

owing to its greater breadth, is additionally weakened by the factor 1.61, we obtain  $P/S=3.75$  for a rough estimate of the relative brightness without restriction to any particular colour.

So far I have not met with any published estimates of the relative brightness of the bows or of the precise character of their polarisation, so that these figures may be of interest. CHAS. T. WHITMELL.

Invermay, Hyde Park, Leeds, October 4.

#### An "Arbor Day."

At the meeting of the conference of delegates from provincial scientific societies to the British Association, held on July 4, a resolution was passed establishing October 21 as an "Arbor Day," and all the delegates present pledged themselves each to plant a tree if possible on that day, and to endeavour to induce members of all their societies and others to do the same. The time is now approaching for this to be carried into effect, and this letter is intended as a reminder.

By the wholesale cutting down of trees in this country during the last few years the scenery of our few woodland areas is losing its beauty, and we are greatly entrenching upon our very small reserve of timber. Although it is only by State action that the re-forestation of our country can be adequately effected, it is hoped that by the carrying out of this resolution some little benefit may be derived, and that year by year our "Arbor Day" may remind us of the paramount necessity of augmenting our home supply of timber.

JOHN HOPKINSON.

Weetwood, Watford, October 14.

#### Students' Microscopes on Loan.

WE are conducting science classes on the lines of communication in France, and it has been suggested to us that some of your readers might care to loan students' microscopes for use in this work. If any who possess such instruments care to help us in this way, I shall be glad to hear from them. It will be understood that the instruments will be carefully kept and returned intact when finished with.

RICHARD WILSON,

The Librarian, Red Triangle Library.

Wimborne House, Arlington Street, S.W.1.

#### THE FUTURE OF THE COAL TRADE.

THE Coal Conservation Committee of the Ministry of Reconstruction has recently issued its final report, which forms, it need scarcely be said, a document of first-rate importance. Its form is decidedly curious, inasmuch as the report in itself is confined to a bare statement of the action taken by the Committee in appointing sub-committees, and the general adoption of the reports of these sub-committees, which are printed as appendices to the report; these reports are by the Power Generation and Transmission Sub-Committee, the Geological Sub-Committee, the Mining Sub-Committee, and the Carbonisation Sub-Committee. Of these the final report of the Mining Sub-Committee is undoubtedly the most interesting, and the most valuable in so far as it contains a number of recommendations of great technical and economic importance. Indeed, the reference to this sub-committee, which instructs it "to consider and advise what improvements can be effected in the present methods of mining coal

with a view to prevent loss of coal in working and to minimise cost of production," covers a subject of most vital importance to the entire nation. British industrial supremacy is built up essentially upon a cheap and abundant coal supply, and whenever that supply becomes either less than sufficient for British industrial requirements, or more expensive than that of competing nations, Britain will cease to be a first-class Power. The safety and welfare of the nation thus depend so absolutely upon the coal supply that the recommendations of the Committee charged with its consideration assume a character of wide national interest.

The two principal subjects discussed are the loss and waste of coal and the cost of production. The former is subdivided into waste at the pit-head and loss underground. Waste at the pit-head is essentially confined to the excessive amount of coal used for colliery consumption. Relatively complete returns, representing 97 per cent. of the coal output of the country, have been obtained, so that tolerably trustworthy data are available, though it may be readily granted that the collieries that have failed to make returns are those at which the consumption is unduly high. The average colliery consumption for the kingdom is given as 6.8 per cent. of the output, or 18,400,000 tons of coal; in one of the other reports an estimate is given of the power employed in the mines and quarries of the United Kingdom, which is stated as 4000 million h.p.-hours. Taking this figure as due to the collieries alone, it would appear that our collieries consume no fewer than 10.3 lb. of coal per h.p.-hour, so that there is obviously room for much improvement. The report makes no reference to another source of waste, namely, the "free coal" which is allowed to coal-miners in some districts. Everyone who has had experience of these districts knows that the collier uses his free coal most extravagantly, and that quite considerable economies might be effected in this item without causing the slightest hardship, or even inconvenience, to the men concerned. Loss of coal underground is considered as arising from various causes, each of which is duly investigated.

The Committee considers that there has been a substantial improvement in respect of the small coal cast back into the goaf within the last ten years, and estimates the loss due to this cause as 0.91 per cent. of the output in 1915. It is obviously difficult to obtain accurate figures on this point, the collieries that are the worst offenders being, of course, those which furnish no returns, so that it is safe to say that the figures published by the Committee are below the actual wastage.

The only recommendation made is that a greater demand for small coal should be created—for example, by extending the market for briquettes. The present moment, when pitch is unusually cheap and the demand for household coal acute, is peculiarly suited to the generalisation of this convenient form of fuel, which has never come into public favour in this country, although it is deservedly popular on the Continent. This