hammer, a steam digester, etc., etc. Never, after it became a part of the equipment, has it seemed possible to proceed without it. In the single case of the electric vacuum furnace, for example, our laboratory has made almost continual use of from three to eight for the past five years. The laboratory, piped several years ago with high vacuum and with electrolytic hydrogen, besides steam, air, water and gas, will probably never operate without them.

Similarly, this applies to a library. In general, the most useful and fertile of our investigators use the library the most. This is as it should be. The recorded research work in a library of a few thousand volumes frequently represents the work of millions of work-hours, and there is little excuse for not availing oneself of the published experience of others. A library containing ten of the leading research journals of the world may be said to have in each volume about 100,000 available brain-power-hours. So a library corresponds to a charged storage battery of great capacity.

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NOTE.

The Speedy Detection of Potassium in Small Amounts.—The use of sodium cobaltinitrite as a reagent for the detection of potassium has been known for a long time, but very little attention appears to have been given to its delicacy. Crookes[1] quotes De Koninck as saying that the precipitate is still formed at a dilution of 1/1000 KCl, but not at 1/2000. The writer also obtained by an indirect method the proportion of 1/1600 K_2O as the point at which precipitation would not occur.

A careful investigation of this reaction is given by W. C. Bray,[2] who finds the sensitiveness to be far greater than the above figures. During the course of a study of this reaction for quantitative purposes, the writer was fortunate enough to find a means of greatly shortening the time required for the test. Bray dissolves a given amount of potassium as potassium chloride in 5 cc. of water, adds a little acetic acid and 5 cc. of the sodium cobaltinitrite reagent (containing 0.5 g. Co in 100 cc.), then allows it to stand until there is a turbidity formed, afterward bringing the precipitate onto a white filter paper where it can be easily seen. The writer has found that if to the solution prepared as described there be added an equal volume of strong alcohol the precipitate will be formed in a very short time, so short in fact that if enough potassium is present to give a test at all it will by this means be thrown down in a few minutes, where several hours would be required otherwise. The following table shows the comparative times required by the procedure used by Bray and that where alcohol is added.

[1] "Select Methods in Chemical Analysis," 1.

[2] THIS JOURNAL, **31**, 621, 633 (1909).

Without alcohol.				With alcohol.			
Mgs. K.	Pts. per 100,000.	Turbid in.	Precipitate settles in.	Mgs. K.	Pts. per 100,000.	Turbid in.	Precipitate settles in.
...	.....	.....	.....	0.1	20	immed.	at once
0.5	10	1–4 min.	short time	0.5	10	immed.	at once
0.3	6	1–4 min.	short time	..	...	.....	....
...	.....	.....	.....	0.25	5	immed.	5 min.
0.2	4	20–30 min.	2 hrs.	0.2	4	3 min.	6 min.
0.1	2	6–10 hrs.	not given	0.1	2	4 min.	11 min.
...	.....	.....	.....	0.05	1	.....	....
...	.....	.....	.....	0.01	0.2	.....	....
0	0	.....	.....	..	...	.....	....
0	alcohol added	.....	.....	0	...	.....	....

This shows that the sensitiveness of the reaction is not increased by the addition of alcohol, but that any potash that will be detected at all will be shown in a few minutes. A qualitative test, however, sensitive to 2/100,000 is unusual, and is really more accurate than needful in ordinary work.

Particular care must be exercised to insure the removal of all ammonium salts previous to testing for potassium, since by the addition of alcohol they are thrown down as quickly as the latter, and almost as completely. This reagent gives a sensitiveness with ammonium salts of 5/100,000, making it not greatly inferior in point of delicacy to the Nessler reagent. Following is given a comparison of Bray's results on ammonium salts and mine where alcohol is added.

Without alcohol.			With alcohol.		
Mgs. NH_3.	Pts per 100,000.	Turbid in.	Mgs. NH_3.	Pts. per 100,000.	Turbid in.
2	40	at once	..	...	.....
1	20	10 min.	1	20	immed.
0.5	10	several hrs.	0.5	10	immed.
...	..	.....	0.25	5	immed.
...	..	.....	0.1	2	none
...	..	.....	0.05	1	none
...	..	.....	0.01	0.2	none

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CORRECTION.

My attention has been called to an error in the review of recent work in inorganic chemistry, which appeared in the December number of THIS JOURNAL. The statement is made that Keiser found the formula of the bicarbonates of calcium and barium to approach "closely the formula $H_2M(CO_3)_2$." As a matter of fact the bicarbonates analyzed contain considerably more carbonic acid than would correspond to this formula, being in the case of the calcium salt $CaCO_3.1.75H_2CO_3$, and in the case of