatory at Washington. The contract was made with Mr. Grubb in 1875, but, owing to difficulties in procuring glass disks of the necessary size and purity, it was not completed until 1881. Further delay occurred in mounting, so that it was barely ready for active work at the time of my visit in April last. I made as careful and critical an examination of its working as was possible during the unfavorable weather which prevailed at that time at Vienna. My examination was principally in the nature of a comparison of its working with that of the Washington telescope.

General style of mounting.—In its main features the telescope is mounted on the same fundamental plan as that at Washington, each being on the German plan, with the German system of counterpoises and with a steel tube. In both, the rapid motion in declination is by means of a rope attached to the two ends of the tube; that in right ascension by a system of wheel-work. In both, the clock-work is in the pier below the instrument. The leading points of difference are, that the mounting of the Vienna telescope is much larger, stronger, and heavier in all its parts, that the appliances for using it are more elaborate and numerous, and that an elaborate system of friction rollers in declination is provided, while the Washington telescope has none. A more convenient system of illuminating the field and the divisions on the several circles has also been introduced. As a piece of mechanical engineering it reflects great credit upon its designer and constructor.

Ease of motion.—In moving the Vienna telescope one is at first struck with the fact that mere weight is a serious drawback in the management of such an instrument, but, when the motion is once commenced, the movement in right ascension is almost as easy as in the Washington telescope. It is, however, very different in declination. For reasons which neither Dr. Weiss nor myself was able to perceive, the friction rollers seemed to be of little benefit in easing the motion in declination, which was much more difficult than in the Washington telescope, and, in fact, quite a tax upon the strength of the observer at the eye-piece.

The quick motion for setting in right ascension is made below the end of the polar axis by turning a steel steering-wheel. This appliance is in every way inferior to the system at Washington, where the same motion is effected by an endless rope hung over a grooved wheel which the observer pulls hand over hand. By this arrangement the observer at the Washington telescope can make the required motion, with his