moreover, large stocks were necessarily accumulated by the various Governments to provide for unforeseen contingencies during the progress of hostilities. In some branches of manufacture these stocks represent several years' normal output. Hence the position of the industry as regards the foregoing products is just now a difficult one. For France in particular, unless the industry is to dwindle and vanish, it will be necessary to devise measures for preventing destructive competition by indiscriminate admission of certain chemicals from other countries. The plan adopted by Great Britain, namely, limited importation, to prevent either undue lowering of prices by "dumping" or excessive charges by manufacturers here, is considered by the writer named to be the best for France to follow until something like normal conditions are again reached.

HARDNESS is an extremely important quality, but no satisfactory definition of it has yet been given. The geologist has his scale of hardness, and the engineer has his instruments for measuring the elusive quality. The tests employed by the engineer are good in their way, but they do not, as a rule, measure directly what the manufacturer wishes to obtain in the finished article. A manufacturer of cutlery, for example, is not directly interested in the way his steel gives when a steel ball is placed on it and pressed down with considerable force. But, in spite of the lack of direct applicability in the engineering tests, a good deal can be maintained in their favour, for there is doubtless some connection between the mechanical properties desired by the manufacturer and the readings of the sclerometer, as the instrument for measuring hardness is called. The interpretation of the readings may be difficult, and will probably require the acquisition of knowledge allied to that attained by the skilled craftsman; but, notwithstanding the difficulties, the regular use of a sclerometer can be productive of nothing but good. The Magnetic Sclerometer which has been put on the market by the Automatic and Electric Furnaces, Ltd., 281–283 Gray's Inn Road, London, W.C.1, may prove to be extremely useful in connection with a large and important class of material, viz. hard steels. As its action does not depend upon mechanical phenomena, its range is limited, and it cannot be used for non-magnetic substances. A rod of steel is placed in a yoke so as to form a complete magnetic circuit, and magnetised almost to saturation. The rod is then taken out of the yoke and the remanent magnetism, *i.e.* the magnetism which remains after the rod has been subjected to the demagnetising action of its own poles, is measured. To make the measurement the rod is placed in a coil connected to a ballistic galvanometer, and the kick of the galvanometer-needle is noted on the rapid removal of the rod from the coil. The throw of the needle, which indicates the amount of magnetic flux still remaining in the rod, may be taken as the reading of the sclerometer. In spite of its lack of direct applicability so far as hardness, in the ordinary sense of the word, is understood, the magnetic sclerometer should prove to be an extremely useful instrument in the hands of the trained researcher.

MESSRS. W. HEFFER AND SONS, LTD., Cambridge, have just issued a Catalogue (No. 182) of 1670 second-hand books dealing, among other subjects, with archæology, folk-lore, anthropology and kindred subjects, Egyptology, and philosophy; also with scientific serials. In the latter section we notice a set of the first 102 volumes of NATURE. The list includes the archæological and fine art library of the late Dr. Allen Sturge. A copy can be obtained free upon application.

OUR ASTRONOMICAL COLUMN.

COMETS.—Schaumasse's comet (1911 VII., 1919*d*) was detected on its return by M. Schaumasse at the Nice Observatory on October 29, being of magnitude 12. The observation indicates October 19 as the approximate date of perihelion. The following ephemeris is for Greenwich midnight (corrected approximately by the above observation):—

		R.A.	N. Decl.	Log r	Log Δ
		h. m. s.	° ′		
Nov.	5 ...	12 27 23	6 28	0·0914	0·2610
	9 ...	12 41 25	5 19	0·0951	0·2622
	13 ...	12 55 13	4 11	0·0993	0·2634
	17 ...	13 8 47	3 4	0·1038	0·2649
	21 ...	13 22 5	1 58	0·1089	0·2666

As the distances from both sun and earth are increasing, the comet will remain faint.

Continuation of the ephemeris of comet 1919*c* for Greenwich midnight:—

		R.A.	S. Decl.			R.A.	S. Decl.
		h. m. s.	° ′			h. m. s.	° ′
Nov.	7	17 0 44	10 30	Nov.	19	17 41 42	16 57
	11	17 13 56	12 41		23	17 56 20	19 0
	15	17 27 32	14 50		27	18 11 28	20 59

The comet is approaching perihelion and growing steadily brighter, but it is too near the sun for convenient observation.

THE SOURCES OF STELLAR ENERGY.—There have recently appeared two articles on this subject by Profs. Russell and Eddington. The first (Publications Ast. Soc. Pacific, August, 1919) points out the apparent inadequacy of the contraction hypothesis to explain the long duration of the output of energy (far in excess of Lord Kelvin's twenty million years) which is suggested by geology and by various other arguments. Hence it is concluded that there must be some unknown source of energy in the interior of giant stars, which dies down before the dwarf stage is reached. Making the supposition that the temperature is insufficient for the unknown source to come into action in the pre-M stage of giant stars, Prof. Russell shows that this stage would be short and extremely few stars would be in it at a time; he thus explains our failure to detect stars in this stage.

He also points out that the hypothesis would do away with the difficulty which Prof. Eddington expressed about the maintenance of the pulsations in Cepheid variables, viz. that the leakage of heat from the hotter to the colder regions would damp out the oscillations in a few thousand years. For the unknown source would supply heat to the interior at the greatest rate when it was hottest, thus making good the leakage.

Prof. Eddington (*Observatory*, October) makes a bold speculation as regards the unknown source of heat. He reminds us that a large proportion of the total energy of a star is locked up in its atoms, so that the energy would not be exhausted when the star cooled. It would need to be annihilated to liberate all the energy. He asks whether this annihilation of matter may not be going on in giant stars: "When a positive and negative charge collide centrally they go out of existence." He points out that at moderate temperatures the outer electrons of the atom form a protecting cushion; but in a very high temperature, ionisation is presumed to take place, robbing the nucleus of its protecting electrons and leaving it an exposed target. He makes an estimate that 1 atom out of 5×10^{15} must be annihilated each second. At this rate it would take about 2×10^{11} years to annihilate the whole star, so that the loss of mass in the periods usually assigned to the giant stage would be trifling.