The following projects, the titles of which have been abbreviated, are now in progress and serve to illustrate the scope of operations under the Fund:

Niacin deficiency in children: Harry Bakwin; Characterization of *Lactobacillus gayoni* factor: Vernon Cheldelin; Breeding of a high-niacin corn: R. F. Dawson; Clinical investigations of nutritional diseases: Grace Goldsmith; Prenatal nutrition in relation to mentality of young: Ruth Harrell; Pyruvic acid cycle in anoxia: H. E. Himwich; Further studies in oxybiotin: K. Hofman; Hydrolysis of proteins and the amino acid content of vegetables and fruits: Arthur R. Kemmerer; Role of folic acid in cancer: J. C. Keresztesy; Improved staple Southern foods (whole corn enrichment): E. J. Lease; Study of the processes of calcification and ossification: F. C. McLean; Pyrimidine biosynthesis: George W. Beadle; Bacterial flora in relation to intestinal function: V. C. Myers; Work of Food and Nutrition Board: National Research Council; Biological oxidation of pyruvic acid: S. Ochoa; Dietary choline in relation to body stores of choline: P. B. Pearson; Nutritional factors involved in growth and metabolism: Edmond E. Snell; Nutritional Disease Teaching Center, Birmingham: T. D. Spies; Parenteral nutrition: F. J. Stare; Biosynthesis of amino acids: E. L. Tatum; Biochemistry of *Lactobacillus casei* factor: John Randolph Totter; Utility of glutamic acid in epilepsy: H. B. Waelsch; Public health nutrition program of Florida: Walter Wilkins; Nutritional significance of cereal enrichment: Jet C. Winters.

Grants are made only to institutions on application of qualified individuals. The Fund will welcome worthy applications within the scope of its field. Letters should be addressed to: Charles H. Schauer, Secretary of the Committee, 405 Lexington Avenue, New York 17, New York, or to the Chairman, Research Corporation, at the above address. No special application form is required, but letters of application should include a brief but clear description of the project, its potential significance, the plan of attack, and a rough budget of contemplated expenditures. The qualifications of the applicant should also be stated if not available from biographical reference books.

In the Laboratory

Built-in Jacks for Plaster Casts

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Anyone who makes plaster castings knows that it is often difficult to get them out of the plaster molds, especially if they have little "draft." The built-in jack described below makes it possible to lift quite deep castings with great ease and with freedom from damage to casting or mold.

The jack consists of a roundheaded stove bolt measuring about $3/16 \times 1$ inch, with its nut. The nut is fitted with plasticine cores, as shown in Fig. 1, B, the elongated lower core being a round rod somewhat larger than the bolt. The upper core on the nut, by means of which the assembly is stuck to the model to be reproduced, should be about 3/16 inch thick. When the mold has been poured it will look like Fig. 1, C, in section. The plasticine cores are then cleaned out, and a small piece of sheet metal from a tin can is cut to the size of the nut and dropped on top of it. This may be called the pressure plate. Soft plasticine is then forced in above the pressure plate and shaped

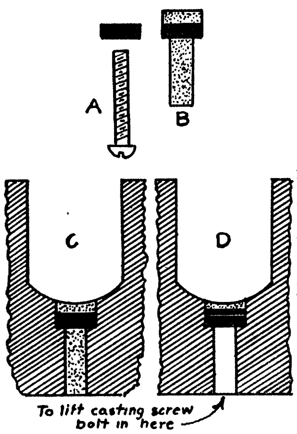

FIG. 1. A—the bolt and nut; B—the nut with plasticine cores; C—the jack assembly cast into the mold; D—plasticine cores removed, pressure plate added above nut, and plasticine filling added above pressure plate; mold ready to pour casting.

with the finger to fit the contours of the mold. The casting is then poured. When this is set, the bolt is inserted and gently turned with a screw driver.

