difficulties that are encountered in a preliminary reconnaissance for precise triangulation. The first part of the publication discusses the character and strength of triangulation figures, selection of sites, and intervisibility of stations. The second part deals with signal building, and includes practical directions, with detailed plans and specifications. The section on hydrographic signals is specially interesting. Signals of some kind or other, either ashore or afloat, are frequently necessary in the location of soundings off a low flat coast. Full plans and illustrations and a note of the amount of material required are given.

THE third number of volume i. of the *Japanese Journal of Botany* has just been issued by the National Research Council of Japan. In addition to botanical papers, it contains reviews of the current Japanese botanical literature, much of which is published only in Japanese and has hitherto been unavailable to workers in other countries. This is therefore a valuable feature of the Journal, and should be of much service in making more widely known the work of Japanese botanists. The present number contains papers in English and German, chiefly on genetical subjects, as well as abstracts of the principal botanical papers which have appeared in Japan during the period April-September 1922.

M. MARCELLIN BOULE, the eminent French anthropologist, in the Huxley Memorial Lecture for 1922, published in the Journal of the Royal Anthropological Institute (vol. lii., 1922), describes the services rendered to the study of man by the late Prince Albert I. of Monaco. The Prince, impressed by the importance of the remarkable cave records in southern France, devoted much attention to the development of these discoveries, of which M. M. Boule gives an interesting account. One important result of his work was the establishment of the Institute at Monaco, where the treasures recovered from the caves find a suitable home, and where the study of them can be conducted.

Our Astronomical Column.

D'ARREST'S COMET. — This interesting periodic comet is due at perihelion in two months, and its detection in July may be hoped for, as it is well placed in the evening sky. Mr. F. R. Cripps has calculated the perturbations by Jupiter and gives the following elements and ephemeris (for midnight) in B.A.A. Journal for May:—

T = 1923 Sept. 14·12 G.M.T.
ω = 174° 7′ 15″
Ω = 143 32 18 } 1925·0
i = 18 3 47
e = 0·6169
log a = 0·5478
log q = 0·1311

	R. A.	N. Decl.	log r	log Δ
July 8.	16h 26·0m	12° 19′	0·193	9·856
,, 12.	16 25·2	11 6		
,, 16.	16 25·2	9 42	0·181	9·847
,, 20.	16 26·1	8 8		
,, 24.	16 28·1	6 24	0·170	9·841

The comet is nearest to the earth at the end of July and brightest in mid-August. The moon will cause difficulty in the latter part of July. The positions given above lie in the southern part of Hercules, and are nearly due south at the end of twilight.

There is no further confirmation of the announcement of the discovery of a comet by Abbot at Athens.

THE COMING OF THE PERSEIDS.—Mr. W. F. Denning writes: "Early meteors from the great August shower are occasionally visible at the beginning of July. They should be carefully observed, as it is desirable to ascertain the opening date of the display. A few meteors, if observed at two stations, might satisfactorily settle the question, though, at its first oncoming, the shower is but slightly manifested. This year there will be no moonlight to interfere with the maximum on about August 11 or 12, and with clear weather the event should be witnessed under good conditions. There is no reason for expecting that the ensuing return will be one of very rich character, but the Perseids form an annual spectacle of meteoric activity not equalled by any other system. A maximum of special intensity was witnessed on the morning of August 12, 1921, when the hourly number of meteors visible to an observer was 250. There is evidence to show that the shower presents itself most richly at intervals of 11·75 years, but more observations are required. Its duration continues over the two summer months of July and August.

"The Perseid shower will be supplemented by other radiants, the following being among the more prominent ones visible at or from about the middle of July and, in certain cases, for some time afterwards:—

16° +31°	47° +44°	303° −10°	334° +73°
22 +21	270 +47	303 +24	335 +58
25 +43	292 +53	312 +62	339 −12
42 +22	281 +44	315 +48	343 +12

There are certainly more than 100 different systems in play, but the great majority of them are feeble and apparently the relics of nearly exhausted streams which possibly formed rich displays in ancient times."

PERTURBATIONS OF THE MINOR PLANETS.—Prof. A. O. Leuschner has published a useful report on this subject as a Bulletin of the Research Council of the National Academy of Sciences, Washington. It deals with twenty-three interesting planets, including the four bright ones, Eros, Andromache, and the six Trojan planets. Tables are given of all orbits published, with a statement of the method by which they were derived.

It is obvious that the vast host of minor planets can only be observed efficiently if there is a methodical division of labour. Arrangements for this had been made before the War, which threw them into confusion, and it is welcome news that Prof. Leuschner's Bureau is again making arrangements for this purpose. At present planets that are better known are frequently observed to an unnecessary extent, while others are neglected. Marseilles Observatory has published numerous orbits and ephemerides of late years, but it has not been in touch with all the countries where observations were being made. One point emphasised in the report is the importance of giving clear information in all published orbits of the materials that were used in obtaining them, and the perturbations that were applied. Several cases are quoted in which this information is lacking.