sonnel and to encourage men and women of exceptional proficiency to devote their efforts to the war on disease. While a great deal has been accomplished by the universities, medical schools and endowed institutions, these efforts heretofore have often lacked coordination. The idea is to make the institute "a great cooperative scientific organization in which leading experts in every branch of science will be brought together and given an opportunity to work in unison for the purpose of discovering the natural laws governing human life."

The country's annual "human repair bill" runs to about $1,000,000,000. That takes no account of loss of time or loss of life from preventable disease. Congress has appropriated vast sums for research in crops and live stock, in mines and minerals, and in the problems and processes of industry, but it has done comparatively little to further the cause of human health. The workers in the Hygienic Laboratory have shown what could be done even with meager funds. With the far larger resources that the National Health Institute will ultimately command, it should be capable of doing great things.—*The New York Times.*

SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN IMPROVED DESIGN FOR A SIMPLE LABORATORY PLANT-DRIER

THOUGH heated air, with the aid of a variety of devices, is commonly utilized by botanists for drying their specimens rapidly while in the field, the older and much slower process of curing under pressure, by the changing of absorbent pads or blotters, is still very widely used in the college and high-school laboratories of the country. That teaching botanists have not more generally taken advantage, both for themselves and for their students, of the time-saving and trouble-eliminating method of heat-curing is undoubtedly due quite as much to the fact that no entirely satisfactory apparatus has been made available as to any prejudice against the method.

The writer, during the past nine years, has been constantly under the necessity of accomplishing quickly in his laboratory the curing of botanical specimens collected under field conditions that prohibit the use there of either blotters or heaters. To overcome this difficulty, various types of driers have been made and tested in the laboratory, where the specimens are sent as soon as possible after being collected, and finally a satisfactory drier has been obtained. It was built according to the plan shown in the accompanying drawing, as a permanent piece of laboratory equipment.

This drier, though developed independently, is similar in many ways to an apparatus described by Dr. H. S. Jackson in the "Report of the New York State Botanist for 1924,"[1] but it embodies several improvements and advantageous modifications not found in Dr. Jackson's drier.

This newly designed plant-drier consists essentially of a four-sided wooden box set on legs at a convenient height and provided with two electric lamps to furnish the needed heat. It is open at the top, but the bottom is closed by a galvanized iron pan which, while being perforated with a number of holes to admit cold air, retains and stores heated air beneath the pack of specimens.

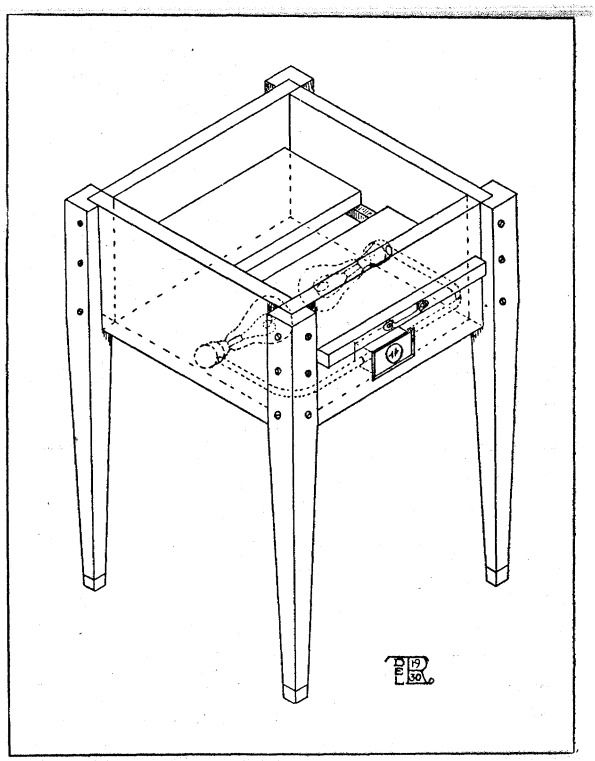

FIG. 1

A narrow ledge fastened around the inner walls of the box, halfway between top and bottom, serves as a support for the pack of specimens; and two sliding shelves, which rest on this ledge and are adjustable to the size of the pack, prevent the escape of heated air along its sides.

