Boruret of iron

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BORURET OF IRON.

M. Lassaigne gives the following directions for preparing this compound :—Prepare a sub-borate of iron by precipitating persulphate of iron by borax ; wash and dry the precipitate, form it into a paste with water, and mould it into a small cylinder ; when dry, place this cylinder within a porcelain-tube, heat it red-hot, and pass pure dry hydrogen over it. Boruret of iron is formed ; it acts slightly upon the magnetic needle, and consists of 77·43 of iron, and 22·57 of boron, or of one atom of each nearly.—*Institution Journal,* July 1828.

VARIETIES OF BORAX.

M. Payen gives the following as the results of his analysis of crystallized boracic acid, anhydrous, prismatic, and octohedral borax,—oxygen being 10.

Crystallized Boracic Acid.
One atom acid 44
Three atoms water . . . 33·73
——
77·73

	Anhydrous Borax.	Prismatic Borax.	Octohedral Borax.
Boracic acid 2 atoms	. . 88	2 atoms . . 88	2 atoms . . 88
Soda .... 1 atom	. . 39·09	1 atom . . 39·09	1 atom . . 39·09
Water		10 atoms . 112·43	5 atoms . . 56·217
	127·09	239·52	183·307

Ibid.

FIGURE OF THE CELLS OF THE HONEYCOMB.

We are indebted to our correspondent M. Fayolle, for directing our attention to a paper on this subject by the celebrated Maclaurin, in the Philosophical Transactions for 1743. It appears from the notice which M. Fayolle has communicated to us, that Fontanelle, the Secretary of the *Academie des Sciences,* in concluding the account of Kœnig's paper read before that learned body in 1739, as mentioned by Mr. Sharpe in his paper on the subject, at p. 20 of our present volume, makes the following remark :—" La grande merveille est que la détermination de ces angles passe de beaucoup les forces de la geómétrie commune, et n'appartient qu'aux nouvelles methodes fondées sur la théorie de l'infini."

Maclaurin observes in the memoir in question, " Mr. de Reaumur has informed us (*Mém. sur les Insectes,* tom. v.), that Mr. Kœnig having, at his desire, sought what should be the quantity to be given to this angle, in order to employ the least wax possible in a cell of the same capacity ; that gentleman had found, by a higher geometry than was known to the ancients, by the method of infinitesmals, that the angle in question ought in this case to be of 109° 26'. And we shall now make it appear, from the principles of common geometry, that the most advantageous angle for these *rhombuses* is indeed, on that account also, the same which results from the supposed equality of the three plane angles that form the above-mentioned solid ones." He then proceeds to demonstrate, by a method purely geometrical,