

*Absorption of Light by Thin Films of Rubber*

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Considerable work on the influence of light on rubber has been done by Victor Henry. In his investigations he experimented with pure unvulcanized rubber, and with vulcanized rubber cured in different ways.

The pure rubber as obtained from Para sheets was exposed to the rays of a mercury vapour lamp for several hours. The samples exposed in this manner showed considerable change in colour and lost their elasticity, being readily torn. The change in the rubber appeared to depend on the colour of the original sheet, the dark brown sample being altered at the surface only, while the "yellow plantation" was changed through a considerable thickness. The vulcanized samples had to be left for a much longer period than that of the unvulcanized before any apparent change was noted.

An effort was also made to determine what particular part of the spectrum was most injurious to the rubber. He arrived at the conclusion that the rays below 3000 A. are the most active in this respect. Some of the rays between 4000 and 3000 A. were strongly absorbed, but the most refrangible rays are the particular agents which alter the rubber, the unvulcanized samples being altered most.

The foregoing results were confirmed during the course of the preliminary work in the present investigation, and prove conclusively that light has a very great influence on rubber and that certain wave lengths are more active than others in this respect. Beyond ascertaining the effect of light on rubber in changing its appearance, elasticity and general physical properties, no attempt was made, by previous investigators, to obtain in a quantitative way the absorption of light for different parts of the spectrum.

The purpose of this investigation was to ascertain in a quantitative manner the amount of light absorbed by rubber and how it varied for different wave lengths.

Pure Para rubber sheets were obtained, light brown in colour and several millimetres thick. Efforts were made to cut the sheets into thinner ones, for this purpose a microtome being used, but owing to the great elasticity of the rubber this method had to be abandoned as