Except the legs, which are of oak, all wooden parts are made of yellow poplar, in order to reduce warping to a minimum. When the usual black laboratory stain is applied to the box, inside and out, and to the shelves, and when the legs are finished with orange

[1] New York State Museum Bul. 266, pp. 99–101, 1925.

shellac and clear varnish an appearance is obtained that is both pleasing and in harmony with other laboratory furniture.

The specimen pack is prepared for drying, as in other cases where heated air is utilized, by separating the specimens from each other with corrugated strawboard, the corrugations running, of course, the short way of the pack, so as to be vertical when the pack is set in the drier. After being strapped tightly between press-boards or lattices, the pack is set on edge in the drier, the sliding shelves adjusted to its sides and the electric current turned on. The rate of drying can be controlled by the size of lamp used.

In our hands, this drier has proved very satisfactory indeed. It is, first of all, a complete and independent unit. As it occupies but little space, it can be conveniently installed in a crowded laboratory. Requiring only to be connected with an electric current, it is always ready for use, and large or small sets of specimens can be handled in it with equal facility. A full pack of wet aquatic plants can be dried in from eight to ten hours by using two 100-watt lamps. There is, moreover, no danger of fire, and the specimens are not subjected to scorching or overheating.

L. R. TEHON

ILLINOIS STATE NATURAL HISTORY SURVEY

SPECIAL ARTICLES

DIRECT TRANSMISSION OF HUMAN TRACHOMA TO THE MONKEY

IN previous notes we drew attention to the successful transmission of experimental trachoma from monkey to monkey by (*a*) simple caging together of infected and uninfected *Macacus rhesus*,[1] (*b*) by repeated swabbing of the normal conjunctivae with the secretions from the experimental lesions in *Macacus rhesus*[2] and (*c*) by the repeated instillation of cultures of *Bact. granulosis* into the conjunctival sac of normal rhesus with subsequent massage of the eyelid.[2] The last method is, of course, not an example of monkey to monkey transmission except in respect to the principle of eye to eye conveyance.

In this note we are reporting two instances of direct transmission of trachoma by means of secretions from human cases to normal *Macacus rhesus*, which showed, previously to the swabbings, smooth conjunctivae. For the materials and effective cooperation we are indebted to Dr. Martin Cohen, of New York.

The cases consisted of two white persons residing in New York. Case A had suffered from trachoma for ten years. The lesions were characteristic, consisting of granulations, extensive scar formation and pannus. Case B had suffered from the active disease for two years. The lesions consisted also of granulations, scars and pannus.

The secretions from each case were taken on cotton swabs and transferred directly, by gentle rubbing, to the smooth conjunctivae of each of three monkeys. Nine swabbings were made from man to monkey in Case A and seven in Case B.

Thirteen days after the last swabbing from Case A, one monkey showed granular lesions of experimental trachoma, and thirteen days after the last transfer from Case B the three respective monkeys presented typical granulomatous changes.

Conjunctival tissue was removed from Case A for curative purposes by Dr. Cohen and employed for direct subconjunctival injections in three further normal *Macacus rhesus* presenting smooth conjunctivae. Within four to ten days, all three developed granular lesions of experimental trachoma. The excised tissue was also employed for bacteriological study. Cultures of *Bact. granulosis* were isolated, and these when injected subconjunctivally into three normal monkeys induced in all experimental trachomatous changes in nine to eleven days.

Finally, granulomatous tissue removed from the monkey infected by swabbing from Case A yielded cultures of *Bact. granulosis*.

The direct transmission of trachoma to monkeys has already been effected by several investigators,[3] but the present experiments are the first in which both transmission and the isolation of *Bact. granulosis* have been successful with the same trachomatous material.

PETER K. OLITSKY
JOSEPH R. TYLER

THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, NEW YORK CITY

ASSOCIATION AND CONSTITUTION

THE study of the properties of compounds has unfortunately not yet made it possible to predict the properties of associated compounds with any degree of success. It now appears that the association as measured by the fluidity method varies regularly in a given homologous series, so that the association itself

[1] J. R. Tyler, SCIENCE, 70: 612, 1929.

[2] P. K. Olitsky and J. R. Tyler, SCIENCE, 71: 263, 1930.

[3] For literature see: H. Noguchi, *Jour. Exper. Med.*, Supplement No. 2, 1928, xlviii; and V. Morax and P. J. Petit, "Le Trachome," Paris, 1929.