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anything wrong in the native dress ; they have a taste for colour ; everything they wear seems to blend with their surroundings.

I thank you very much indeed for your patience in listening to me. I hope I have recommended to the best of my ability my country of the Paraguayan Chaco.

HONDIUS AND HIS NEWLY-FOUND MAP OF 1608

THE Hondius map of 1608, on Mercator's projection, the acquisition of which by the Society was announced in the August number, is one more monument of Dutch cartographical work in the late sixteenth and early seventeenth centuries, examples of which have been gradually accumulating of late years. It is no cause for surprise that so many of these fine maps should have long remained unknown, if we think of the vicissitudes to which works of such size must have been subject since their first production, and the obvious difficulties in the way of their safe preservation. It may be hoped that the widespread interest now aroused in such treasures may lead to the unearthing of still others of these masterpieces, in the making of which Holland played so notable a part, and that many obscure points in the cartographic history of the period may so in due time be elucidated.

The present Hondius map takes an honourable place in the series of great wall-maps inaugurated by Waldseemüller's of 1507, and continued in still finer style by Mercator's of 1569 and Peter Plancius's of 1592. It is the second production of the kind by the same firm to be brought to light within the past twenty years, the other being the hemisphere-map discovered by Father Joseph Fischer at Wolfegg Castle in Württemberg, and reproduced in 1907 under the joint auspices of the American Geographical Society and the Hispanic Society of America. The editors, Professors E. L. Stevenson and Joseph Fischer, consider it to have been originally brought out in 1611. The very existence of the 1608 map seems hitherto to have been unsuspected by writers on such matters, and its discovery—if we may use the term—gives valuable help towards a due appreciation of the work of Mercator's worthy successor—Jodocus Hondius the elder. Next to Mercator's map of 1569 it is the first map of equal importance that is known to us, constructed on the Mercator projection, and the directions given upon it for such construction are of particular interest in view of the still somewhat obscure early history of that projection. To this we will return later. As a splendid specimen of engraving and pictorial embellishment the present map takes high rank in the series, and its excellent preservation permits a better appreciation of its merits in these respects than was possible with Blaeu's map of 1605 (also reproduced by the Hispanic Society of America, the possessor of the one known copy ; see *Journal*, vol. 46, p. 61), which has suffered far

more from the lapse of time. In the actual geography we cannot expect to find much that is exceptional, for the rival map-makers of the time copied without scruple from each other, and it is hopeless now to disentangle the original from the borrowed details of their several works. All subsequent maps for many years owed an immense debt to Mercator's planisphere of 1569, and the influence of Plancius too is long traceable. In the matter of its geography the close relationship between our own and other maps of the Dutch school is evident at first sight.

A glance at the main facts of Hondius's career may help to the proper placing of the 1608 map in relation both to other work of his own and to that of his contemporaries. His first efforts were rather those of an engraver than of a cartographer, and it is to his high qualifications as such that we owe much of the interest of the present map. Sir Sidney Colvin, in his 'Early Engraving and Engravers in England' (British Museum, 1905; reviewed in *Journal*, vol. 47, p. 59), speaks of Hondius's early work while a refugee in this country, and its importance, with that of other foreign engravers, in giving an impetus to the development of engraving in England, where the art had previously made little if any headway. In 1589 he was associated with De Bry and Ryther in engraving the maps for the English version of the 'Mariner's Mirror.' A special map of America signed by him and bearing the same date of 1589 is virtually copied *in toto* from maps by Ortelius of 1587-89, and as no copy seems to be known which does not bear the date 1602 as that of actual issue, we may doubt whether it really appeared before that year, the earlier date being possibly copied from Ortelius.* Besides producing several small maps he was responsible for the engraving of the famous Molyneux globes, now preserved in the Middle Temple Library, which bear the date 1592. After moving to Amsterdam about two years later he brought out, in 1596 or 1597, an important map of the World, about the size of an Atlas-map, which is known as the "Christian-Knight Map" from its representation on the blank space of the Southern Continent of the fight of the Christian Knight against Sin, the Flesh, and the Devil. This was one of the few maps constructed on the Mercator projection before 1600, and it (or others now lost) caused some trouble between Hondius and Edward Wright, who a few years before had shown him the MS. of his 'Certaine Errors in Navigation,' and who, when this was eventually published in 1599, complained that Hondius had stolen therefrom his method of constructing the "Mercator" scale of latitude. About the same time Hondius prepared a map in hemispheres to illustrate Drake's voyage of circumnavigation, adding to it a Dutch text with engraved portraits of Drake and Cavendish (see reproduction of the map in *Journal*, vol. 44, p. 180,

* One original feature in this map, no doubt due to Hondius's association with English navigators and map-makers, is the representation of Tierra del Fuego and neighbouring islands as a group quite separated from the Southern Continent. He gives it the name "Insule Reginae Elisabetae ab Anglis detectae anno 1579."

