

THE ONE INCH TO THE MILE ORDNANCE SURVEY MAP OF ENGLAND

THE first sheet of the new 1-inch map of England is so beautiful a thing: so great an improvement upon any topographical map produced hitherto in England: indeed probably the best map produced anywhere by the modern processes of colour-printing used with strict economy, that for its full appreciation it requires long study and consideration, proportional to the care and skill which have been devoted to it at Southampton since it was conceived some years ago. The present hasty study of it can be no more than a first reconnaissance of its merits.

The Plymouth sheet, No. 144, was well chosen to be the first example of the Fifth (RELIEF) Edition, as the country behind Plymouth runs up from the sea to above 1500 feet, is well watered, well wooded, served by a complex system of railways, mineral lines, and tramways, of reservoirs and "leats of fair water," has craggy summits, extensive bogs, quarries and mines, and china-clay works, behind a rocky coast with wide sands, tidal estuaries, mud flats, and salt marshes: a fine field for the topographer.

The original 1-inch map dealt with the problem by a system of conventional signs engraved on copper, and the quality of the black, printed carefully on hand presses from the steel-faced electrotypes of the original plates, cannot be approached by any of the modern machine methods. It is interesting to read in Brigadier Jack's last report as Director-General that "The demand for prints from the old copper-plates of the 1-inch map continues, and about 28,000 impressions have been printed during the year." But beauty of the black line had long ago to give place to colour, and colour required printing from stone or zinc on rapid machine presses, with the printing plates prepared by transfers from the original copper, and the parts not required in any particular colour stopped out. First the hachures were put on a separate brown plate; then the contours on a red plate, and the water on one or more blue, with the woods in green on another. Then in the current Popular Edition (the Fourth) the contours became orange and the hachures disappeared altogether. That, one was accustomed to say, was the last of the hachures, a beautiful but expensive method of showing relief, with a small range of effect exaggerating the smaller slopes and inadequate on the greater, giving scope to the draughtsman for artistic effect, but sometimes at the expense of strict conformity with the stern precision of the contours.

So long as the colour plates were made by working on transfers from plates designed for printing in black only it was inevitable that the result should be out of proportion, and this was especially noticeable in the main roads, which were too heavy when the broad black symbol was filled with yellow or red. And the finer black detail, especially the smaller names with fine hair-lines designed for copper-plate printing, was apt to go rotten in the process of transfer. Moreover the sheet-lines had been changed several times with successive editions, and there was a limit to the possibility of cutting about and riveting together the steel-faced electrotypes; they could and did stand a good deal, but eventually could stand no more. The time had come to redesign the map to suit the new methods.

In the "Report of the Progress of the Ordnance Survey for the Financial Year 1st April 1929 to 31st March 1930," Brigadier Jack reviewed the developments that had taken place on the Ordnance Survey during his Directorate, and set out the principles on which the Fifth Edition of the 1-inch map was planned. The Popular Edition of Scotland was already based on drawings, reproduced by the helio-zincographic process, but as it was a portion of the same edition as the English, no important change of style had seemed desirable. "In the proposed Fifth Edition of the English map," he said, "the break with the engraved map will be complete," and continued:

"The occasion seemed to me to be a suitable one for considering what changes, if any, should be introduced in the 1-inch map. It should be explained at once that there was not the smallest desire to depreciate the engraved 1-inch map, or to discard what was good in it. But I felt very strongly that if the map was to be produced by a process other than engraving, full advantage should be taken of the facilities provided by that process, and that we should not be hide-bound by the engraving tradition. I considered that we ought to approach the new map with free and unbiased minds, retaining what was good in the old map, but discarding what was bad, or had been retained simply because it was done by the engravers.

"In the new map, therefore, while the well-known style of the 1-inch map is being maintained, various changes and improvements in details are being introduced. These include a more pleasing style of writing, improved symbols for main roads and railways, the restoration of parish boundaries, and new symbols for certain modern features, as, for example, National Trust Areas.

"Finally, it has long been my wish to restore something of the beauty of old maps to the 1-inch map of Great Britain. This does not mean that anything fanciful will be introduced in the map itself; but it does mean that the border will be made decorative, and that the title, scale, and other references will be incorporated as part of the border instead of being left to float unattached in a waste of blank margin. I hope and believe that this addition of ornament to the map will be found to detract in no way from its utility, while adding to its appearance and artistic value.

"One other change in the map must be mentioned. Most adults in the nation became familiar during the war with the method of fixing the positions of points on the map by their east and north coordinates, and this simple and logical method is now, I believe, taught in all schools. The 1-inch is a military map as well as a map for civil use, and the Army depends on it for training. It consequently became necessary in the new map to provide a 'grid' from which coordinates could be measured easily. On the new map therefore the old lettered and numbered 2-inch squares will disappear, and will be replaced by a grid of 5000 yards side.

"The working out of the details of the new 1-inch map has been in the hands of Captain J. G. Withycombe, who is in charge of the Small Scales Division. This officer's sound knowledge and artistic taste have been of the greatest value to the Survey, and I wish to record here my appreciation of the good work he has done."

