

Senate, a report on the subject of an inter-oceanic ship-canal, 8000 copies of which with its accompanying maps were distributed by Congress and by the observatory. Within two brief years he took command of the South Atlantic squadron.

Rear-Admiral B. F. Sands, succeeding him in the year 1867, has most efficiently improved the opportunities of a longer superintendency to inaugurate and carry forward some of the most important astronomical operations of the day. To these we can only refer.

The phenomena of the total eclipses of 1869 in the United States and of 1870 in the Mediterranean countries were closely observed. Their fully illustrated reports were published by Congress in large editions, now exhausted.

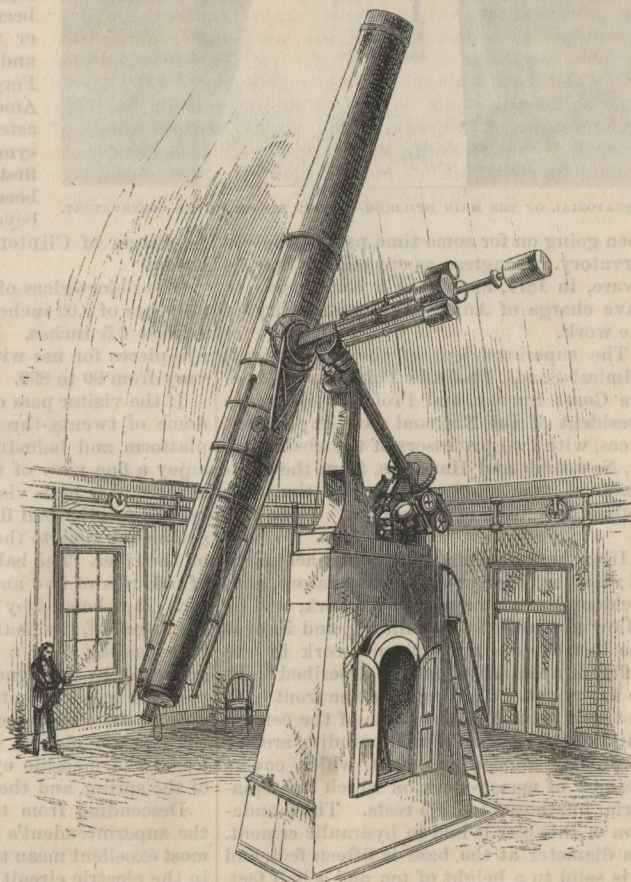
Beyond the regular and severely exacting astronomical routine of observations, two centres of interest have been recently occupying the utmost activities of the institution: the reception, mounting, and use of the new great equatorial, and preparations for going out to observe the transit of Venus of December 8, 1874.

The great equatorial has but one near approach to itself in the diameter of its object-glass—that of the private amateur establishment of Mr. R. S. Newall, at Gateshead, England, whose telescope has an objective of twenty-five inches in diameter. The Naval Observatory glass has twenty-six inches clear aperture. It is not easy to realize what this power is, and what it promises. The reader must imagine himself within a dome, itself forty-one feet in diameter and forty feet in height, looking through a tube made of three sections of steel stretching away for thirty-two feet; the whole telescope and its metallic base weighing about six tons.

Among the friends of the observatory who aided in secur-

ing the appropriation in Congress for this instrument was the present Judge and late Senator C. D. Drake, once himself in the United States navy. Through his urgency before the conference committee the appropriation was secured of \$50,000 for the telescope, and \$14,000 for its tower and dome. Chance and Co., of Birmingham, England, cast the big lump for the object-glass; Alvan Clark, of Cambridgeport, with his sons, ground and polished it; and in the month of November, 1873, successfully mounted it. The planning of the dome and tower and the general conception of the instrument, including the application of water-power in place of the usual driving clock-work, and of illumination by electric light, are to be credited to Professor Newcomb, in charge.

The transit of Venus, occurring but once at most in a lifetime, and offering a valuable method of determining the sun's parallax—the base line of measurement of celestial distances—is the astronomer's great event of this century. Preparations to observe the transit of December 8, 1874, have



THE GREAT EQUATORIAL—UNITED STATES NAVAL OBSERVATORY.