

ON SIMPLE GROUPS OF LOW ORDER*

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1. *Introduction.* The known simple groups of composite order were tabulated by Dickson.† All the groups there enumerated as far as order 7920 belong to well known infinite systems. The exhaustive determination of the orders of simple groups was carried by Siceloff‡ and his predecessors as far as order 3640. Recently G. A. Miller§ has shown that there is only one type of simple group of order 2520, and it is easily proved that no other order below 5616 affords more than a single type of simple group.

In what follows, the exhaustive enumeration of orders is carried as far as 6232. The only orders found are those of Dickson's table, viz., 4080, 5616, 6048, 6072. There is only one simple group of each of the orders 4080 and 6072; whether there is more than one in the other two cases remains to be decided.

Elementary considerations exclude all orders but the following:

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|------|------|------|------|
| 3648 | 4080 | 5472 | 6048 |
| 3744 | 4320 | 5616 | 6072 |
| 4032 | 5040 | 5760 | |

A bare epitome of the reduction process is here given,—just sufficient to enable the reader to retrace the essential steps. Primitive substitution groups are completely known up to degree 20; an unknown simple group cannot have a set of less than 21 conjugate subgroups. In the text the letters G , H , I , s represent entire group, subgroup, invariant subgroup and element.

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† See this BULLETIN, vol. 5, p. 474; and *Linear Groups*, p. 309.

‡ AMERICAN JOURNAL, vol. 34, p. 361.

§ See this BULLETIN, vol. 28, p. 98.