A CATALOGUE OF PHOTOMETRIC SEQUENCES
SUPPLEMENT NO.2

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Photometric observers have from time to time expressed the need for a convenient way of finding in the literature the photometric sequences they require. This need is particularly felt in photographic photometry, and the increasing use of the Palomar Sky Survey in recent years, and more recently the ESO and SRC surveys, have given a new impetus to the subject. In addition, the use of image tubes has led to a further demand for suitable calibration sequences.

At the Brighton IAU Meeting in 1970 Argue, strongly seconded by Bok, proposed to the Photometry Commission that a small working group be set up to produce lists of sequences. The Commission President, Dr. Cousins, requested Argue and Bok to contact interested parties and compile a list.

A circular letter was sent out to astronomers known from a search of the literature and of the reports of observatories to be active in the photometric field, and from the replies received a catalogue was produced early in 1973, and later that year a supplement. For each sequence the catalogue gave the equatorial and galactic coordinates, the name given to the sequence by its author, the angular extent on the sky, the number of stars, their range in brightness, the photometric scales (UBV, Hβ etc.) and a literature reference or alternatively the author's address.

In this work Argue and Bok were assisted by E.W. Miller, an associate of Bok's at Steward Observatory. Altogether some 480 sequences were given, together with data on about 2000 stars scattered over large areas of sky. A reference was also given to an earlier compilation by Sharov and Jakimova in Sternberg Trudi 40 containing some 800 entries of which about 450 are

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suitable for calibration sequences. Sharov and Jakimova's catalogue covers the period 1953 to 1968. Ours begins about 1968, so altogether there is good coverage over the last twenty years. We do not however claim that our part of the coverage is complete.

The main catalogue and supplement were circulated by us principally to contributors and observatories. Our stock of 400 copies is virtually exhausted, but copies are available from the Centre de Données Stellaires, Strasbourg, details of which are in Information Bulletin No. 9.

At the Sydney Meeting of the IAU in 1973 the Photometry Commission sponsored a further supplement. Bok had retired about this time and his part was taken over by Miller. Again a literature search was made and 500 circular letters sent out, 200 by Miller to the N and S Americas, and 300 by Argue to the rest of the world. It is interesting to note the response. Miller received 9 replies with data on 129 sequences. Argue received 14 and 164 sequences. We do not believe this adequately covers the potentially useful sequence photometry that has been carried out in the past three years. There are probably still many more sequences available. I shall return to this point later.

Some observers replied to the circular letter by writing a letter of encouragement, usually combined with a request for a copy of the supplement when it is ready, but not supplying any data. I suppose where physical support is lacking we must be content with moral support.

In addition to the 300 sequences just mentioned, our new supplement refers to 200 open clusters catalogued by Mermilliod, 5000 stars in $UBVB_1B_2V_1G$ by Golay and 25 sequences in galactic HII regions by Moffat.

Altogether, taken in conjunction with the earlier catalogue and supplement, the user has some 1400 sequences for immediate reference and in addition, data on about 10000 stars scattered over the sky. The various sources from which the sequences have been derived are listed in Table I.

TABLE I. Distribution of sequences

Main Catalogue and Supplement 1	480
Supplement 2	300
Sharov and Jakimova	450
Mermilliod	200
Total	1430

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Fig. 1 shows the distribution of limiting brightness for the sequences listed in Table I. Most are seen to terminate at about 15^m, the limit for a telescope of aperture 1m.

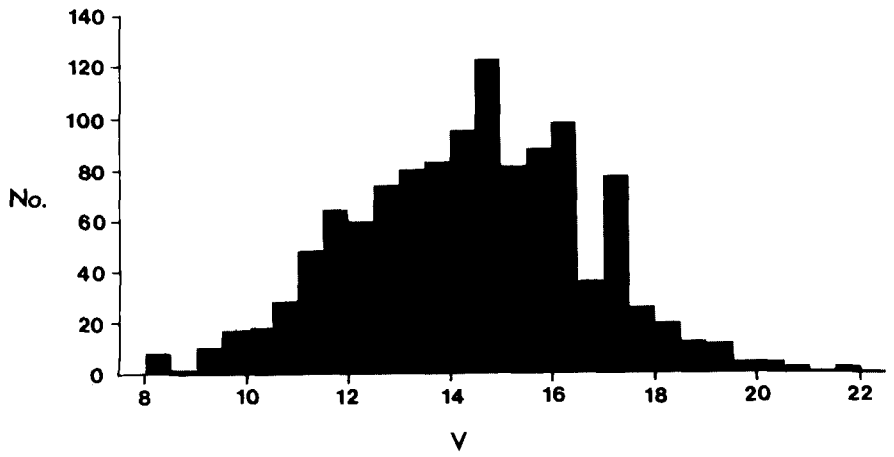

Fig.1. Distribution in limiting magnitude of sequences in Table I.