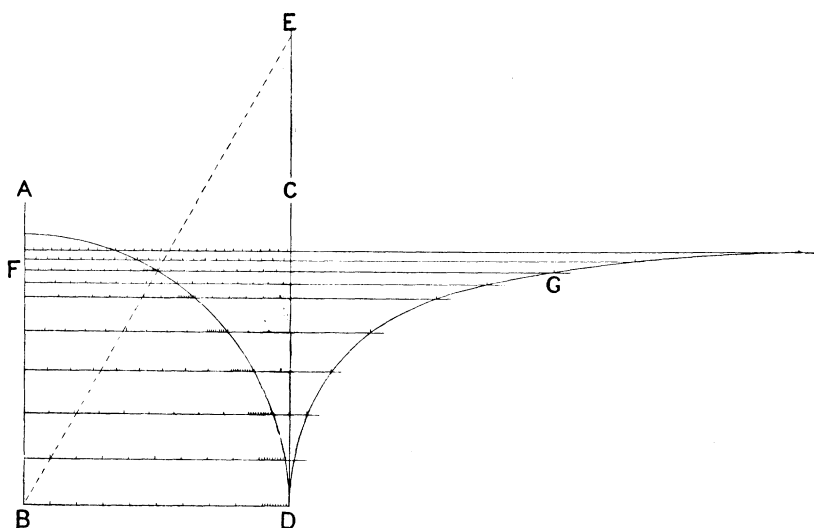
and of the portraits in Colvin, *loc. cit.*, p. 45). His attention was next given to the preparation of new maps to supplement those of Mercator's Atlas, the plates of which he had bought from the latter's heirs. An augmented edition appeared in 1606, including many of these maps by Hondius, and forming a great advance on the original edition in the representation of the newly discovered regions outside Europe.

From a statement on the last sheet of Hondius's great map in hemispheres (assigned, as above said, to 1611), it appears that besides the maps intended for this atlas Hondius issued also separate maps of the four continents, as well as more than one general map of the world ("aliquot totius orbis descriptiones, quatuorque item ejus partes separatim in lucem dedimus"), all apparently on Mercator's projection. Wright, in his preface to 'Certaine Errors' (1599 and 1610), speaks of Hondius's "Greater Mappe of the World and of Europe, now of late" [brought out] *; also of the "so common sale of his Mappes of the World, of Europe, Asia, Africa, and America." This too seems to imply the publication of other maps of the continents than those in the atlas, and that they were constructed on Mercator's projection.† However this may be, his labours on the atlas had made available material for a general map of the world, on a scale large enough to embody much of the information given in the atlas in the form of special maps, and as might be expected our map of 1608 represents such a combination of the material into a well-balanced whole. The impulse to its publication may well have been the appearance, probably about 1605, of Blaeu's great map in hemispheres, already mentioned above. This last, whilst in the main reproducing the geography of Ortelius, Mercator, and Plancius, was remarkable for its pictorial and other embellishments, the influence of which is clearly traceable in the R.G.S. map. The general design of the two maps (apart from the projection) is so similar that there can be little doubt that Hondius's venture was an attempt to outdo his rival—the beginning of a competition long maintained by the two firms in respect of the atlases issued by each. Hondius, as we have seen, had already shown a penchant for Mercator's projection, which he could now at any rate use with a clear conscience, Wright's book having appeared in 1599; and he once more used it for his big map.

Had not this already appeared in the first edition, it would have been pleasant to see in the "Greater Mappe" the identical issue now brought to light. As it is, its identification must, it seems, wait for some further happy discovery.

† Our attention has been called by Dr. Wieder to maps of the four continents by Hondius, published by I. le Clerc of Paris in 1602, and he suggests that these may have been reduced copies of larger maps not now known to us, just as the small map engraved by P. Kaerius in 1608 may have been reduced from the large R.G.S. map. The map of America dated both 1589 and 1602, to which reference has been made above, was published by Le Clerc, and would seem to be one of the four mentioned by Dr. Wieder. It is not on Mercator's projection, however. There are considerable differences between it and the new map of America given by Hondius in the Atlas of 1606. Le Clerc also published in 1602 a revised edition, by Hondius, of Rumold Mercator's hemisphere-map of 1587, but the unrevised edition continued to appear in the Atlas for some years.