The Society will remember Captain Withycombe's paper on Lettering on Maps, read at the Afternoon Meeting on 12 November 1928, and published, with the spirited discussion that followed, in the *Journal* for May 1929. We need not repeat the arguments which he used to much effect, for reform by

return to the old style, with such adaptation as the process of helio-zincography demanded. The alphabets which he then published, designed by Mr. Ellis Martin for the new 1-inch map, have been used on the Plymouth sheet with some slight but important improvements in the last six letters of the italic lower case and in one or two of the numerals. To this design is due the most striking improvement of the map. The new character is above everything legible and simple in effect. The nice balance between the thick and the thin strokes, the careful design of serifs, and a hundred subtleties of curve and proportion are responsible for the deceptive simplicity and the remarkable legibility which cannot be achieved without the most cunning art. By adopting this character the Ordnance Survey have set up a new standard of excellence which all map draughtsmen must be persuaded to follow if they can, though of course with due regard to the fact that such drawing is necessarily slow and expensive, and justified only for maps of high accuracy and permanent importance. The conditions which must govern drawing for journals and books and magazines are quite different, and do not concern us here.

Next in importance to lettering in the fine appearance of the sheet is the representation of relief, and the title of the new edition—the Fifth (RELIEF) Edition—suggests perhaps rightly that the most obvious feature is the striking improvement in this representation. The last edition relied on contours only. The new has contours in brown; hachures from the old copper-plates in buff making a refined kind of vertical hill-shading; another printing from parts of the hachure plate in purple making an oblique hill-shading; and a delicate layer-colouring in four grades of the buff hachure tint, changing at each 500 feet, so delicate and unobtrusive that it is scarcely recognizable as layer-colouring under the hachures, but undoubtedly there (though there is nothing in the reference to suggest it), and most successful. A double hill-shading, vertical and oblique in buff and purple, was used on the French 1/50,000 Type 1900, but the vertical was omitted in the later Type 1922. It has never before, we think, been combined with layer-colouring, nor has the double shading ever been made before from hachure-plates, so much more effective than the usual grained or half-tone shade familiar in oblique hill-shading. Neither have we ever before seen hill-shading and layers done in a single printing. It was a great idea to keep the old hachures in service thus, even if they do not always quite fit the contours; the break with the old engraved map is not complete after all. And the colours, like Turner's, have been mixed with brains.

A very distinguished map-printer once looked doubtfully at a charming map and shook his head. "There are fifteen printings," he said; "I never think that more than eleven are justifiable." The new 1-inch map has only seven, and the preceding edition had the same number, incredible as it may appear when the two sheets are placed side by side: the one so delicately rich, the other so poor and empty. Scrutiny seems to show that the contours and the filling of the first-class roads are on the same brown plate, the whole of the layer-colouring and the vertical hachures on a lighter brown or buff, and only the filling of the second- and third-class roads on a yellower buff; but it is hard to be certain, the gradation is so delicate and the lighter layer colours transferred from so fine a stipple-plate. However that may be, the general effect is triumph-

antly successful, and the Ordnance Survey deserve the thanks of the country for this demonstration that a rich result can be obtained by economy with intelligence.

For the first time an Ordnance Survey map appears upon an orthomorphic projection, the Transverse Mercator, otherwise but unnecessarily called the Gauss Conformal. We may look forward to an interesting paper at some Afternoon Meeting on the relative merits of this and the Tissot modification of Lambert's Conical Orthomorphic with which we became familiar on the unification of the Allied Command in the early summer of 1918. What the projection may be matters nothing to the appearance of the sheet, but dangers lurk beneath, as the Ordnance Survey know well, having been for a century embarrassed by the fact that England was on Cassini and Scotland by the obscure decision of some rash Director-General on Bonne, so that in spite of the Union the two countries would never join at the Border, until the last Scotch edition was redrawn on Cassini. An orthomorphic projection and a grid naturally go together, and we shall hope to learn at the suggested Afternoon Meeting what is implied in the marginal statement that the origin of the projection is in 49° N. 2° W. We understand that the central meridian is 2° W. and that a scale correction has been applied to reduce the errors east and west. But the grid coordinates of the south-west corner of the sheet are 800,000; 1,161,000 yards. It is usual to add some round number to the horizontal coordinates and to choose an initial point of the meridian for the vertical, so that the complete grid references have always the same number of digits, which we do not find here; and if 49° has been the first choice of initial point on the central meridian, its significance would seem to disappear when the false origin is assumed for convenience. But this is for inquisitive specialists.

One thing we were promised by the late Director-General which we have not received—the decorative border. True, the conventional signs have been neatly collected within two simple panels, and look much the better for it; but there is still a good deal of “scale and other references . . . left to float unattached in a waste of blank margin,” and we hope that something more may be done to redeem the promise. The present scale and the mid-nineteenth-century border are a little out of keeping with the beautiful content of the sheet and its decorative cover.

N.B. - According to Winterbotham on page 151 below, the author of this article was A.R. Hinks.