and 3dly, A very useful work by Lieutenant Riddell, containing magnetic instructions for the use of portable magnetic instruments, and for fixed magnetic Observatories, printed by the Government in 1844.

Lieutenant Riddell, on his arrival in Canada, examined different localities which were suggested to him as convenient sites for his Observatory. The preference was finally given to Toronto, where he was offered two-and-a-half acres of ground belonging to King's College, on the sole condition that the buildings erected should be appropriated only for an Observatory, and revert to the College when discontinued. This offer was accepted, and the new buildings occupied in September, 1840. In the mean time a temporary Observatory was formed in a small unoccupied barrack in the city. The new Observatory is situated in lat. 43°, 49″ 35‴, and long. 79°, 21″ 30‴, on a rising ground, about half a mile north of the city, 300 yards west of the University, and 107¾ feet above the surface of Lake Ontario, or 341¾ feet above the sea. The buildings consist—1st, Of an Observatory, having two apartments, one for the instruments, 50 feet by 20,—the other, an office or computing room, 18 feet by 12, with a vestibule or hall, 12 by 6—the transit theodolite occupying a small circular room, connected by a covered passage with the instrument room, and placed at a sufficient distance from it to obtain a view of the lower culmination of some of the circumpolar stars; 2d, A detached building, with a room 18 feet by 12, partly sunk under ground, with a view to uniform temperature, for experimental determinations and observations of absolute intensity. It is situated about 80 feet from the Observatory, so that the instruments placed in it, may neither affect, nor be affected, by the magnets in the Observatory; 3d, An anemometer house, constructed so as to support the vane and pressure plate of Oster's anemometer, at a height exceeding 30 feet above the roof of the Observatory, and above the neighbouring trees; 4th, A small shed for the inclination circle—and 5th, Barracks for the officers and detachment. The whole of the ground granted by the College is enclosed by a picketing. The buildings 1 to 4 are at the eastern end, within an inner inclosure; the barracks for the officer and party are at the western end. The Observatory is built of 12-inch logs, rough cast on the outside, and plastered on the inside, the laths being attached to battens projecting two inches from the logs, so as to leave a stratum of air between the logs and plaster. The doors and windows are double, and the outer door has the further protection of a closed porch. The small room, or office, is provided with an open fire-place, adapted for a wood fire; the instrument room has neither stove nor fire-place. No iron whatever was used in the structure, the nails being of copper, and the locks and other fastenings of brass. The instruments are supported by massive stone pillars, each formed of a single stone, about six or seven feet long, imbedded in masonry to the depth of three feet.

The foregoing details we have condensed from Lieut.-Colonel Sabine's introduction to the work, which comprises the observations made in 1840, '41, and '42, by the Lieutenants in charge, whose assiduity, efficiency, and talents, are highly commended by the gallant and scientific editor. Nor is it the less gratifying to find that the good conduct, intelligence, and zeal of the men, and the thoroughly efficient and trustworthy manner in which they performed their duties, are spoken of in terms honorable to the distinguished corps to which they belong.

Lieut.-Colonel Sabine has contributed (with the assistance of Lieutenant Riddell), about 100 pages of preliminary observations, under the head of "Adjustments, Abstracts, and Comments." To give even an outline of the immense mass of tabular information here submitted to the scientific reader, is far beyond our limited space, without serious encroachment upon the other departments of our Journal We would, if it were within our power, submit a few extracts, or the substance of such comments, where they immediately seem to call for particular attention, but we must keep within the bounds we have prescribed for ourselves.

We notice from the observations made on the subject of magnetic declination, that the following practical inferences are derived for the instruction of persons who may have occasion to employ the compass in surveying, and other similar purposes in Canada:—1st. That large deviations from the mean monthly direction of the needle, at the same hours, are least likely to occur from noon to 4 P.M. 2d. That at all other hours of the day, the liability to the occurrence of deflections exceeding five to six minutes from the mean direction at the same hours, is about three times as great as at the hours of two and four P.M.; at six P.M., the liability, as it may be estimated from the two hourly observations, is about one observation in twenty-eight, and at eight and ten P.M., rather greater. 3d. That the disturbances are usually deflections of the north ends of the needle *to the west* in the forenoon, and *to the east* from six P.M., to midnight, inclusive.

One of the principal objects to be attained from the establishment of the fixed Observatories, was the elucidation of the laws of the irregular fluctuations of the magnetic elements, and the determination of their local or universal character. To effect this, all the magnetometers were to be observed on certain days simultaneously at certain short intervals, and for twenty-four hours together. Twelve days, entitled Term days, were named in each year, one in each month, for this kind of observation; the intervals between the observations being five minutes for the declinometer, and ten for the magnetometers. Other national magnetic Observatories were