National Argentine Observatory in Cordoba, presents a catalogue of 5791 stars. The work is the outcome of 28,718 observations made with the 5-in. Repsold meridian circle during the six years 1885–90. The observations are of a general nature over the southern sky, and form a continuation of the general catalogue. Auwers's list of 303 fundamental stars was observed in 1889 by Prof. Updegraff, and the results are included in this catalogue. There is also included a list of sixty-three comparison stars for the minor planet Victoria, observed in 1889 by Prof. Updegraff, and this is given separately, in addition to being included in the regular catalogue. There was no unusual change or condition of the meridian circle during the period mentioned, so far as is known, and the reductions were made in precisely the same manner and with the same system of constants as in the general catalogue. The catalogue also includes the results of a comparison with Boss's Preliminary General Catalogue of the stars common to both.

THE MILKY WAY AND THE DISTRIBUTION OF STARS WITH PECULIAR SPECTRA.—The distribution with reference to the galaxy of the many stars having peculiar spectra classed by the late Mrs. Fleming has been analysed by Mr. T. E. Espin, and the results appear in the March-April number of the Journal of the Royal Astronomical Society. The distribution evidence suggests that the order A, F, G, K, M of the Harvard classification of stellar spectra requires rearranging thus, A, G, M, K, F. The author makes some interesting speculations on the structure of the galactic system.

THE MICROSCOPE SUBSTAGE AND ITS ADJUSTMENTS.

THERE are one or two points, particularly in the substage arrangements, which are distinct and characteristic of English and Continental microscopes. In the English instrument of any pretensions it has always been the custom to provide a centring substage, and this carries both the optical portion of the substage condenser and the iris diaphragm. It has to be assumed, therefore, that the iris diaphragm is centred permanently and accurately to the optic axis of the substage condenser, its perfection therefore depending on the extent to which this assumption is justified.

In the case of the Continental microscope, where a centring substage condenser is provided, it is mounted so that the optical part is centred independently of the iris diaphragm, the latter, in fact, being mounted below the substage condenser and having certain adjustments which are in no way connected with the centring arrangement. It therefore follows that in the Continental type the iris diaphragm may be, and indeed often is, permanently out of centre with the optic axis of the objective. The substage condenser has therefore to be centred in relation to two axes, the centre of the iris diaphragm and the optic axis of the objective, which themselves are not in exact alignment. It is obvious that under such conditions the provision and use of a centring appliance for the adjustment of the optical part of the condenser will never result in correct alignment of the various parts. With the object of overcoming this defect, at least in part, some of the better Continental models have been provided with an independent adjustment to enable the mechanic to centre the condenser to the optic axis, after he has centred the iris diaphragm. The condenser is mounted in a ring provided with three screws, the setting of which admits of the optical part of the condenser being centred, but this is, of course, not an adjustment of which the average user would care to avail himself. In the English arrangement, where the iris diaphragm is correctly centred to the substage condenser, centration of the whole substage fitting results in correct alignment with the remainder of the optical system of the microscope.

For the most critical work, therefore, it would appear that the English method is to be preferred. On the other hand, where a microscope is being used for laboratory work, and is only occasionally being used for the testing of objectives or for critical purposes, there is no doubt that the Continental type has much to recommend it. The fact that the iris diaphragm may be contracted to any desired degree, and may then be shifted laterally so that oblique illumination in any azimuth and in any zone of the field of view can be obtained at will, is a great convenience, and for anything like rapid testing of objectives is almost essential.

In the English stand it becomes necessary to provide stops of various sizes and shapes, which can be placed at the back of the substage condenser, to enable oblique illumination to be obtained in any desired manner.

Where absolute accuracy is required it would appear that an arrangement in which both substage condenser and iris diaphragm are capable of independent centration might be a desideratum. In such a case the iris diaphragm would be centred first, and then the optical part of the substage condenser introduced, and that centred independently. By this means the iris diaphragm, the substage condenser, and the objective would be in exact alignment, and the arrangement would be such that work of the most critical character could be carried out. It must be admitted, however, that the conditions under which such a method would become necessary rarely, if ever, arise, so that a well-made instrument provided with the Continental type of substage, in which the iris diaphragm may be decentred, is a very desirable adjunct to any good microscope.

As an indication of the perhaps unnecessary elaboration that has obtained in English stands, one may mention the provision of a fine adjustment to the substage condenser. It is difficult to conceive under what conditions this becomes necessary. A well-made rackwork should provide all the accuracy of adjustment that is required. If it does not it either implies that the mechanical construction of the microscope leaves something to be desired, or that the user has not acquired the necessary manipulative skill to focus his substage condenser with sufficient accuracy, the latter alternative being the more probable.

AUSTRALIAN METEOROLOGY.

THE Australian Meteorological Bureau has issued a series of interesting maps showing the normal distribution of temperature and rainfall over the Australian continent. The variety of climate which Australia offers is well illustrated by these charts. The mean summer temperature of the south coast of Victoria (between 60° and 65° F. for January) is about the same as the mean summer temperature of London, while 400 miles to the north the heat is tropical, with a mean temperature of more than 80° F., increasing to more than 85° F. in the greater part of the north-west and central regions. The trend of the isotherms near the coasts shows the usual oceanic effect; they bend southwards in the winter and northwards in the summer in passing from continent to ocean. The isotherms are closest together near the southern coast in summer and near the northern coast in winter.