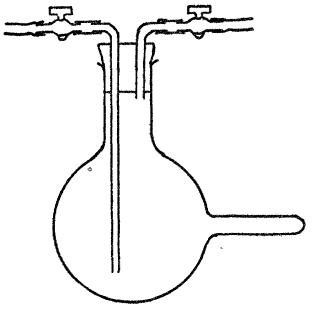
hemoglobin observed both with the naked eye and spectroscopically. It is usually complete in a few (three to five) minutes with a moderately strong aerating current.



The immediate reverse change to oxyhemoglobin upon blowing through a current of air is then observed spectroscopically.

Carbon monoxid or illuminating gas is then passed through the flask and the very rapid change to carbonyl-hemoglobin observed both by the cherry red color on naked eye inspection and also spectroscopically. It goes without saying that this can be performed, starting either with hemoglobin or with oxyhemoglobin.

The change from carbonyl-hemoglobin to hemoglobin is then observed by the passage of a current of nitrogen, hydrogen or carbon dioxid. Usually it takes 15 or 20 minutes to effect the complete disappearance of the two carbonyl hemoglobin bands as compared with the three to five minutes required for the disappearance of the two oxyhemoglobin bands under identical conditions, thus visualizing to the student the difference in velocity of dissociation of oxyhemoglobin and carbonyl-hemoglobin.

That the combination of the hemoglobin with carbon monoxid has not changed its power of combination with oxygen is then readily demonstrated.

It is also instructive to require the student to explain why a current of nitrogen or other indifferent gas changes both oxyhemoglobin and carbonyl-hemoglobin to hemoglobin, while ammonium sulphide or Stokes reagent has this effect only with oxyhemoglobin.

The apparatus also obviously lends itself to other instructive demonstrations. When the aeration flask and test-tube are made strong enough and pressure tubing is employed the air pump may be used instead of the current of indifferent gas. The behavior of hemoglobin towards other gases, active and indifferent, as well as the influence of physico-chemical conditions in the solvent may similarly be studied.

These experiments bring home to the student that in all cases the common factor responsible for breaking up the combination of hemoglobin with active gases is the reduction of the partial pressure of the active gas in the solution. Practical hygienic applications to the treatment of cases of gas poisoning are obvious.

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THE TRANSMISSION OF NEMATODE RESISTANCE IN THE PEACH

IN the spring of 1919 the writer, at that time connected with the Georgia Experiment Station, planted peach seedlings grown from pits obtained from three sources in root-knot nematode infested soil at the Georgia Experiment Station.

One lot of pits was obtained from a tree on a farm near Tallahassee, Florida, a second lot was obtained near Cordele, Georgia, and the third lot was made up of seed from several trees growing at the experiment station.

During the summer it was observed that the seedlings from the Florida pits were growing more vigorously than those from the two lots of Georgia pits.

Examination of these trees in the fall of 1919 showed that the Florida seedlings were practically free from root-knots; while the seedlings from both lots of Georgia pits were heavily infested, thus accounting for their less vigorous growth.

The resistant peach seedlings were reset in nematode infested soil where they continued to make a vigorous growth during the season of 1920. Examination in the fall showed that these seedlings retained their resistance to the root-knot nematode as stated by the writer in the annual report of the Georgia Experiment Station.

Since the peach is not readily propagated except by seed nematode, resistance will have to be seed transmitted if much practical use is to be made of this resistance, so tests were planned to determine this point.

These resistant peach seedlings produced their first crop of fruit in the summer of 1921, and seed from these were tested in root-knot nematode infested soil in the summer of 1922. Pits from Belle of Georgia fruits were planted in the same soil as checks.

In the fall of 1922 the seedlings were dug and examined and it was found that the trees from Georgia Belle pits were heavily infested with root-knots, while the second generation Florida seedlings were free from root-knots. This indicates that this Florida seedling peach is resistant to the root-knot nematode and that the factor for resistance is seed transmitted.

Since July 1, 1922, the writer, as a member of the Tennessee Experiment Station, has continued this

investigation with a view to practical application, but it seems desirable to present this progress report to show the possibilities of root-knot nematode control through resistant fruit stocks.

