

ON THE ENGRAVING OF CHARTPLATES BY GALVANIC ETCHING

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The problem of how to print charts has of course been solved in various ways by the Hydrographic Services of the different nations, taking into consideration the number of copies in the editions as well as other circumstances. This question will not be discussed in these few lines. Most of the Hydrographic Services however recognize, I understand, the advantages of having their charts engraved on copperplates. Engraving thus constitutes a work of considerable importance for the offices of most Hydrographic Services, and a few remarks on a method of engraving by galvanic etching, which has been used by the Swedish Hydrographic Service during the last five years, might be of some interest to nautical cartographers.

In a pamphlet entitled "Neue Wege der Kartenherstellung" there is an article written by Dr. Hans H.F. MEYER and Mr. R. MANGELSDORFF on the method of engraving by galvanic etching, that has been devised for engraving the topographical map-plates of the German Reichsamt für Landesaufnahme. (*).

Thanks to the facilities offered by the German authorities the writer and Mr. H. ORTENBLAD, Director of the Government Printing Office here in Stockholm, were given the opportunity to study the German process, as completely elaborated at that time — i. e. in February 1932. The method at the "Landesaufnahme", which entailed the engraving of comparatively small plates, about 50 × 50 centimeters (Messtischblätter), worked perfectly and gave very good results.

For information regarding the technical process and details the reader is referred to the paper mentioned above. When engraving larger plates, such as the Swedish chartplates of dimensions 75 × 105 centimeters, the method however proved less satisfactory, resulting in rather broken etchings. Therefore during the year 1932 the Government Printing Office here in Stockholm made certain essential and practical modifications to the German process. In January 1933 the first large plate (the Swedish Chart N° 88) was engraved at this Service with relatively good result (**). Since that time 14 more large plates have been engraved with more and more improvements.

It should however be noticed, that a plate engraved by galvanic etching is still somewhat unfinished. The land tint, the shading of depth contours,

(*) Otto H. KRAUSE, *Neue Wege der Kartenherstellung im Reichsamt für Landesaufnahme*, Berlin 1931.

(**) The photographic work and preparatory details are performed by the Government Printing Office, while the actual galvanic etching is made by the Hydrographic Service.

and many other details must be engraved afterwards by hand. The list below shows the time requested for the galvanic engraved plates, the final hand engraving of which is now completed. It intends to show the relation in time between the engraving of the plates by hand only in one column, and in the other the engraving of the same plates by galvanic etching and completion by hand.

Chart N°	Engraved by hand (estimated time)	Galvanic engraved, completed by hand.
88	12.5 months	4.5 months
233	14.5 »	7.0 »
236	14.5 »	9.2 »
237	13.5 »	7.7 »
238	14.0 »	5.4 »
239	13.5 »	7.7 »
255	14.0 »	5.7 »
256	14.5 »	7.0 »
259	12.5 »	6.6 »
276	12.0 »	7.1 »
Average 13.55 months		6.79 months

It should be noticed, that the times given in the second column of the list are estimated. This involves of course some uncertainty, but this can hardly exceed 10 per cent of the estimated times and the result in any case favours the galvanic process.

The list thus confirms the fact, that *the average time of engraving a chartplate has been reduced to one half by using the galvanic engraving process.* As to the costs the relation between hand-engraving only and galvanic engraving is 100: 58, i.e. *a saving of 42 per cent in favour of the galvanic method.*

The foregoing statements stand on an entirely quantitative basis. As to the quality of the engraving it might be said that the galvanic etching is of course not quite as good as the engraving made by a skilled hand-engraver. But as the third column of the list also includes the time taken for touching up the galvanic etching, it can be stated that the comparison has been made between two processes, which are also equal from a qualitative point of view.

In connection with the lines written above it should be instructive to obtain information from other Hydrographic Services as to what extent the use of *engraving-machines* of various types has simplified the engraving-work as regards both time and cost. A comparison between engraving by machine and by galvanic etching might also be of considerable value especially to those nations which have not yet introduced either one process or the other, but which intend to do so.

Finally it should be added, that if anyone is surprised at the very long engraving times shown in the above list he is advised to take out the charts mentioned and examine them. The reason is seen in the very complicated topographical structure of the Swedish coasts.

NOTE BY THE DIRECTING COMMITTEE :

The question of the different methods of engraving used by the States Members was studied by this Bureau in 1922, and the results of their enquiries published in Hydrographic Review Vols: I N° 2, II N° 2, V N° 1 etc. As however numerous improvements have since been made in these methods the Directing Committee intend instituting further enquiries from the States Members in the near future.

