The details of the investigation will be published in due course.

Chemical Laboratory, Archæological Survey of India, Dehra Dun, *July* 1, 1947. B. B. LAL.

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A RELATION BETWEEN REFRACTIVE INDEX AND VISCOSITY

LAGEMANN[1] combined Mott Souder's[2] viscosity relationship with the Lorentz-Lorenz equation and came to the conclusion that for liquids in general, a rough rule is that Mott Souder's viscosity-constitutional constant I is about twelve times the molecular refraction. It has been found that this relationship holds only for aliphatic liquids. The ratio for some simple aromatic liquids is given in the following table:

Ratios of I and M for some aromatic liquids

Compound	I	M	I/M
Benzene ..	249·9	25·96	9·6
Toluene ..	296·5	30·80	9·6
Ethylbenzene ..	344·1	35·37	9·7
o-Xylene ..	346·1	35·48	9·7
m-Xylene ..	344·1	35·64	9·6
p-Xylene ..	346·1	35·70	9·7
Aniline	280·6	30·29	9·3
Methylaniline ..	328·2	35·24	9·3
Benzylamine ..	328·2	34·15	9·6
Ethylaniline ..	383·8	40·05	9·6
Dimethylaniline ..	383·8	40·41	9·5
o-Toluidine ..	330·0	35·01	9·4
Nitrobenzene ..	310·2	32·37	9·5
o-Nitrotoluene ..	353·8	37·05	9·5
Chlorobenzene ..	290·2	30·90	9·4
Bromobenzene ..	309·2	33·76	9·2

From the above table the conclusion may be drawn that for simple aromatic liquids Mott Souder's[1] I is roughly 9·5 times the molecular refraction.

The values of I have been taken from Mott Souder's paper and those of molecular refraction from Landolt-Bornstein Tabellen.

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TREATMENT OF ALKALINE WATER TO RENDER IT SUITABLE FOR REELING SILK

IN the course of our studies on the quality of raw silk produced in certain silk filatures in South India, some interesting observations have been made. One of the points of considerable scientific and practical importance relates to the influence of water used for cooking the cocoons and reeling the filaments on the quality of silk.

The bore-well water used in one of the silk filatures was found to affect the processing of cocoons and the quality of the silk. Although the cocoons were found to cook much quicker than in other waters, more sericin (silk gum) was dissolved in that water thereby necessitating more frequent change of water in the cooking and reeling basins. The silk flores, as they were reeled over and hanks were made, were found to retain more moisture, stick together and take longer periods to dry. After drying, hard gum spots and variations in colour, from light greenish yellow to deep greenish yellow, were noticed. These conditions adversely affected the normal properties of the silk, particularly its lustre, feel, evenness, neatness, cleanliness and its winding property. When, instead of the bore-well water, water from other sources, such as from the tank (rain-fed) in the neighbourhood or from the river about two miles away from the filature, was employed the silk reeled was free from the above-mentioned defects.

The unusual features of the bore-well water were its bicarbonate alkalinity and temporary hardness, the permanent hardness being relatively inconsiderable. 100 c.c. of the water required 33 to 40 c.c. of N 50 acid for neutralisation, and the temporary hardness was 18 to 28 parts per 100,000, as observed during different seasons over a period of four years. In view of this observation, further trials were carried out by treating the bore-well water with calculated amounts of mineral acids (such as sulphuric and hydrochloric acids) and organic acids (such as acetic, oxalic and tartaric acids) in order to neutralise the alkalinity of the water or reduce it to that of the river water which was found satisfactory for silk reeling. The results of these studies confirmed the above observations and indicated that a simple and cheap method of treating the bore-well water was just to neutralise its alkalinity or reduce it to a minimum by adding sulphuric acid (commercial grade) and vigorously stirring the water by means of an efficient blower so that no free acid was left in the water. Thus it was observed that the quality of the silk reeled in the bore-well water after treatment with sulphuric acid (0·75 c.c. of concentrated acid per gallon of the water for bringing down the alkalinity from 37 to 9 in terms of N/50 acid for 100 c.c. of the water) was comparable to that reeled in the river water (100 c.c. of this water required 8·9 c.c. of N/50 acid for neutralisation).

The practical application of the above findings under the working conditions of a filature presents some fresh problems. If the water in