We may here recur to the directions given by Hondius for the construction of the Mercator scale of latitude, to be found near the left-hand bottom corner of the map. It is interesting to note that whereas Wright had avowedly based his method on a table of secants of the successive latitudes (giving the cumulative figures for every tenth minute, *i.e.* for every sixth part of a degree*), Hondius, though his graphic method arrives at an identical result, does not expressly state that the values are those of the secants. Briefly his method is as follows. At the ends of a straight line of suitable length representing a segment of the equator he erects two perpendiculars (AB and CD in the accompanying figure), and from the foot of one as centre describes a quadrant with radius



Hondius's Method of constructing the Mercator Scale of Latitude

A similar diagram is given on the 1608 map, where however a line is drawn for each degree. The secant BE is added above to bring out its obvious equality with the line FG.

equal to the distance between them. The arc he divides into nine parts, each equal to ten degrees, and through the points of division draws lines between the perpendiculars parallel to the equator. The portions of these intercepted within the quadrant are then all divided into an equal number of parts, ten being chosen for convenience' sake, and the lengths of the segments without the quadrant (which represent the defect of the respective parallels on the globe from the lengths of the corresponding lines on the enclosing cylinder) are measured in terms of the subdivisions of the corresponding portions within the quadrant. The lines are then produced beyond the second perpendicular, and on each extension a part is marked off containing a number of parts of the equatorial line (and their fractions)

* In the third edition, brought out by Joseph Moxon in 1657, the values were given for every minute of latitude.

equal to the number of parts (and their fractions) of the portions of the lines between the circle and the second perpendicular. The resulting lengths measured from the first perpendicular are in fact the lengths of the secants of the several latitudes, each being made up of the radius plus an addition proportional to the defect of the several parallels from the length of the radius. It might therefore be asked, why does not Hondius simply draw and measure these secants? Was it to avoid too definite an admission that he was really using Wright's method? This is perhaps hardly to be pressed, for he had no doubt another reason for the procedure. His lines are all parallel, and having obtained the lengths for each ten degrees (or five for higher latitudes) he is able to draw an even curve giving the required lengths for each degree or fraction of a degree, though he apparently considers it unnecessary to take smaller units than degrees. The method dispenses with Wright's elaborate tables of meridional parts, but cannot of course give quite so accurate results, as each length obtained from the secant curve has to be mechanically subdivided and the divisions transferred in succession to the map. Cumulative errors may therefore creep in before high latitudes are reached. Wright's method, by cumulative addition of the exact values in figures, permits the whole distance from the equator to each parallel to be marked off at one mechanical operation.

On the merits of the Wright-Hondius controversy we can hardly pronounce with confidence. Wright says in his preface that he lent his MS. to Hondius at the latter's earnest request, and with the assurance that no part of it should be published without his own consent. To Wright's indirect complaints Hondius replied directly, excusing himself on the ground of difficulties of communication, which discouraged him from applying for permission. After all, perhaps, the piracy did not amount to a great deal. Already Mercator had understood and used the general principle, even if he had not worked it out so precisely as Wright. Whilst the latter refrained from publication, was a fellow-craftsman to be entirely debarred from using the projection, and if not, was he still to adhere to the rougher method, whilst aware of the more correct one? By merely copying the proportions of Mercator's big map, Hondius could have produced a result sufficiently accurate for the public to which his smaller maps (*e.g.* the Christian Knight's) were addressed, and which would hardly have been cognisant of the difference. His mistake lay in not making open acknowledgment of his indebtedness to Wright in the 1608 map or other large maps on the same projection, if such there were. As between Mercator and Wright, the latter's merit consisted, not in the discovery of a new principle, but in explaining it and supplying the details for general use, whilst Mercator had been content with giving the results in map form.

We have now to consider broadly the relation of the 1608 map to the later one discovered at Wolfegg Castle. The finding of the earlier con-

