

## QUERIES AND REPLIES.

UNDER THIS HEAD will appear each week, Queries and Replies; the former may be propounded by any subscriber and will be replied to by prominent bee-keepers, through, out Canada and the United States who can answer from experience, as well as by the Editor. This Department will be reserved for the more important questions, others will be answered in another place.

### PROTECTION FOR BEE HIVE.

QUERY No. 64.—Which is the best protection from cold or heat for a bee-hive, a solid wall, hollow or a packed wall, according to science?—B. L.

PROF. A. J. COOK, LANSING, MICH.—A packed wall.

DR. J. C. THOM, STREETSVILLE, ONT.—A packed wall.

H. COUSH, THE GRANGE, ONT.—The hollow or packed wall.

P. H. ELWOOD, STARKVILLE, N. Y.—A properly packed wall.

DR. A. B. MASON, WAGON WORKS, O.—“A packed wall, according to science”

JUDGE ANDREWS, MCKENNY, TEXAS.—I have not studied this question—do not answer.

G. W. DEMAREE, KY.—A double wall “packed” for cold weather, and a thin single wall for warm weather.

J. E. POND, JR., FOXBORO, MASS.—My own opinion is a double wall with 3 or 4 inches or more for a dead air space.

H. D. CUTTING, CLINTON, MICH.—A hollow wall divided into as many compartments or hollow walls as possible.

S. T. PETTIT, BELMONT, ONT.—A hollow wall protects best against heat. A packed wall, if the material of both hive and packing be of the best kinds, protects best against cold.

G. M. DOOLITTLE, BORODINO, N. Y.—Am not sure, but a hollow wall would be as good as a packed dead air space. Either I consider superior to a solid wall.

R. MCKNIGHT, OWEN SOUND, ONT.—Neither is best—both combined is necessary. Of the two the packed wall is preferable, provided it is properly done.

O. O. POPPLETON, WILLIAMSTOWN, IOWA.—This depends entirely on the materials, out of which the solid and packed walls are made, either of which can be made better than a hollow wall.

DR. O. C. MILLER, MARENGO, ILL.—If you mean which is the best non-conductor, I should say a hollow wall, *provided* the walls are perfectly air tight—if cracks in the walls, then packing is better. If you mean which is the best wall for a hive, opinions differ.

ALLEN PRINGLE, SELBY, ONT.—The packed wall is doubtless the best as a protection against heat and cold; but if we take everything into consideration, especially the important point of dryness, the hollow wall if properly made, is perhaps the best.

DR. DUNCAN, EMBRO.—The best protectors from cold are non-conductors of heat. All solid bodies conduct heat faster than porous. Confined air is the best non-conductor of heat; fine fur is warmer than coarse, because the air is more confined among its fibres than it is amongst coarse hair. Therefore I think a hollow wall is warmer than a solid one, and if the hollow is filled with chaff or sawdust it is still warmer because the air is more confined among the particles of either those materials and forms a better non-conductor of heat. The hollow wall would be the best protection from heat if the air inside was allowed to escape above, and cool air would enter below if there was proper ventilation.

S. CORNEIL, LINDSAY, ONT.—A solid wall of cork, if it could be obtained. According to the Table of Thermal Conductivities in the Encyclopædia Britannica if we represent the power of cork to conduct heat by 29 that of air will be represented by 49, grey unsized paper by 94, carded wool by 122, walnut sawdust by 195, fir wood across the fibre by 260, walnut across the fibre by 290, fir wood along the fibre by 470, walnut along the fibre by 480, wood generally by 500, water by 2,000, and copper by 960,000. In hollow walls the air must be confined perfectly, or the advantage from its nonconducting property will be to a great extent lost. It must also be dry. “If we represent the power of common dry air to conduct heat by 80, its power, when loaded with moisture, rises to 230. For this reason damp air feels cold to the body.” And for the reason that water conducts heat so much better than air, or any of the materials used for packing, all the substances mentioned above should be kept dry. From the foregoing it will be readily inferred that the best available protection against cold is a wall packed with granulated cork, the interstices of course being filled with still air, but wool has properties for passing off moisture from bees which on the whole make it more desirable if it were not for the expense. Upholsterers use a kind of wool made from old woolen cloth, costing about six cents per pound, which, I think, would make good packing for hives.