NOTES.

The Editor desires to point out that the pages of the Journal are open for the inclusion of short notes dealing with analytical practice and kindred matters. Such notes are submitted to the Publication Committee in the usual manner.

A SIMPLE METHOD FOR TESTING GLUE.

MANY methods for testing glue have been suggested, and most of them are unsatisfactory or give results which are difficult to interpret.

The following simple method involving the use of the machine for testing the tensile strength of cement has been devised, and is claimed to be a useful addition to the tests already in use.

The method is as follows: Briquettes of pitch pine of the same dimensions as those used in testing the tensile strength of cement (*cf.* British Standard Specification for Cement) are made, the grain running longways. These are then sawn across the middle at right angles to the axis, care being taken that the operation is done with great exactitude, and the cut surfaces smoothed down with sand-paper so that they fit absolutely when placed together.

Twenty-five grms. of glue are allowed to stand in 100 c.c. of water for twenty-four hours. This is then heated on a water-bath until all the glue has dissolved, the evaporated water replaced, and the solution cooled to 50° C. A quantity of the solution is then removed by a small pipette specially made from a thin glass tube delivering exactly 0.3 c.c., which is found to be the amount required to cover the sq. inch section of the briquette. This amount is run out on to the flat surface of one of the half-briquettes, the other half is put immediately on top of it, and the two halves are held in position by a 2-inch rubber band. After twenty-four hours the briquette is placed in the cement testing machine and broken in the ordinary way.

The cross-section of the middle of the briquette being exactly 1 sq. inch, the tensile strength of the glue can be given in pounds per sq. inch. Several briquettes should be used for each sample, and the mean results taken.

The following are the results obtained from ten samples of glue. The figures marked * are considered abnormal and not included in the means.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	
Pounds per Square Inch.										
410	300	60	400	*500	400	40	370	100	450	
445	180	0	280	190	250	60	328	120	410	
575	180	115	380	175	265	120	315	105	300	
440	220	75	255	280	305	90	450	140	470	
*275	220	110	430	220	*605		380		450	
550	365	110	446	215	*175					
480	270	50	285	170	400					
440	280	60	380	210	405					
Mean :	477	246	72	356	207	338	78	369	124	416

In order to classify the glues for general purposes, the following standards were made:

Quality.			Tensile Strength.	
			Pounds per Square Inch.	
A. Good	...	...	More than 300	
B. Medium	...	...	,, 150 and less than 300	
C. Poor	...	...	Less than 150	

CONCLUSIONS.—1. From the above results it will be seen that there is an occasional abnormal briquette; obviously this should be omitted from the mean of the series.

2. That by the above method anyone can fix his own standards, using whatever wood or strength of glue be most suitable.

3. It is suggested that for each series six briquettes be made.

4. That a really fair estimate of the strength of different glues can be obtained by this method.

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THE ESTIMATION OF SMALL AMOUNTS OF CHROMIUM IN STEELS.*

Since the publication of my paper on the estimation of small quantities of chromium in steel (ANALYST, 1921, 38), my attention has been drawn to the sensitive colour reaction of chromic acid with diphenyl-semicarbazide described by Cazeneuve (ANALYST, 1900, 25, 331). This indicator gives an intense "permanganate" colour with chromic acid, visible at far greater dilutions than the colour of the chromic acid itself. It was thought worth while to try the chromium process, using this indicator in the colour matching, and to carry it to greater dilutions, to find out if the separation of the chromium from the iron is as complete as it appears to be.

Samples containing a small but measurable quantity of chromium gave identical results, whether the chromium was estimated in the ordinary way by direct matching of the chromic acid colour, allowing for the blank, or whether the indicator was added to the two tubes and the purple colour matched (if necessary diluting and taking an aliquot part).

The details of the experiments, with percentages of chromium too low to be estimated by matching the chromic acid colour, are as follows:

$\frac{N}{1000}$ $K_2Cr_2O_7$ added to 4 Grms.	Cr added.	$\frac{N}{1000}$ $K_2Cr_2O_7$ re- quired for 100 c.c.	$\frac{N}{1000}$ $K_2Cr_2O_7$ re- quired for 4 Grms.	Cr found.
c.c.	Per Cent.	c.c.	c.c.	Per Cent.
Blank	—	Less than 1 drop	—	—
1.00	0.00043	0.15	0.75	0.00032
2.00	0.00087	0.35	1.75	0.00076
3.00	0.00130	0.55	2.75	0.00120
4.00	0.00174	0.70	3.50	0.00152

In each case 4 grms. of electrolytic iron were used, and the separation carried out as in the original experiments.

These results prove that the oxidation and separation of the chromium from the iron are complete.

The indicator is made up by dissolving 1 grm. of diphenyl-semicarbazide in 10 c.c. glacial acetic acid, and making up the solution to 1,000 c.c. with water; 5 c.c. are added to each tube, and 10 c.c. of 1 : 3 sulphuric acid are used instead of the original 20 c.c.

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