The distribution over the sky is shown in Fig.2 which is an equal area plot in galactic coordinates. Open circles denote sequences in which all stars are brighter than 14^m, and filled circles the remainder. Apart from dividing our sequences into two approximately equal groups, 14^m is a convenient upper limit for magnitude estimation from the Palomar prints. Below 14^m the image diameter varies linearly with magnitude to a close approximation down to about 19^m on the O prints. This gives a useful way of determining brightness within this range because the slope does not show much change from area to area or chart to chart. The most important changes are in zero point, so that once this is fixed, say by a few stars of magnitude 14, brightnesses can be determined to an accuracy of $0^m.3$ of $0^m.4$ in the same area. This is very useful for QSOs. The closed circles in Fig. 2 indicate in which regions useful sequences are to be found.

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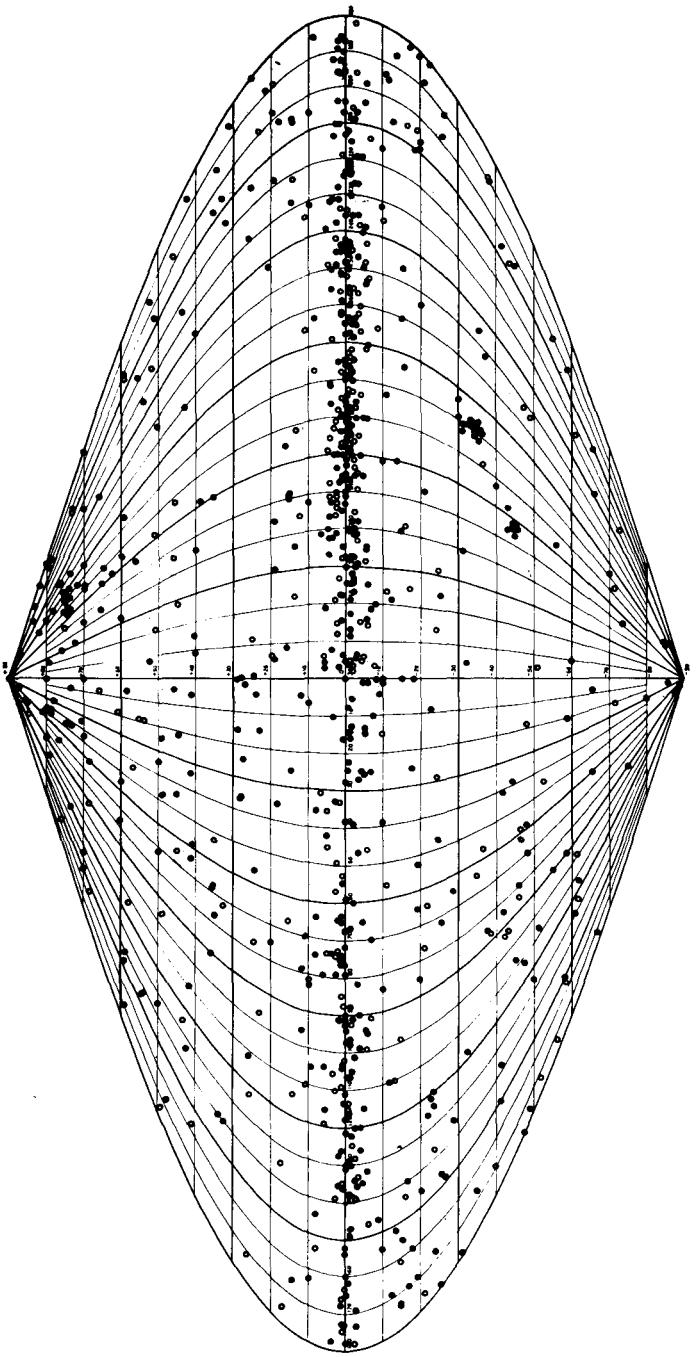

FIG. 2. Distribution of sequences in Table I. Open circles: sequences having all members brighter than 14^{m}. Closed circles: the remainder.

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The lack of completeness of our compilation raises the question of whether we have been compiling in the best way, or would we have done better to have compiled directly from the literature? Compiling from the literature can be very time consuming. Once a paper has been seen to contain useful data, it is easy to send the author a circular letter, but to extract the photometric information from the paper can take much longer: the right ascension and declination alone may require a search through several cross references. On the whole we prefer the more personal approach. It gives the author the chance to revise published material and to communicate in advance of publication. Much of it may of course be published eventually, so a literature search will achieve the same result in the end, but the current trend is against this. Journals are becoming increasingly reluctant to accept tabular data, and page charges are ever increasing. The convenience of having all your data ready at hand on your library shelves is rapidly passing away. Our catalogue goes some way beyond this, in establishing a direct communication between observers, but with steadily rising production and distribution costs this too is becoming difficult to continue, at least on the present privately financed basis. The answer lies in central data banks, clearly in this case Strasbourg. These are matters I am hoping the Photometry Commission of the IAU will consider, and I would very much appreciate the comments of this colloquium.