

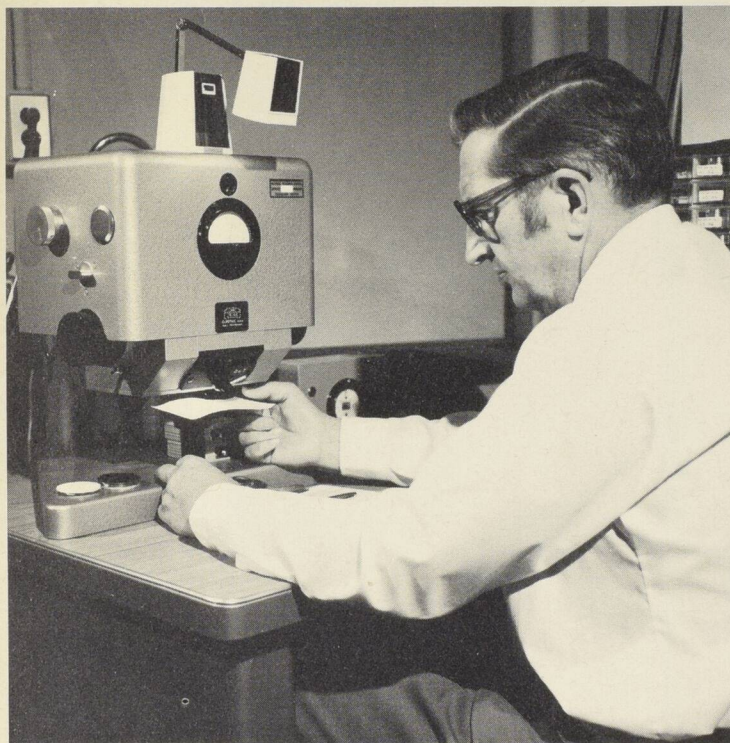
opacity standards

industrial testing laboratory.

The Elrepho measures opacity by determination of two reflectance values. The actual process of testing each sample takes less than 30 seconds. A sample of paper is first placed on a jet-black background and the reflectance value is recorded. Then the sample is placed on a white background and that reflectance value is recorded. The reflectance of the sample with the black background is usually smaller than that with the white backing. The actual opacity value is determined simply by dividing the reflectance obtained with the black backing by that obtained with the white backing.

Comparative measurements on a large number of samples, including the strongly-colored tissue papers resulted in the conclusion that accurate opacity measurements can be made with the Elrepho on colored papers of a wide variety. The majority of tissue papers studied by Mr. Budde are outside

H.W. Budde takes opacity measurements from samples of paper using the Elrepho electric reflectance photometer. • M. H.W. Budde mesure l'opacité d'échantillons à l'aide du photomètre à réflectance "Elrepho".



Brightly-colored papers were essential for work on opacity standards for paper conducted in NRC's Division of Physics. The illustration demonstrates the meaning of opacity; a thin sheet of tissue paper at top is of very low opacity, with the black background clearly showing through. With increasing thicknesses of tissue paper, the opacity increases until the background cannot be seen, at bottom. • Grâce à ces papiers aux couleurs éclatantes on a pu déterminer les normes d'opacité. Pour mieux comprendre ce que l'on entend par opacité, nous avons placé une feuille mince de papier jaune sur fond noir (en haut), puis plusieurs épaisseurs de ce même papier en allant vers le bas. Résultat: le fond noir très visible (en haut) finit par devenir invisible (en bas).

these limits. From these measurements, the limits of the feasibility of opacity measurements were determined.

"We looked into opacity measurements," says Mr. Budde, "because the Canadian paper industry needed a useful and reasonable standard for opacity measurements and there were some weak points that needed clarification. The job is now finished and the results have been incorporated into the CPPA standard 'Opacity of Paper'."

Because of his research into the various optical properties of paper (brightness, reflectance, opacity), Mr. Budde was recently named chairman of a Working Group on Optical Properties of Paper, Board and Pulp of the International Standards Organization. He is the first Canadian named to such a position within the ISO Technical Committee on paper, board and pulp.

At the first meeting of the working group, NRC was asked to undertake international exchanges of reflectance standards so that, within the ISO member countries, reflectance measurements would be in close agreement. Mr. Budde is now working toward this end. □ David Smithers

