forskningsinstitutet of Helsingsfors, utilizing measurements from the last international cruise in July–August, 1939. The analysis of sustained observation series, partly from anchored ships, partly by means of recording meters below subsurface carrier buoys, prove the rotating current component of 12 pendulum hours' period to be practically of the same phase across the central Baltic, from the Swedish island Öland to near the coast of Lettonia. This implies that the whole surface watermass down to the thermocline near 20m:s depth is carrying out a rotatory movement with a horizontal amplitude up to 5 kilometres. In addition tidal currents of the M_2-period with a maximum velocity of 2 cm/sec. were for the first time ascertained to occur in the Baltic.

The vacuum core-sampler constructed by Pettersson and Kullenberg has been further developed. With a 2″ tube cores up to 12 metres long have been sampled from the Gullmar Fjord (115 m), and have been submitted to pollen analysis. Also from the Baltic coast cores of 7 metres length have been sampled with a shorter tube. They show distinct varves, also such of recent date, and thus promise to allow of a linking up of the post-glacial chronology of De Geer with our time. By means of a special contrivance it has been possible to make the length of the cores agree to within a few per cent. with the depth of submergence in the deposit, the cores being thus truly representative of the stratification *in situ*.

An examination of the radium content in manganese nodules from the Challenger expedition, central Pacific Ocean, has proved the very high content of the outermost layers, 10^{-10} gr Ra/gr, to decline rapidly inwards to quite low values near the nucleus. Apparently the Ra-ions attracted by the manganese, either from the sea water or from the surrounding sediment, show the characteristic decay of 1,580 years half-period. From the figures thus interpreted the rate of growth of the nodule is estimated at 1 millimetre in from 700 to 1,500 years. The more rapid growth to the upward direction, indicated by the convex shape of the largest nodule, is probably due to the accretion of sediment from above, the rate of sedimentation being thus found of the order 1 millimetre in 1,000 to 2,000 years, apparently the first estimate of the accumulation of red clay based on measurements. The figures are subject to a final revision on the conclusion of a more detailed study now in progress, where the radium content is being related, not to the gross weight of substance but to the content of manganese.

Preliminary measurements made several years ago on the vitamin D content in diatoms, collected in larger quantities during the spring increase here, had indicated the presence of considerable amounts of the antirachitic vitamin, which were, however, much increased by exposing control batches of the same diatoms to intense ultraviolet radiation from a quartz lamp. These investigations have now been resumed in collaboration with the new State Institute for Public Health of Stockholm, Director Professor Abramsson, where biological tests were carried out with diatoms collected from Bornö Station on the Gullmarfjord. The results were negative with non-radiated diatoms, probably owing to the available quantity being rather limited, whereas the same quantity of diatoms after uv-radiation gave a relatively high vitamin content, the oil extracted being even richer in the D-vitamin than codliver oil. It therefore seems likely that the vitamin D found in many marine organisms may in fact be identical vitamin D_3 and especially that the vitamin D available in phytoplankton and hence their value as primary foodstuff for marine organisms may depend on the ultraviolet daylight penetrating into the surface layers of the sea. This also suggests the tentative explanation for the preponderance of certain year-classes of food-fishes, and all it implies for the economic yield of the fisheries, that it may be due not only to the quantity of foodstuff available during the critical weeks in the existence of the fish-larvae (when their percentage of survival is largely determined) but also to its *quality, i.e.,* to the amount of vitamin D produced in the phytoplankton by the antirachitic daylight components reaching down to the plankton-bearing layers. Further research along these lines is now in progress.

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THE FIRST LAW OF FLUORESCENCE

THERE have been comparatively few rules and so-termed laws formulated and proved for fluorescence and phosphorescence. Probably the best known is Stokes's Law, although others of a more specialized nature may be found in the literature of the field.

