THE SUTTON-STEELE DRY CONCENTRATING TABLE.

(Extract of Paper read before the Sydney University Engineering Society, on May 13th, 1908).

By W. Shellshear, B.E.

In this paper the author describes in detail a dry concentrating table brought out by the Minerals Separation Company. It is claimed that the table is the equal of any form of concentrator in use. and has the great advantage of requiring no water for its operation.

Before treatment on the table the ore is fine dry-crushed, either with rolls or ball mills, and passed through an Askham Stag separator, in order to remove fine dust. which is drawn off by a fan.

After removal of the dust, the material passes to a Reedy designer. This consists of a rectangular-shaped box, carrying a number of superimposed screen shelves, which size the material into eight grades, varying from a 16 sieve to a 200 sieve.

The table itself has much the same form and dimensions as an ordinary Wilfley table. The top is supported on rockers, has an end shake, and an adjustable inclination from the back to the front.

The speed is about 480 revolutions per minute, but this can be varied by an arrangement of cone pulleys.

The throw of the table is about ⅛in., and about ½-horse-power is required to drive it.

The table top consists of a shallow wooden frame, covered on the lower side by galvanised iron and on the upper by a series of narrow slats. Over the latter is stretched fine cloth, and on top of it the ordinary tiffle strips are tacked.

Two nine-inch air pipes connect to the lower side, by which air is forced through the cloth at a pressure of two to three inch water gauge.

The air escaping through the cloth buoys up the ore as it worked forward by the jerking action of the table. A separation takes place, the tailings pass over the tiffle. while the concentrates travel along them, and are eventually delivered at the end.

The air is supplied by a fan (No. 6 American Blower Company), about 2ft. 6in. diameter, and absorbing four to six horse-power. The air supply for this fan should be free from dust, to prevent the under side of the cloth becoming choked.

The coarser the material being treated the greater should be the air pressure and the less the throw. The cloth should, therefore, be open for coarse material and of fine texture for smaller grades.

In practice three different cloths are necessary—

(a) For 16 to 40 grade material.

(b) For 40 to 80 grade material.

(c) For 80 to 200 grade material.

The chief advantages claimed are:—

1. No water is required.
2. Extremely close concentration can be effected.
3. Large capacity—up to three tons per hour.
4. No mineral lost by flotation.
5. Easily worked, and has few working parts.
6. High recoveries and high-grade concentrates produced.
7. No drying of resultant concentrates necessary.

The paper is accompanied by several drawings and photographs.

THE FOLLOWING RESULTS WERE OBTAINED ON A PYRITIC ORE CARRYING GOLD AND SILVER.

GRADE.	PRODUCT %		ASSAY VALUE. oz. dw. gr.	RECOVERY %	TOTAL RECOVERY %	ORIGINAL VALUE. oz. dwt. gr.
16-40	Concentrates ...	25·5	Ag. 66 0 2 Au. 0 4 10	73·3 87·5	82·6 Ag.	Ag. 22 17 17
	Middlings... ...	11·9	Ag. 17 6 5 Au. 0 0 13	9.3 4·7	92·2 Au.	Au. 0 1 8
	Tailings	62·6	Ag. 6 5 16 Au. 0 0 4	17·4 7·8		
40-60	Concentrates ...	21·4	Ag. 99 18 4 Au. 0 2 14	71·5 75·5	84·1 Ag.	Ag. 29 18 9
	Middlings... ...	11·1	Ag. 33 9 19 Au. 0 0 19	12·6 11·5	87.0 Au.	Au. 0 0 18
	Tailings	67.5	Ag. 7 0 23 Au. 0 0 4	15·9 13·0		
60-80	Concentrates ...	25·5	Ag. 82 0 9 Au. 0 4 4	74·2 86·4	85·4 Ag.	Ag. 25 4 22
	Middlings... ...	14·3	Ag. 22 0 11 Au. 0 0 3	11·2 1·4	87·8 Au.	Au. 0 1 9
	Tailings	60.2	Ag. 5 17 8 Au. 0 0 6	14.6 12·2		

The results shown in the above table were obtained by MR. A. BURN, of the Minerals Separation Company, at their works in Melbourne.