C. to vary between the extremes of 102780 and 102400; so that, to be of any value at all, the possible error in the results must not exceed 10. The hydrometer used for these observations is fully described in a paper presented to the Royal Society by Mr. Buchanan early in 1875, and published in abstract in the "Proceedings" for that year. Its description is briefly as follows:

The stem, which carries a millimetre-scale 10 centimetres long, has an outside diameter of about 3 millimetres, the external volume of the divided portion being 0·8607 cubic centimetre; the mean volume of the body is 160·15 cubic centimetres, and the weight of the glass instrument is 160·0405 grammes. With this volume and weight it floats in distilled water of 16° C., at about the lowest division (100) of the scale. In order to make it serviceable for heavier waters, a small brass table is made to rest on the top of the stem, of such a weight that it depresses the instrument in distilled water of 16° C. to about the topmost division (0) of the scale. By means of a series of six weights, multiples by 1, 2, 3, 4, 5, and 6 of the weight of the table, specific gravities between 1·00000 and 1·03400 can be observed. It is not necessary that these weights should be accurate multiples of the weight of the table; it is sufficient if they approach it within a centigramme, and their actual weight be known with accuracy. The weights of the table and weights in actual use are:

Weight of table		0·8360	gramme.
"	of weight No. I.	0·8560	"
"	" II.	1·6010	"
"	" III.	2·4225	grammes.
"	" IV.	3·1245	"
"	" V.	4·0710	"
"	" VI.	4·8245	"

For ocean-waters the hydrometer is always used with the table and either No. IV. or No. V. weight.

When the mechanical part of the construction of the instrument was finished, with the exception of the closing of the top