experiments, using the K lines from tungsten (effective $\lambda = 0 \cdot 196$ Å.) reflected from rock-salt, and measured the absorption coefficient of the secondary radiation excited by these rays in paraffin. The absorption coefficient of these rays was found to be considerably greater, by about 52 per cent. at 90° and 22 per cent. at 30°, than that of the beam incident on the paraffin.

In order to compare my results with those of Mr. Plimpton, a molybdenum Coolidge tube was then substituted for the tungsten one, and the $K\alpha$ line ($\lambda = 0 \cdot 708$ Å.) was employed. An increase in the absorption coefficient of the secondary rays excited in paraffin was again observed, though it amounted to only 29 per cent. at 90° and only $6 \pm 1 \cdot 2$ per cent. at 20° with the primary beam.

The softening thus observed when reflected X-rays are scattered is substantially the same as that found when unreflected rays of the same hardness are employed. Mr. Plimpton's negative result is apparently due to the fact that his experiment was performed under unfavourable conditions of wave-length and scattering angle. The conclusion seems necessary, therefore, that the softening of secondary X-rays is due, not to the process of scattering, but to the excitation of a fluorescent radiation in the radiator.

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The Colour of the Sea.

THE view has been expressed that "the much-admired dark blue of the deep sea has nothing to do with the colour of water, but is simply the blue of the sky seen by reflection" (Rayleigh's Scientific Papers," vol. 5, p. 540, and NATURE, vol. 83, p. 48, 1910). Whether this is really true is shown to be questionable by a simple mode of observation used by the present writer, in which surface-reflection is eliminated, and the other factors remain the same. The method is to view the surface of the water through a Nicol's prism, which may for convenience be mounted at one end of a tube so that it can be turned about its axis and pointed in any direction. Observing a tolerably smooth patch of water with this held in front of the eye at approximately the polarising angle with the surface of the sea, the reflection of the sky may be quenched by a suitable orientation of the Nicol. Then again, the sky-light on a clear day in certain directions is itself strongly polarised, and an observer standing with his back to the sun when it is fairly high up and viewing the sea will find the light reflected at all incidences sufficiently well polarised to enable it to be weakened or nearly suppressed by the aid of a Nicol.

Observations made in this way in the deeper waters of the Mediterranean and Red Seas showed that the colour, so far from being impoverished by suppression of sky-reflection, was wonderfully improved thereby. A similar effect was noticed, though somewhat less conspicuously, in the Arabian Sea. It was abundantly clear from the observations that the blue colour of the deep sea is a distinct phenomenon in itself, and not merely an effect due to reflected sky-light. When the surface-reflections are suppressed the hue of the water is of such fullness and saturation that the bluest sky in comparison with it seems a dull grey.

By putting a slit at one end of the tube and a grating over the Nicol in front of the eye, the spectrum of the light from the water can be examined. It was found to exhibit a concentration of energy in the region of shorter wave-lengths far more marked than with the bluest sky-light.

Even when the sky was completely overcast the blue of the water could be observed with the aid of a Nicol. It was then a deeper and fuller blue than ever, but of greatly enfeebled intensity. The altered appearance of the sea under a leaden sky must thus be attributed to the fact that the clouds screen the water from the sun's rays rather than to the incidental circumstance that they obscure the blue light of the sky.

Perhaps the most interesting effect observed was that the colour of the water (as seen with the Nicol held at the polarising angle to the surface of the water and quenching the surface-reflection) varied with the *azimuth* of observation relatively to the plane of incidence of the sun's rays on the water. When the plane of observation and the plane of incidence were the same, and the observer had his back to the sun and looked down into the water, the colour was a brilliant, but comparatively lighter, blue. As the plane of observation is swung round the colour becomes a deeper and darker blue, and at the same time decreases in intensity, until finally when the plane of observation has swung through nearly 180° the water appears very dark and of a colour approaching indigo. Both the colour and the intensity also varied with the altitude of the sun.

The dependence of the colour on the azimuth of observation cannot be explained on a simple absorption theory, and must evidently be regarded as a *diffraction* effect arising from the passage of the light through the water. Looking down into the water with a Nicol in front of the eye to cut off the surface-reflections, the track of the sun's rays could be seen entering the water and appearing by virtue of perspective to converge to a point at a considerable depth inside it. The question is: What is it that diffracts the light and makes its passage visible? An interesting possibility that should be considered in this connection is that the diffracting particles may, at least in part, be the *molecules* of the water themselves. As a rough estimate, it was thought that the tracks could be seen to a depth of 100 metres, and that the intensity of the light was about one-sixth of that of the light of the sky from the zenith. If we assume that clear water, owing to its molecular structure, is capable of scattering light eight times as strongly as dust-free air at atmospheric pressure, it is clear that the major part of the observed effect may arise in this way.

It is useful to remember that the reflecting power of water at normal incidence is quite small (only 2 per cent.), and becomes large only for very oblique reflection. It is only when the water is quite smooth and is viewed in a direction nearly parallel to the surface that the reflected sky-light overpowers the light emerging from within the water. In other cases the latter has a chance of asserting itself.

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S.S. *Narkunda*, Bombay Harbour,
September 26.

The "Proletarisation of Science" in Russia.

DR. H. LYSTER JAMESON asks in NATURE of September 29, p. 147, for an account of the constructive elements of the "proletarisation of science" in Russia, and seems to praise the effort of the Soviet Government to bring the fundamental conclusions of scientific thought within the reach of the "proletariat" by editing a whole series of elementary text-books of natural science.

A Russian university professor, whose friendship I have enjoyed for more than twenty-five years, who has just escaped from the "Bolshevik Paradise" gave