This raises the pressure plate and makes the soft plasticine above it ooze out between casting and mold, thus breaking the "seal" between the latter and lifting the casting with ease. The plasticine may be softened by working into it a small amount of vaseline. It should be soft but not sticky. The jack should be located below the estimated center of gravity of the casting, and for large castings several may be used, so disposed that any massive parts will be assisted out of the mold. Where several jacks are used, each must be given a small fraction of a turn in rotation so that the casting rises smoothly as a whole and does not come out at one end first. It is assumed that some one of the usual "parting compounds," such as a mixture of soap and coal oil, will be used on the mold.

An Improved Method for Quantitative Impregnation of Textiles With Germicidal Emulsifiable Oils

THE RESEARCH STAFF[1]

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Oil treatment of floors and bedclothes has been shown to effect significant reductions in concentration of air-borne organisms (*2*) and offers an encouraging approach to the partial control of respiratory infections. Until recently textiles were impregnated with dust-laying oils in a commercial laundry by the addition of an emulsifiable oil to the last water rinse. Subsequent agitation of the laundry rotator produced good contact of the textiles with the emulsion, resulting in absorption of a portion of the oil. This procedure was responsible for considerable waste, since the unabsorbed emulsion was drained off and not reused. The process was not only uneconomical but also technically inadequate for impregnation of a definite concentration of oil per weight of textile material.

Harwood, Powney, and Edwards (*1*) have recently described a technique for application of dust-laying oils to hospital bedclothes. Their method allowed quantitative removal of oil emulsion by the textiles, although different types of emulsions were required for cotton and woolen articles. Loosli and Robertson (*2*), in their recent review on control of dust-borne bacteria, conclude, in part: "Methods for oil-treatment of bedclothes on a large and practical scale have been reported. Much remains to be done in perfecting economical and stable oil-in-water emulsions and techniques of application which can be carried out by unskilled laundry workers."

This laboratory has developed a simple technique for quantitative impregnation of either cotton or woolen textiles with a single stable and inexpensive oil-in-water emulsion.

The procedure for practical application in laundries is as follows:

(1) The textiles are washed in the usual laundry manner, allowing sufficient rinsing for complete removal of soap.

(2) A stable and readily emulsifiable, nonionic, oily material[2] is added to the last water rinse, resulting in a stable oil-in-water emulsion after a few revolutions of the laundry rotator.

(3) During continued agitation a cationic germicidal agent is added, transforming the nonionic emulsion into a bactericidal cationic emulsion. The negatively-charged cotton and woolen textiles quantitatively remove positively-charged oil droplets from the emulsion. After a few minutes of the usual laundry agitation the original milky emulsion loses its opalescence and appears as a clear, watery fluid. This visible change serves as an end point, indicating complete absorption of oil by the textile.

(4) The watery fluid is drained off, and the textiles are finished in the usual laundry manner.

Many thousands of woolen blankets, cotton sheets, and pillowcases have been tested for impregnation, with a uniform degree of success. It should be pointed out, however, that the laundering process is not a prerequisite for oil impregnation. For example, with colored textiles such as olive-drab blankets laundering need only be practiced when necessary from the standpoint of cleanliness. Analyses of the initial emulsions and the clear drainage fluids have shown complete quantitative exhaustion of the germicide and oil by the textiles. By repeated Soxhlet extraction analyses of the treated textiles it was demonstrated that a known amount of oil can be introduced into either cotton or woolen articles. Detailed procedures for these techniques will be published elsewhere.

The advantage of using a positively-charged emulsion is clearly seen in both the laboratory and commercial laundry. Prolonged manual agitation of cotton or woolen textiles in the original nonionic emulsion produces no visible clearing of the fluid; however, upon addition of the cationic detergent to such an emulsion, a rapid and complete removal of oil droplets ensues. At the present time it is not feasible to employ commercially produced cationic emulsions, since considerable difficulty exists in large-scale com-

[1] The opinions advanced in this publication are those of the writers and do not represent the official view of the Navy Department.

[2] The cooperation of the California Research Corporation and the Shell Oil Company in development and preparation of these nonionic compounds is gratefully acknowledged.