siderably alters the position of the later map, which from some points of view becomes something like a reissue of its predecessor on another projection and with different illustration; and the arguments for dating it 1611, or as prepared during the lifetime of the elder Hondius, lose some of their force. It was the common practice at the time to reissue important maps with little alteration—witness the use of Mercator's big map of 1569 as the model for several of the maps in the atlas of 1595, themselves given again without change in later editions. As the editors allow, the insertion of Le Maire Strait in the Wolfegg map shows that the existing copy was not issued till about 1618—some years after the elder Hondius's death. Now the chief reasons for ante-dating the original map were its evident association with the initiative of the elder Hondius, and its failure to show the results of Hudson's last voyage. But if we regard the later as largely a reissue of the earlier map, both these facts would be susceptible of explanation without placing its date—as a hemisphere map—earlier than 1618. A reason might, it is true, be found for the rapid supersession of the 1608 map within three years (at first sight a puzzle) by supposing that the Mercator projection had to some extent prejudiced its success with the general public in competition with Blaeu's hemisphere map, for there are indications that Mercator maps had not met with great favour at the time. On the other hand the statement by the author on the last sheet of the later (Wolfegg) map seems to imply a considerable interval between them. In speaking of the distinct uses of the two kinds of projection, the author (whether Jodocus the elder or younger, he may be taken as speaking for the firm in general) refers to his (or its) earlier Mercator maps, and to the directions given for their construction (no doubt those above discussed), which, he says, had since been used by many: “*artificio insuper directionum apte constituendarum mechanice et plane addito explicatoque (quod postea multis exemplo fuit).*” If this is not an allusion to the R.G.S. map it would seem that other and earlier maps must have been made by Hondius, of which we have still no knowledge. In any case the 1608 map is of special interest as placing the *original* authorship of the elder Hondius beyond question, and adding one more laurel to those already assigned to him.

No detailed description of the contents of the map can here be attempted. For the geography such is hardly called for, seeing that it is, as has been said, mainly a combination into a single view of the material already used for the atlas of 1606. The agreement with the atlas maps may be verified at once on inspecting the representation of, say, Tartary and China on the one hand, or America on the other. One special instance may be noted—that of the Solomon Islands, shown identically in the large map and in the “America” of 1606. Like many maps of the time, these both follow a pattern set apparently by Peter Plancius among Dutch map-makers, though no doubt originally taken from a Spanish chart. The

nomenclature of the group shows a good deal of variation, and, unlike most of his contemporaries, Hondius gives an almost correct rendering of the name Guadalcanal, which is often broken up into two distinct names, "I. Dagoa" and "Dalcana." Hondius has Quadalcanal, and it is interesting to find that this same spelling already occurs on the Molyneux globe, engraved, as will be remembered, by Hondius. Both in the large map and in the "America" in the Atlas the prime meridian passes through the extreme west of the Azores, thus also touching the extremity of South America.* In the later Hondius map it takes a more usual course through San Miguel in the same group. That Plancius served in part as a model, directly or indirectly, is shown by the occurrence of many of his explanatory statements, pictures of animals, etc., e.g. the mention of "boves gibbosi" (?bisons) in North-West North America, and the pictures in South America of the sloth and opossum (cf. *Journal*, vol. 52, pp. 25, 26). Curiously enough, the later Hondius map, whilst also drawing upon Plancius, does not reproduce quite the same items. The resemblance to Blaeu's 1605 map, at least in the general plan, has already been noticed. Hondius extends the pictorial side greatly, though following Blaeu's general idea. He gives no fewer than fifty-four cartouches round the margin, containing for the most part views of cities (eighteen representative cities of all parts of the world are shown) alternating with figures of their inhabitants. Seven of the most powerful monarchs of the day are also pictured, namely, those of Spain, France, Germany, Moscovy, China, Persia, and Turkey, and small maps of the Arctic and Antarctic regions are given. Blaeu's example is followed in the portraits of the four circum-navigators—Magellan, Drake, Cavendish, and Van Noort, and of the two outstanding figures in the discovery of the New World—Columbus and Vespucci; but Blaeu had in turn copied Drake and Cavendish from Hondius's map of 1597. Hondius improves upon his rival by giving under each navigator's portrait a map of his route; adding also a map of Ptolemy's World, placed under that geographer's portrait.

There can be no question that the present map is one of the finest products of the art of the early cartographical engravers, and the Society has been exceedingly fortunate in securing so valuable a treasure, and that, thanks to the generosity of the former owner, at a most moderate cost.†

E. HEAWOOD.

* The Hoeius map, originally made about 1600 and modelled on Plancius's map of 1592, also takes its prime meridian through Corvo, the westernmost of the Azores.

† The bringing to light of yet another of these finely embellished maps suggests the possibility that the question of the model followed by Ricci in his great Chinese map may in time find a more definite solution than has yet been possible. These later Dutch maps so closely answer to the description of Ricci's first edition, copied from a European map in his possession, as illustrating "the various customs (or costumes?) of the countries" (see *Journal*, vol. 50, p. 259), that one is almost tempted to think he may have used as his model an earlier specimen of such a pictorial map than any now known to us. Yet if such had been the case we should have expected to see more trace of its influence than we do in Ricci's later and more complete editions.