selves hydrophilic, hence the assumption of an oil film completely enclosing each grain is untenable.

If a mass of clay-water-oil paste be left floating on a soda (washing soda) solution for some time, the silicate particles gradually free themselves from the emulsion and sink. But each drags down with it a tiny droplet of oil, just easily visible with a 10× pocket magnifier, attached to its top. The soda has completely freed the surface of each grain from oil but has *not* destroyed the attraction of the solid particle for the oil droplet. Such behavior is not readily accounted for by either the mechanical or chemical theories of adsorption. An electrical theory would account for it if a particle of one dielectric partly immersed in another had an opposite charge induced on the remaining part. I find no reference to any such law in the literature, but it is plainly consistent with the current theory of dielectrics.

In the oil fields conditions are frequently ideal for emulsion formation. During drilling, oil and mud are intimately mixed by the drill bit. During flowing and pumping, flow through the fine capillaries of the oil sands will produce emulsions if free sand particles and water are present. Such emulsions in most cases represent a dead loss, for there is no efficient chemical method of separating the oil at a reasonable expense. The high voltage electrolytic method (Cottrell process) effectively separates the particles constituting the emulsion but requires expensive apparatus.

P. G. NUTTING

U. S. GEOLOGICAL SURVEY,
WASHINGTON, D. C.

EXCYSTATION OF COCCIDIAL OOCYSTS IN VIVO

WHILE excystation of coccidial oocysts has been observed and deliberately produced *in vivo* by various observers the phenomenon has not been put to the practical use of which it is capable. Segmentation of the oocysts is the usual method of determining the viability of coccidial oocysts, but the limitations of this method lie in the fact that only unsegmented oocysts may be thus tested. Excystation is a reliable criterion of viability that can be used to determine the length of life of oocysts after segmentation, the action of physical or chemical changes in the environment of segmented oocysts or of any other experimental procedure which can be tested by a conclusive manifestation of life within the matured oocyst.

The author has repeatedly carried out excystation *in vivo* using the following simple technique. Segmented oocysts from cats, dogs, guinea-pigs, pigs and prairie-dogs have been used with equal success; probably any species of coccidia from birds or mammals can be used. Young rats (75 to 100 grams) are deprived of food and water for twenty-four hours preceding the experiment. This has the double advantage of making the animal eager to eat and of thoroughly emptying the stomach and small intestine. The ripe oocysts are concentrated by centrifugation. If they have been exposed to any unpalatable chemical which may have been used to prevent putrefaction or for some experimental purpose, the chemical must be removed by dilution with water and centrifugation. The concentrated oocysts are suspended in four or five drops of sweet milk. The material is offered to the starved rat and will be immediately consumed. Sixty minutes after the ingestion of the oocysts, the rat is killed and the intestine is removed. At various points throughout its length it will be observed that the small intestine is distended with white contents. At these points the intestine should be opened and the contents observed microscopically. By examining various places in the intestine, all stages of excystation, if the ingested oocysts were normal, may be found, including motile sporozoites within and outside of the oocysts.

When using this method for experimental purposes, one or more control animals fed with untreated oocysts of the same lot from which the experimental were obtained should be included in the experiment.

JUSTIN ANDREWS

JOHNS HOPKINS SCHOOL OF HYGIENE
AND PUBLIC HEALTH

INVESTIGATIONS OF APPLICATIONS OF IODINE

FOR some time past, especially in Europe, considerable research attention has been accorded to the investigation of various proposed uses of iodine. This element, while less fortunate commercially, perhaps, than its congener bromine, which among other industrial applications has achieved importance in the manufacture of a widely used "anti-knock" motor fuel, is known to play a vital rôle in physiology, which fact may lead, it is thought, to the extension of its utility in food and medicine as well as in agriculture. Through the brilliant investigations of Kendall, Harington, McClendon and others, the intricate biochemistry of iodine has received much illumination. There remain, however, many unsolved questions regarding its physiological functions, especially in the lower animals.

These reasons led the Iodine Educational Bureau to establish on January 1, 1928, a multiple fellowship at Mellon Institute. This fellowship, having as its objects the investigation of possible technologic uses of iodine and also collaboration with other institutions interested in research on this element, is headed by