Various Brands OF Foundation.

(Report by Frank T. Shutt, M.A., F.I.C., Chemist to Dom. Exp. Farm.)

Wax, like honey, is a true secretion and not a material gathered by the bees, special cells or glands having for their function its production; It differs from honey, however, in its formation in certain particulars. Honey would appear to be the result of the action of a diastese or ferment. produced by certain cells in the bee, upon the cane sugar contained in the nectar gathered from flowers. Wax is manufactured. so to speak, in the bee and is the result of the physiological function of certain glands, as already stated. Wax, therefore, is not collected, but is produced at the expense of the honey or sugar (as the case may be) consumed by the bee. Thus Dumas and Milne Edwards found that bees fed with 500 grammes of sugar produced 30 grammes of wax, the same weight of honey only yielding 20 grammes. It would also appear that although pollen is not absolutely necessary to the production of wax, its consumption by the bees greatly reduces the amount of honey or sugar otherwise required (Berlepsch). From this it is evident that wax is secreted, primarily at the expense of the tissue and, secondarily, of the food consumed.

Another very important object is to prevent the building of drone comb. The cells of this comb being larger than those of the worker comb cells, the often more than useless rearing of drones is largely prevented.

In supplying "foundation" to the bees, the object is to save much of this expenditure and thus allow the bees more time and energy for the production of honey,

The primary object of the present series of experiments, as suggested by Mr. Holtermann, was to ascertain the relative ease with which the various foundations tested were drawn out and used by the bees, it, naturally, being held that those would be the most profitable which were utilized in this way to the greatest extent by the bees or in other words those to which the least wax was added by the bees in building the comb It will be seen that other and perhaps more important results have been incidentally obtained.

The experiments were conducted as follows: The frames were filled with the various foundations under test, and the weight of two inches square, ascertained directly noted. At the close of the season, a simi-

EXPERIMENTS WITH VARIOUS BRANDS OF "FOUNDATION" 1894.

Designation Letter.	Name of Wax and Mill.	Temperature.	Weight in Grammes of Foundation 2 in. square.	Weight in Grammes of empty honey comb 2 inches square.	Weight in Grams of wax added by bees per 2 square inches.	Percentage of Wax added by Bees.	Approximate Measurement of 1 lb.
A	Choice Wax, Root mill outer section	89 F.	1.4010	2.8335	1.4325	102.2	9.0 sq. ft.
B	" " " " "	89 F.	1.4010	3.0801	1.6330	120.1	" "
C	" " " inner section	120 F.	1.2940	2.6025	1.3085	116.1	10.5 " "
D	" " " "	120 F.	1.2940	2.8835	1.5595	137.8	" "
E	Foundation in general use, outer section		1.4145	2.5650	1.1505	81.3	8.9 " "
F	" " "		1.4145	2.4805	1.0660	75.3	" "
G	Heavy sheet, Root mill, outer section	120 F.	1.3157	2.8165	1.5008	114.	9.6 " "
H	" " inner section	120 F.	1.3157	2.6750	1.3593	103.3	" "
I	Inferior wax, Root mill, inner section	120 F.	1.1670	2.5340	1.3670	117.1	10.8 " "
J	" " " outer section	120 F.	1.1670	2.5050	1.3380	114.7	" "
K	" " " "	89 F.	1.2240	2.5410	1.3170	107.6	10.8 " "
L	" " " inner section	89 F.	1.2240	2.8060	1.5820	129.2	" "
M	Choice wax, Given press, inner section	120 F.	1.8010	3.0563	1.2553	69.1	7.6 " "
N	Patent process, 12 sq. feet, inner section		1.0040	2.7065	1.7025	175.5	12.5 " "
O	Patent process, 15 sq. feet, inner section		1.0930	2.6115	1.8185	166.4	11.5 " "
P	Inferior wax, Given press, inner section		1.5820	3.0090	1.4270	90.0	8.0 " "