drate is thrown down by the calcium carbonate naturally present, and passes out of solution along with the co-precipitated peaty matters, the waters becoming pellucid and colorless. When fine silt is present this is removed at the same time. With kaolin suspended in distilled water artificially hardened by the addition of dissolved carbonate of lime, the kaolin was readily precipitated on the addition of an alumina salt in amount exactly equivalent to the small quantity of dissolved calcium carbonate. But it appeared to be simply entangled in the flocculi of the aluminium hydrate, and, as indeed might have been anticipated, did not enter into combination with the kaolin.

As remarked above the alum salt is necessarily used when both suspended silt and peat extract are present; iron salts will not answer. The latter behave precisely like those of alumina so far as the silt is concerned, but form soluble compounds with the peat. Indeed the color of the clarified water may be deeper than the original owing to the dark tint struck by the ferric humus compound, and when this result is obtained just as much alum salt must be employed to get rid of the dissolved iron compound and render the water colorless, as if the original peaty water itself had to be dealt with.

A NEW LABORATORY STAND.

By Dr. G. C. Caldwell.

This stand takes the place in my student laboratory of filter stands, lamp stands and burette stands, one stand serving two students working on opposite sides of the table and carrying also a shelf long enough to hold four bottles for the reagents most commonly used in quantitative work, such as ammonia, and the acids.

It is entirely of iron, and consists of a post, with a round base about four inches in diameter and a quarter of an inch thick, from which the post proper rises to the height of about 18 inches: this post carries six arms 15 inches long, three of which can revolve towards the student working on one side of the table, while the other three revolve only in the opposite direction: above these arms is the short reagent shelf above referred to.

Four of the arms, two for each side of the table, carry iron rods which can be held at any height by the thumb screws in the ends of the arms: one of the rods carries a funnel holder like that on an ordinary filter stand, for the other rod the usual lamp rings are provided. Of course both rods can be used at once for filtration or for ignition by providing more funnel holders, or lamp rings The third arm carries a burette holder for two burettes.

This stand has been in use in my quantitative student laboratory for eight years, as well as in my private laboratory and by my assistants in their private laboratories. When the table is built against the wall we have four-arm stands, all arms turning one way. We would not willingly go back to the old style of only movable stands, although these are occasionally required for some special purposes. Filtration, ignition and titrations can be carried on just as conveniently as with the usual appliances, and all the arrangements for these operations are perfectly stable: burettes are always plumb; at least six movable stands are dispensed with without any loss in respect to economy, as the cost of this stand complete is a little less than seven dollars.

I also use, in connection with this stand, Bunsen burners on ordinary two arm gas brackets, which, like the arms of the stand, can be drawn out towards the student working at the table, and brought under the lamp rings on the stand, and can be pushed back out of the way when not in use: thus I dispense with a large quantity of rubber tubing, avoid all danger of fire from the "striking down" of the flame of the burner, and sacrifice nothing in respect to convenience. Every student is supplied also with a burner attached in the usual manner, but he seldom uses it.

Of course this stand, working in opposito directions for two students, is incompatible with the great array of reagents that is

put before each student in nearly all quantitative laboratories. But the actual using of reagents is only a small item in quantitative work; by far, the largest part of the time is spent in the operations of filtration, ignition or titration; only a very few reagents have to be used frequently, and these can be counted on the fingers of one hand. With the other reagents conveniently accessible at several places in the laboratory, the loss of time incurred in going for them is insignificant; and these occasional excursions give no little rest from the weariness of standing for a long time at one place.

The following cut of a four-arm stand needs no explanation: provision is made by four screw-holes in the base for fastening the stand firmly to the table.