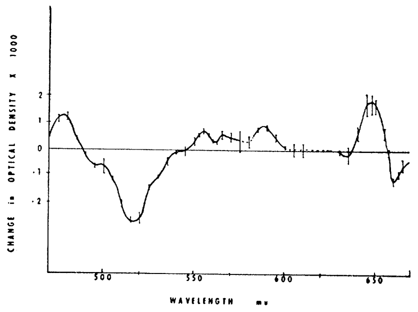

Fig. 2. Absorption spectrum changes in *Chlorella* produced by prior illumination. Spectrum measured with a difference spectrophotometer about 1.5 sec after illumination of 30-sec duration.

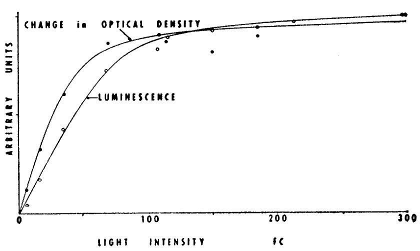

Fig. 3. Luminescence and 525-mμ absorption measured concurrently as a function of illumination intensity. Optical density and luminescence measured 1.5 sec after illumination for about 0.1 sec in a flow system.

to be reported fully elsewhere strongly suggest that chlorophyll itself participates directly both in the photochemical and later steps in photosynthesis as a chemical reagent rather than simply as a light-trapping agent (*10*).

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10. This work was supported in part by a grant from the U.S. Atomic Energy Commission. Thanks are due to L. R. Kruger for expert assistance in the construction of the apparatus, and to C. S. French and J. H. C. Smith for many helpful suggestions and discussions of the experimental techniques and results.

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Carbon Dioxide Sorption by Yeast

The sorption of carbon dioxide by some relatively dry food products, such as milk powder (*1*) and the nut meats (*2*) has been reported. A similar phenomenon occurs during the exposure of granular, dry yeast. We have noted that the uptake of carbon dioxide is equally as great with fresh preparations of active dry yeast as it is with yeast in which fermentative activity has been destroyed by heat treatment.

When dry yeast is sealed into an ordinary can in an atmosphere of carbon dioxide, the degree of sorption is high enough to cause deformation and collapse of the can. Pressure measurements in a comparable closed system using relatively large amounts of yeast in proportion to the volume of carbon dioxide have shown a minimum sorption capacity of about 0.3 ml/g of yeast after 5 days of contact. Indications have been obtained, however, that this value may increase considerably in a system in which the sorption mechanism is not required to operate against a self-induced reduced pressure.

For the study reviewed in this report, measurements were made in a Warburg microrespirometer in which the reduced pressure could be equalized by venting the apparatus. These experiments demonstrated a continuous but progressively decreasing rate of uptake of carbon dioxide by dry yeast during a period of 10 days. At this time the volume of carbon dioxide that had been taken up by 0.5 g of yeast in an 18-ml test system was at least 3.0 ml.

The afore-mentioned experiment was repeated with radioactive carbon dioxide (*3*) in an attempt to determine the nature of the sorption process. Fractionation of the yeast after prolonged exposure to the labeled carbon dioxide was attempted to detect the yeast components responsible for the uptake of the gas.

This approach failed in its original purpose. It was found that in each of the two trials made, the degree of radioactivity of the yeast after removal from the test system was very much lower than would be expected on the basis of the measurements of uptake volume. Less than 1 percent of the expected radioactivity was found in the yeast following a 15-minute air sweeping that was given the yeast immediately preceding the first count-rate determination. Apparently this flushing of the excess carbon dioxide also causes an extremely rapid loss of sorbed gas from the yeast. Failure to remove the interstitial carbon dioxide would yield count rates that would obviously not be a measure of the sorbed gas.

Table 1. Loss of labeled carbon dioxide from dry yeast on exposure to ordinary atmosphere.

Time after first count-rate determination (hr)	Proportion of original activity remaining in yeast (%)
1	85
2	76
3	69
4	62
5	58
24	48
72	6
96	3
240	2

The further observation that the radioactivity of the yeast after removal from the test system was decreasing rapidly precluded consideration of fractionation of the yeast. As shown in Table 1, the steady diffusion of labeled carbon dioxide from the yeast on exposure to the ordinary atmosphere suggests that carbon dioxide forms no stable addition or reaction complex with any constituent of yeast.

These findings suggest that only a transient association exists between the yeast and the carbon dioxide. The extent of this association is governed by the relative proportion of yeast to gas in the test system and by the time of contact or exposure.

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Pseudotuberculosis in Experimental Animals

In our experience 3 years ago, about 2 percent of the mice purchased from a commercial breeder succumbed to pseudotuberculosis (*1*) while in quarantine prior to use. *Corynebacterium pseudotuberculosis murium* was readily isolated from the lesions. When subjected to sublethal total body x-radiation (350 r) 65 to 75 percent of the animals with latent infection died with active pseudotuberculosis (*2*). Recently it has been found that