In photochemistry, the very basic rule is the Grötthuss-Draper Law. Grötthuss, in 1817, while investigating the fading of alcoholic solutions of ferric chloride and other iron salts, concluded that only light which is absorbed can act chemically. This rather obvious statement, now called the First Law of Photochemistry, at first attracted little general attention. Later the Grötthuss Law was independently rediscovered by Draper, in 1843, in the course of investigations on the photochemical combination of hydrogen

and chlorine.[1] Quantitative significance was given the Grötthuss-Draper Law by Van't Hoff, in 1904, during study of substance transformations by light of different intensities.[2]

In fluorescence an analogous situation may be considered to exist. However, the most fundamental law of fluorescence, and therefore of fluorochemistry, has not yet been formally defined, *i.e., energy must be absorbed by a luminescent system before emission can occur.* This patent statement most evidently concerns Stokes's Emission. In this connection, the exact status of Anti-Stokes's Emission and resonance radiation may provoke contention when close consideration is given this First Law of Fluorescence.

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CEMENTING SINO-AMERICAN FRIENDSHIP

A STATEMENT contained in the recent letter by Egbert H. Walker on the subject of "Cementing Sino-American Friendship" possibly should be expanded. Dr. Walker's letter was concerned with the possibility of the collection of reprint material to be used as gifts to destitute Chinese libraries. He stated, "There seems at present to be no organization receiving and storing such unneeded literature for future distribution." His statement is true in respect to reprint material alone, but there is an organization in existence working on the question of preservation of scholarly and scientific materials for foreign libraries.

The American Library Association as early as December, 1940, created a Committee on Aid to Libraries in War Areas, headed by John R. Russell, librarian of the University of Rochester (reported in SCIENCE, March 6, 1942). During the past year and a half the committee has been working toward that time when reconstruction of foreign libraries can become possible. A rather extensive purchase program has been in process since July, 1941, and a campaign for gift material has been inaugurated on at least a small scale. The committee has had considerable publicity aimed at the conservation of important American scholarly journals, and through the publicity has received gifts from many institutions and individuals interested in the rebuilding of research resources in foreign countries.

The cooperation of a small group of American libraries scattered throughout the country has been enlisted on the question of storage space, and as gifts of journals have been offered, the committee has been able to issue shipping instructions for the transfer of this material to temporary storage, pending that time when foreign distribution can be accomplished.

With rather limited storage space, the committee has been doubtful as to the wisdom of attempting at the present time to collect book material and reprints. Considering the present state of the international situation, it is obvious that storage of this material may have to be for a matter of years, and although we can be sure what journal material will be of importance to foreign libraries, it is not as easy to predict the value of book and reprint material.

The committee would be very grateful for assurances that scholars in this country are keeping this future need in mind and are not destroying either journal, book or reprint material which they feel will be of value. In those instances where personal storage of this material is not possible, the committee would be very grateful for reports of what publications might be available and would undoubtedly be able to reach some satisfactory solution of the storage problem.

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Executive Assistant to the Committee
RUSH RHEES LIBRARY,
UNIVERSITY OF ROCHESTER

RESEARCH AS USUAL

ALTHOUGH few of us realize what the phrase means, we have been rightly told that "this is total war." As yet we have been called upon for only a small fraction of the sacrifice that will surely be necessary before the struggle is over. The longer we postpone doing the inevitable, the higher the cost will be, just as we are now paying heavily for our lack of foresight and sagacity a few years ago.

In this country a vast amount of time is still being spent on things that are of no immediate importance. A goodly fraction of that wasted effort could be devoted to work that will promote the success of our war struggle. In so far as it could be, it should be. To do anything else is at best short-sighted and at worst definitely unpatriotic.

Although many scientists in this country have already turned their attention to research work tributary to the war, there are still thousands who are going along just as in peace times, digging up facts that have no relation to the present emergency, studying problems not even remotely concerned with it, and burdening the mails with papers and books that deserve but little attention until this war has been won and our civilization saved from utter ruin.

Scientific research is of prime value in this crisis. Many of its good results are already well known. It is even possible that a single scientific discovery may tip the scales in favor of victory. But if one's accustomed field of research happens to be unrelated

[1] J. Draper, *Phil. Mag.*, 23: 401, 1843.

[2] F. F. Heyroth, "The Chemical Action of Ultraviolet Rays," 2d edition, page 206. New York: Reinhold Publishing Corporation. 1941.