cent. for proteids soluble in salt solution, *viz.*, globulin, albumin, and proteoses.

The amount of coagulable proteids was found to be 1.50 per cent., consisting of albumin and a part of the globulin. There remains then 1.29 per cent. for the uncoagulated globulin and the various proteoses. We have accordingly, in the malt used for these determinations, approximately:

		Per cent.
Proteid, insoluble in salt solution and in alcohol		3.80
Bynin, soluble in dilute alcohol		1.25
Bynedestin, leucosin and proteoses soluble in water and salt solution	Coagulable	1.50
	Uncoagulable	1.29
Total proteids		7.84

The results of this study show: that, in germination, the proteids of barley undergo extensive changes without acquiring, or before acquiring the properties of proteoses; that hordein disappears and an alcohol soluble proteid of entirely different composition takes its place; that edestin also disappears and a new globulin is formed, very different both in composition and properties. The albumin, on the other hand, appears to be unchanged in its characters, but its quantity is increased. It is to be noted also that hordein and edestin are both replaced by proteids much richer in carbon and poorer in nitrogen.

NOTE.

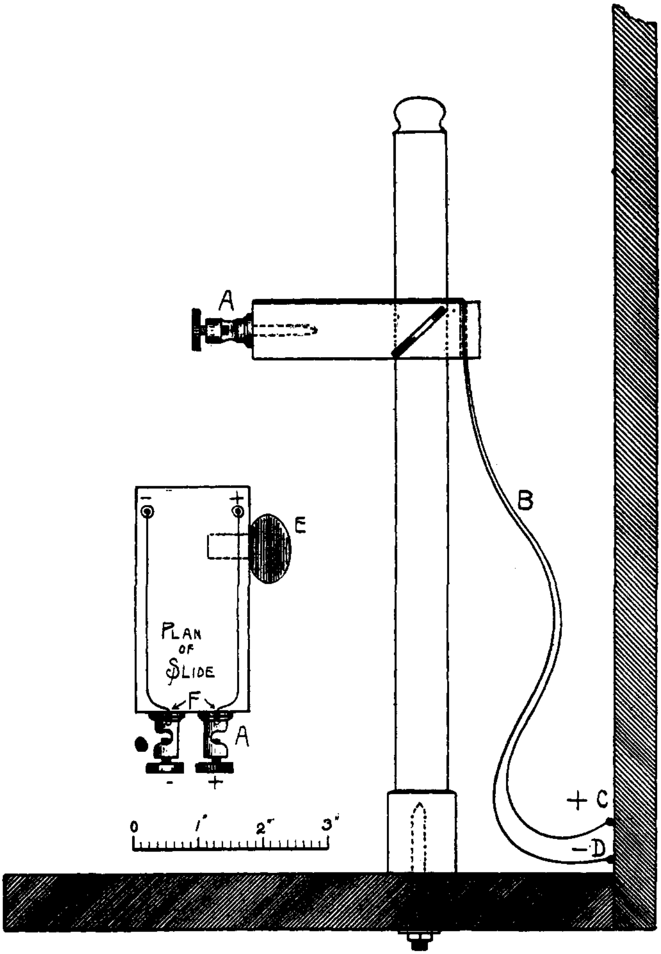
A Cheap Adjustable Electrolytic Stand.—Stands for electrolytic work, especially for efficient assaying of copper, should fulfill certain conditions.

All joints and connections, as far as possible, should be permanently soldered and very few switches used.

If many assays of the same kind are to be simultaneously conducted, each assay should be independent of its neighbor.

The stands or terminals, for holding the platinum cases or cylinders and spirals (which are the forms of electrodes generally used in large laboratories), should be capable of instant adjustment to suit a beaker of any height and size, or permit a block of wood to be placed under the beaker, since some chemists prefer when an electrolysis is finished, to wash the electrodes by quickly slipping out a block, dropping the beaker, and replacing it with another of distilled water.

The author has designed and used for several years, electro-



lytic stands which are simple in construction and comparatively inexpensive, and a number of them may be quickly turned out together in any works possessing a carpenter or machine shop.

The drawing shows that the stands each consist of small, turned sticks of oak wood, one foot high, and fastened by a short lag screw, bolt, or common screw and washer, to a wooden shelf one inch thick, under which are placed the gravity or storage batteries.

A block of wood, of the shape and construction given in the sketch, is arranged to slide on the wooden post, and fastened by the large screw (*E*). Into the front end of the sliding block are screwed two brass holders for the "cylinders," or "cone and spiral" electrodes.

All dimensions may be taken from the scale accompanying the sketch. The "single binding posts" given in chemical catalogues, make very good holders if one side of the brass post is filed out opposite the hole as shown in cut (at *A*.)

The cotton-covered (No. 19) connecting wires (*B*) are connected by soldered joints with two parallel main wires (No. 16) at *C*, *D*, and are led up through two small holes at the back of the sliding block and over the top to the brass plugs in front.

These holders or plugs may be screwed in part way, and the bared ends of the wire twisted once around the screw.

The brass plugs are then screwed up tightly in position, the short, free end of the wire bent down over the top in a little slot previously filed, and fastened with a drop of solder (as at *F*.)

These neat, wooden stands may be set in a single or in a double row in a "staggering" position.

The stands may be arranged in little sets of twos or fours, independent of each other, by breaking one of the parallel main wires at *C* or *D* by a switch or removable plug of low resistance.

From each of these groups or sets lead wires with soldered connections may be run to batteries below, and to arrangements of incandescent lamps on the wall above and behind the row of stands, and each group of assays may thus be given a different strength of current, one sixteen candle power lamp being generally sufficient for four copper assays.

The advantage of connecting assays of the same kind in parallel, as indicated in the sketch, consists mainly in the fact that the current is divided up between the assays, lessening the total resistance, and that any electrode may be quickly removed after loosening the screw at *A* without disturbing the other analyses.

If the laboratory is wired for incandescent (seventy-five volt) lamps, the current obtained from a circuit containing arrangements of sixteen or thirty-two candle power lamps is more steady than that from small batteries.

If the dynamo only runs at night, a bank of lamps in parallel arc may be arranged as a resistance and the current passing through these, caused to charge two or more storage batteries in series at night. In the morning the direct current, through resistance of lamps, which had been applied to analyses during the night, may then be switched off and the dynamo current also switched off from storage cells, which are then connected up, through suitable resistance coils, in an opposite direction with the copper analyses yet unfinished.

As noted, adjustable resistance coils should be included in the circuit of analyses, through which the storage cells discharge. For a description of such apparatus, I refer to the works of well known authorities,[1] [2] and for different arrangements of incandescent lamps to articles in this Journal of 1894 and 1895.

The "chloride accumulator" is thought to be the most efficient storage cell for laboratory work. Three cells in series of the type (5 E, Electric S. Bat. Co., Phila.), require the current of ten sixteen-candle-power lamps in parallel arc to secure a full charge in one night of twelve to fourteen hours, and will, when connected with analyses, give out again for a period of fourteen to fifteen hours about eighty per cent. at two volts potential.

The foregoing descriptions will, it is hoped, be of service to those who have considerable electrolytic work with copper, or other metals, and the stand described is recommended as one that is permanent, easily adjustable and comparatively inexpensive, if set up by the chemist himself.

G. L. HEATH.

1 Clasen s Quant. Anal. by Elect,, Am. Ed., pp. 23-28.
2 E. F. Smith's Electrolysis, pp. 27-28.