(CHEMISTS' SECTION)

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the thermopile. At any desired wave length, the ratio of the deflection observed when the cell containing the oil is placed in the path of the radiant energy to that when it is removed gives directly the transmission of the cell filled with the oil. By correcting for the absorption in the glass and the reflection from the surfaces, the transmittance of the oil alone is obtained for that particular wave length. For definitions and explanation of terms used, see paper by Priest, "The Color of Soya Bean Oil as Compared with that of Cottonseed Oil," the CORROX OIL PRESS, January, 1920.

This particular spectrometer could not be used beyond wave length 1360 millimicrons. Values are, therefore, given from about 600 in the orange to 1360 in the infra-red. The wave-length calibration was of high accuracy, and the bands have been located with an uncertainty not greater than ± 5 millierons, and probably less than that. Inasmuch as the apparatus was not intended for such large thicknesses as were used, the values of transmittance do not have the accuracy that could be obtained if certain changes, preparatory to a thorough investigation, were to be made. It is because such an investigation cannot be made in the near future that these preliminary and approximate results are presented.

The spectral transmittance curves for several oils are given in the accompanying figure, all being for 10-cm. layers except the coconut oil, which is for 2 cm. Because of the approximate values, already noted, the curves for all the samples except the coconut oil were reduced to the same value at 980 millimicrons, this value bringing them into close agreement with the visual curves from 600 to 700. The following points are worthy of note:

1. When the reduction just noted is made, the curves are practically identical between 850 and 1360 millimicrons, regardless of the color and the location and magnitude of the bands in the visible region.
2. This is strikingly true of the Wesson oil, in which the band at 670 has entirely disappeared, without, however, affecting the bands in the infra-red.
3. These infra-red absorption bands are, therefore, a property of the oil itself rather than of the chlorophyll or other color-producing materials.
4. The infra-red bands are located as follows:

1210 millimicrons.....	very strong
1040 millimicrons.....	strong
930 millimicrons.....	strong
830 millimicrons.....	weak
770-780 millimicrons.....	weak

There are doubtless other bands beyond 1360. W. W. Coblenz of the Bureau of Standards has examined (Investigations of Infra-red Spectra, Carnegie Institution of Washington, Publication No. 35, pp. 37 and 213; Bureau of Standards Bulletin Vol. 7, p. 649, 1911) thin layers of one of the important constituents of cottonseed and other vegetable oils, viz., oleic acid (The Chemical Composition of Cottonseed Oil, Jamieson and Baughman, the CORON OIL PRESS, pp. 61-63, July, 1920). He found many absorption bands, some very strong, between 1000 and 15,000 millimicrons.

5. The coconut oil, although in but a 2-cm. layer, is obviously of the same type and further confirms the above conclusions.

Knock all you please, but be sure your knocks are constructive. Use your hammer to drive in nails, not to knock off the plastering. Kick by all means if things don't go to suit you, but kick the accelerator, not the brake.

The common thermopile-galvanometer-deflection method was used, the eye being insensitive to the infra-red. The thermoelectric and visual methods, however, overlap in the red and thus afford a basis of comparison. The method is briefly as follows:

Radiant energy from a Mazda-C lamp is dispersed by means of a glass-prism spectrometer, and a very narrow region of the resulting spectrum of any desired wave length is made to fall upon a thermopile. This is connected in series with a sensitive galvanometer, whose deflections may be observed. The deflections are proportional to the current flowing through the galvanometer-thermopile circuit, this current, in turn, being proportional to the radiant energy incident on the thermopile. The method is often as follows:

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