Many of the phenomena observed in glasses can be explained if one assumes that while the atoms that actually take part in the "network" like O, Si, Al, etc., suffer changes in the polarisability due to strain and are also affected considerably by the changes in the Lorentz field, the ions like Na, K, Pb which occupy the holes in the "network"[13] are not particularly susceptible to the former polarisability changes but are affected to a larger extent by the alterations in the density of the surrounding atoms. Hence the introduction of such ions into the silica network would tend to decrease the s.o.c. of the glass. The absorption wavelengths of many of these heavier ions are much greater than those for the network forming atoms. Hence the dispersion of the negative effect would tend to mask the dispersion arising from strain polarisability changes. One could, therefore, easily conceive of glasses with a fair percentage of heavy ions having stress-optic coefficients which practically do not show any dispersion or exhibiting even negative dispersion (*i.e.*, the s.o.c. decreasing with decreasing wavelength). As the ratio of the heavier ions continues to increase, one should expect to find the s.o.c. actually becoming zero for a particular wavelength and then changing sign.

Many of these phenomena have been observed in glasses. It has also been noticed that most glasses show a small increase in the s.o.c. at λ 4916 and a tendency to decrease at λ 3650. Investigations are in progress to find out if these anomalies are real and if so whether they have any relationship to the fluorescent bands that are usually found in these regions.

The authors wish to thank Dr. S. Chandrasekhar, Dr K. Vedam and Prof. R. S. Krishnan for the many discussions they had with them.

1. Filon, L. N., *Proc. Roy. Soc.*, 1931, **130 A**, 410.
2. Mueller, H., *Physics*, 1935, **6**, 179.
3. Schutz, W., *Handbuch der Experimental Physik*, **16**, Magneto-Optik.
4. Ramachandran, G. N., *Proc. Ind. Acad. Sci.*, 1947, **25 A**, 266.
5. Chandrasekhar, S., *Ibid.*, 1954. **29**, 290.
6. —, *Ibid*, 1951, **34**, 235.
7. Ramaseshan, S. and Chandrasekharan, V., *Curr. Sci.*, 1951. **20**, 150.
8. Ramaseshan, S., *Proc. Ind. Acad. Sci.*, 1954, **40 A**, 184
9. Ramachandran, G. N., *Ibid.*, 1947, **25 A**, 208.
10. Burstein, E. and Smith, P., *Ibid.*, 1948, **28**, 377.
11. Marie and Mathieu, J.-P., *Compt. Rend. Acad. Sci.*, 1946, **223**, 147.
12. Mueller, H., *J. Ceramic Soc.*, 1938, **21**, 27.
13. Warren, B. E., *Z. Krist.*, 1933, **86**, 349.

UTILIZATION POSSIBILITIES OF KASHMIR LIGNITE

LIGNITE deposits in Kashmir Province have been estimated at 128 million tons, of which 48 million tons are in the Shaliganga area (Raithan and Lanyalab) and 80 million tons in the Nichahoma area. The unestimated but proved deposits are however many times higher.

So far it has not been possible to use this lignite on account of its poor quality, for, Kashmir Lignite is difficult to be ignited because of its high inert content. Once ignited, it is also difficult to maintain a constant fuel bed temperature because of the speedy evolution of volatiles leaving behind insufficient fixed carbon to maintain the bed temperature. Besides, burning of lignite in open grates results in smoke and smell, a nuisance which for long has stood in the way of its utilization. This is due to incomplete combustion of volatiles which escape unburnt.

However, some useful results have been achieved towards its utilisation by the Industrial Research Laboratory, Srinagar. It has been found that Kashmir lignite in the immediate future can be used in its raw form in specially designed ovens, stoves and furnaces. It can also be subjected to pressure gassification for town gas supply and fertilizer manufacture. In this process liquid by-products will be available in addition. Lignite may also be used in pulverised form for thermal power generation.

Indus. Res. Lab., Srinagar. S. N. WAZIR.