scab dropped off spontaneously. The papule has been converted into a nodular infiltration the size of a grain of corn, which we are continuing to observe closely.

Comments: Patient L. M. undoubtedly had pinta, mal del pinto or carate, as shown by the inoculation of volunteer A. A., in whom the initial lesions of pinta, mal del pinto or carate were produced at each one of two points of inoculation. In the present state of our knowledge the only laboratory method that will allow with certainty to differentiate syphilis from pinta, mal del pinto or carate is the experimental inoculation of man, with the production of an initial pinta lesion different from that of syphilis and pian.

The ulcerative papular lesion produced in one of four rabbits inoculated with serous fluid obtained from the initial pinta lesion of volunteer A. A. resulted from the inoculation of *Treponema carateum* and not from some other species of treponema, since subpassage to volunteer D. D., utilizing serous fluid expressed from the ulcerated papule of the rabbits, resulted in the development of an initial pinta lesion that contained abundant treponemata.

Summary: In this preliminary note we describe the results obtained by inoculation of the skin of the scrotum of four black rabbits with serous fluid expressed from an initial pinta lesion. The inoculation was made intradermally, as superficially as possible, with serous fluid rich in treponemata and diluted with normal salt solution. A papule appeared at the point of inoculation in one of the four rabbits on the 105th day. One hundred and fifteen days after inoculation the papule presented a circular erosion on an indurated base. The serous fluid expressed from this lesion contained numerous treponemata on dark-field examination, and these were easily impregnated by the Fontana-Tribondeau method. A volunteer inoculated with serous fluid expressed from the rabbit's lesion developed a typical initial pinta lesion at the point of inoculation, thus proving that the scrotal lesion of the rabbit was produced by Treponema carateum or Treponema herrejoni, the causal agent of pinta, mal del pinto or carate.

Four rabbits inoculated with serous fluid from the scrotal lesion of the rabbit have not yet developed visible lesions.

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THE PROTECTION OF PANCREATIC LIPASE BY ACACIA GUM

DURING a series of experiments on the enzymatic activity of pancreatic lipase, it was found that the presence of the acacia gum had a pronounced effect in preventing the destruction of the enzyme. An emulsion consisting of 1 ml tributyrin plus 1 gm of acacia gum plus 100 ml of water buffered to a pH of 8.8 was the substrate used in these experiments. The substrate was added to 80 mg of fat-free pancreatic lipase. The reaction was allowed to proceed at constant temperature in a water bath. The mixture was agitated constantly by means of an electric stirrer. To measure the pH a glass and a calomel electrode were placed in the mixture and connected to an electronic null indicator and potentiometer. The mixture was maintained at constant pH by adding sodium hydroxide at short



FIG. 1. Residual lipase activity after pancreatic lipase was in solution with various substrates for different periods of time. Upper Curves: Enzyme with tributyrin with gum ______. Enzyme with tributyrin without gum -----. Lower Curves: Enzyme with gum without tributyrin _____. Enzyme in buffer without gum and without tributyrin -----.

intervals of time. The reactions were allowed to proceed for varying durations from forty minutes to sixty hours. To determine the amount of enzyme activity remaining after each period an emulsion containing 10 ml of tributyrin was added and the rate of the reaction followed for at least fifteen minutes. The velocity of this hydrolysis was taken as a measure of the residual enzyme activity.

The following controls were also run: substrates of tributyrin with no acacia gum, gum plus enzyme with no tributyrin, and enzyme without gum and without tributyrin. Fig. 1 shows the results of these experiments. It may be seen that the enzyme deteriorates most rapidly in the absence of gum and tributyrin and that the presence of gum without tributyrin protects the enzyme to a large extent. In the emulsions containing tributyrin the presence of gum further protects the enzyme from destruction. One experiment in which 40 gms of gum were used instead of 1 gm a rate of 1.3 ml of 1N NaOH per minute after 615 minutes of enzyme action was obtained. This represents only a slight enzyme deterioration.

The mechanism by which the gum protects the enzyme is at present unknown, but Mendel and Rudney¹ have recently discovered that acacia gum and

¹ B. Mendel and H. Rudney, SCIENCE, 100: 499, 1943.

other negatively charged colloids will restore the activity of true cholinesterase. It will be of great interest to determine how effective acacia gum may be in pro-

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A LIGHT BOX FOR TAKING PHOTOGRAPHS IN BLACK AND WHITE OR COLOR

For photographing plants to show disease symptoms a light box (Fig. 1), which overcomes many of the problems usually encountered in taking such pictures; has been built and used at the Agricultural Experiment Station at the University of New Hampshire.



FIG. 1. Scientific Contribution No. 12 of the Biological Institute of the University of New Hampshire.

The box, except for the legs and frame supporting the glass, is made of five-ply $(\frac{1}{2}$ in.) and three-ply (3/16 in.) wood as shown. A cover $29 \times 29 \times \frac{1}{2}$ in. is used to cover the glass when the box is not in use. The box is painted white inside and varnished on the outside with a light oak stain.

By releasing the thumbscrews on the sides, the frame holding the top-lights may be raised or lowered, the bolts sliding in the grooves in the frame. The top-light reflectors may be moved in or out to fit the object.

Six unmounted General Electric light kits composed of the following parts were mounted directly to the wooden reflectors and base and controlled by the two switches: fluorescent T8 daylight lamp, 15 watt, 24" long; No. 58G670 auxiliary; No. FS2 starter; No. 7019HH, No. 7013HH sockets.

An opal glass 24×24 in. flashed on both sides is supported by the $2 \times 3 \times 29$ in. frame, the frame being grooved so that the glass is flush with the wood on the upper surface. The base holding the two bottom lights is adjusted by moving the pegs shown. The camera is mounted above the box on an adjustable frame attached to the wall.

The daylight setting on the photometer, held at the

tecting other enzyme systems. Such work is at present in progress. GEORGE P. CHILD

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camera lens, is used to determine the exposure for the type of film employed. Regular Kodachrome is used with the fluorescent lamps, thus avoiding the use of filters or shifting to type A Kodachrome which would be necessary if tungsten or photoflood lamps were used. Since the heat from the lamp is negligible, plant specimens and the operator do not wilt during the working period.

With the bottom lights on, the opal glass gives a white background without shadows for specimens up to 20 inches wide.

In photographing mosaic leaves or leaf variegations, the top-lights are moved up and outward or the bottom lights may be moved toward the glass to increase the light transmitted through the lighter areas of the leaf to give greater contrast.

Filters and filter factors may be used as with daylight. Pan X film and a Wratten A (No. 25) filter have given excellent contrast in photographing Haloblight lesions on bean leaves and raspberry leaf mosaic.

When a black background is desired, a piece of black velvet cloth is placed over the glass with the bottom lights turned off. In photographing specimens with Kodachrome, a large 24×24 in. blue blotter may be placed on the glass to give a blue background which to some workers is more pleasing than white for certain plant specimens.

In photographing objects, such as apples or tomatoes, reflection of the lights on the fruits is obtained. This is not objectionable in color photographs as it adds life to the pictures. In black and white, however, it can be avoided by fastening a very thin piece of tissue paper over the lights.

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