from any subsequent cases should be destroyed in such manner as to stamp out the disease."

The conference adjourned, to meet in Washington on the second Tuesday of December.

EUCLID AS A TEXT-BOOK OF GEOMETRY.

ALTHOUGH Euclid has long since been superseded in the schools of this country, the following statistical notes on the extent to which Euclid's 'Elements' are still used in other countries may prove of some interest to the readers of *Science*. The figures are derived from a list of editions of Euclid's 'Elements' and 'Data' up to the year 1879, contained in a new Russian school edition of the 'Elements' by Professor Vâshchenko-Zakhàrchenko.[1] This is a noteworthy work in several other respects. Besides numerous and extensive notes, and additions to the text, designed to render Euclid's treatment of geometry more palatable to modern taste, and to fill up some lacunae in the old work, the author has prefixed to his translation a valuable dissertation on the axioms and postulates and on the so-called non-Euclidean geometry of Bolyai and Lobachèfsky, of which a sufficiently full sketch is presented. That a man so well acquainted with modern investigations of the principles of the science of space as Mr. Vàshchenko-Zakhàrchenko (a bibliography of this subject is also appended to the volume) should prove such an ardent adherent of Euclid, pure and simple, for the schools, is a truly remarkable fact. A closer inspection of his own list of editions of Euclid might have shown him that the modern mind does not tend at all in the direction of a revival of Euclid's system and methods in geometry.

This list has 455 entries, of which 2 belong to the fifteenth, 84 to the sixteenth, 92 to the seventeenth, 118 to the eighteenth, and 159 to the nineteenth century. This enumeration includes reprints. Of really different editions there were, according to the author's count, 80 in the sixteenth, 59 in the seventeenth, 50 in the eighteenth, and 115 in the nineteenth century.

Mr. Vàshchenko-Zakhàrchenko, however, does not pretend that his list is complete: indeed, he has not attempted to present a full and correct bibliography of all editions of Euclid. The titles are given in such an abridged form as to make identification in some cases difficult; and typographical errors abound. No American edition appears in Mr. Zakhàrchenko's list, although several have been published in the United States.[2] Still, for our purpose the list, as it is, will yield some interesting results. We have only to group its data so as to show the distribution of the various editions among different nations and by centuries. This is done in the following table:—

PERIOD.	Greek and Latin.	English.	German.	French.	Italian.	Dutch.	Spanish.	Swedish.	Russian.	Polish.	Danish.	Portuguese.	Modern Greek.	Finnish.	Arabian.	Chinese.	Total.
15th century .	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
16th " . .	60	1	2	4	12	–	2	–	–	–	–	–	–	–	3	–	84
17th " . .	43	3	9	16	10	7	2	–	–	–	–	–	–	–	1	1	92
18th " . .	31	26	17	18	11	5	3	3	3	–	–	1	–	–	–	–	118
1800 to 1839 . .	9	15	21	1	1	–	–	1	2	2	1	–	1	–	2	–	56
1840 to 1879 . .	0	95	1	–	3	–	–	2	–	–	–	–	–	1	–	1	103
Total . . .	145	140	50	39	37	12	7	6	5	2	1	1	1	1	6	2	455

There can be only one interpretation of these figures. They illustrate in a striking way the fact that at present Euclid is used as a text-book in the schools in no country but England.

The English editions constitute thirty-one per cent of the whole number in the list, and fifty-three per cent of those in the four principal living languages (English, French, German, Italian). But this disproportion only appears in its full significance when we take into account the time of publication. Indeed, the table shows that up to 1840 the number of editions in the above-mentioned four languages is almost the same, — viz., 45 in English, 39 in French, 49 in German, 34 in Italian, — while, within the last forty years, 95 English editions have appeared, but only 1 German, 0 French, and 3 Italian editions.

In France the yoke of Euclid was thrown off as early as the end of the last century. The last French school edition of Euclid, according to Mr. Zakhàrchenko's list, was published in 1778. Thus, in France the end of Euclid's reign coincides with the beginning of the epoch of greatest splendor in the history of mathematical research; and, indeed, it is well known that this change is directly due to the influence of that celebrated school of French geometers who gave such lustre to the latter part of the eighteenth century, and won for France her unrivalled supremacy in mathematical science during this period. Legendre's 'Elements' took the place of Euclid's, until he, in his turn, had to yield to more modern influences. And as early as 1814, Delambre and Prony, in their report on Peyrard's critical trilingual edition of the 'Elements' and 'Data,' were justified in speaking of Euclid's method as 'une manière passée de mode,' and of his style as 'aujourd'hui peu connu.'

Italy, Spain, Russia, and other countries, soon followed suit. Everywhere the influence of the French school was felt; and, until the last quarter of a century, Legendre supplanted Euclid, when in many of these countries there arose schools of geometers who independently provided their countries with excellent text-books of their own. In Germany, Euclid held his own longer than anywhere else. But, on the other hand, opposition to the old system is nowhere so universal and uncompromising now; and nowhere has modern geometry found so many enthusiastic disciples.

A. ZIWET.

[1] "The Elements of Euclid, with an explanatory introduction and annotations, by M. E. Vàshchenko-Zakhàrchenko. Kieff, 1880." 15+747 pp.

[2] The library of congress possesses two American reprints of R. Simson's Euclid, published by Desilver of Philadelphia in 1825 and 1834 respectively, and an addition of the first three books of the 'Elements' (Playfair's text), with notes, under the title "The geometry of Euclid: with annotations by Horatio Hubbell, Phila., J. B. Lippincott & Co., 1861."