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QUOTATIONS

THE MASSACHUSETTS COLLEGE OF PHARMACY

OUTCOME of an association founded by Dr. Ephraim Eliot of Harvard one hundred years ago, the Massachusetts College of Pharmacy on November 15 observed the centennial of that organization, which is, in a sense, the centennial of the college. It was a day of many speeches. Running through them all was expression of the idea that the occupation of the pharmacist, whether or not it may properly be called a profession, has been raised to professional dignity and importance. Perhaps it is well for the public to be reminded of this fact in these days when many a drug store contains articles of vast variety in nowise connected with drugs and remedies. It is easy to forget that somewhere in such establishment are the men who have been scientifically trained in the compounding of remedies for human ills.

Significance of the anniversary as bearing upon the problems of youth was also indicated. Payson Smith, commissioner of education, spoke of the boys who are drifting from job to job trying to find their proper place in life. The vocational school, whether it be a college of pharmacy or whether it be devoted to instruction in other occupation, makes appeal to many a boy who might otherwise become one of the drifters, and introduces him to a life of greater usefulness.

The Massachusetts College of Pharmacy is fortunate in the possession of the building given it by the late George Robert White, whose great gift to Boston has made possible the creation of the proposed health units which were described by Mayor Curley in his remarks at yesterday's observance. These health centers in crowded sections of a great city suggest the opportunity which the pharmacist has in common with other citizens to devote time and energy to the public service. But in a larger sense the pharmacists as a body are in the public service, inasmuch as they stand with the physician in the battle with disease and the maintenance of the public health. It is therefore, cause for general satisfaction that institutions such as our own college of pharmacy are to be found in the land, giving their students the technical training which they need and emphasizing the ideals which should guide them in their chosen occupation.—*Boston Evening Transcript.*

SCIENTIFIC BOOKS

Publications of the Astronomical Observatory of the University of Michigan, Volume 3. Published by the Observatory, Ann Arbor, 1923. 270 pages, 16 plates.

THIS volume is a compilation of recent investigations of the Detroit Observatory, chiefly in the field of stellar spectroscopy. The opening papers are continuations of a series by R. H. Curtiss on "Studies of Class B stellar spectra containing emission lines." It is shown that the widths of the hydrogen emission lines in any one of these stars bears a nearly linear relation to the wave lengths and that the lines so plotted for the stars intersect not far from wave length 3270 A.; so that, if the width of one emission line is measured, those of others in the same spectrum may be calculated quite accurately.

In the second paper Professor Curtiss discusses, among other features of Class Bp stars, their evolutionary status. These stars may be said to stand apart from normal helium stars not merely as having more extensive atmospheres, but also because of the excitation of their atmospheres to luminosity. They may have developed uniquely along one of the current evolutionary sequences which he reviews; or, as seems to him more probable, they differ from other Class B stars by virture of a stimulus received by encounters with diffuse nebulosities and differing only in degree from that which produces the novae.

One of these stars, Kappa Draconis, is found to be a spectroscopic binary of a peculiar type. Broad emission and underlying absorption lines oscillate in a period of nine days; but the narrow absorption lines which divide the hydrogen emission, including also the narrow K line of calcium, do not share this oscillation. The orbit of the Class Bp star Sigma Cygni is calculated by F. Henroteau. Another paper by the same author deals with radial velocities of Boss's antapex group of stars. The preferential motion of this group is found in substantial accordance with Boss's conclusions.

It is interesting to find, in a paper by C. C. Kiess, a complete confirmation of the remarkable behavior of Alpha Canum Venaticorum, to which Ludendorff and Belopolsky called attention ten years ago. Two groups of faint lines, attributed by some writers to the rare earth elements, vary reciprocally in intensity, and certain of them yield variable velocities of the same period as the intensity variations; while the majority of the lines, including the more prominent ones, are apparently invariable in both respects. Moreover, maximum intensity occurs coincidently with maximum velocity of approach. It seems to the reviewer