

PRESIDENT SANDERS: We are indeed indebted for this inspiring message from Admiral Glover, and he is certainly right when he says we all have to keep pushing, because maps, charts and surveys can only go on as the funds are made available by the Government. It is too big for any commercial company or private individual to undertake by themselves, and it really is a national program.

Our Program Committee is to a certain extent carrying out some of the points that Admiral Glover has mentioned in connection with this meeting. This meeting has been widely publicized, and copies of his address have been sent by the Program Committee to key personalities of the Congress. I hope that move will have its effects. We must all keep working to secure the funds necessary to carry on this work.

Thank you, Admiral Glover.

The next paper on our program this morning is to be given by a man respected by all of us and a friend of all of us. He is really the international ambassador of surveying and mapping. I have had the opportunity to see him in foreign countries in conferences involving surveying and mapping, and it has given me a great sense of pride to see one of my fellow Americans so much respected and admired by the outstanding mapping people in foreign countries.

In our own country, the man I refer to is chief of the staff of the Bureau of the Budget, concerned with the coordination of the surveying and mapping activities of the Federal Government. I am sure you all recognize Mr. Robert H. Randall.

MR. ROBERT H. RANDALL: Mr. President, Members of the Society and Friends: I wish to acknowledge the very kind introduction and also a very skillful cueing-in. I noticed that when our President made his remarks concerning Admiral Glover's address he mentioned the little job of getting money for mapping. I thought perhaps he was cueing me in on that, and I still think so.

The United States has a national mapping program. Moreover, it is being increasingly effective in producing the maps and charts of domestic and foreign areas which constitute it. As a member of the American Society of Photogrammetry, it is my purpose this morning to present to you some comments upon the program and current progress towards its effectuation. It is fitting, I think, that this matter should be brought before the Society, since its members are in all cases interested in this national program, and in many instances are actively and personally engaged in working it out.

While it is accurate to say now that we have a national program, this could not always be said. During the past one hundred years there have been seventeen official investigations and reports made at the behest of President or Congress, all having as their aim the improvement of the Federal Government's surveying and mapping affairs. While the more thorough of these reports recognized that there was a lack of a comprehensive understanding of what the Nation needed in respect to basic maps and charts, and that there was a consequent need of a comprehensive program and of organized productive efforts towards it, no particular improvements ever came about as a result of any of these investigations. No Federal agencies were shifted or consolidated, and no agency's responsibilities was materially changed.

The report on reorganization of the executive branch of the government submitted to Congress by President Roosevelt in 1939, recognized, in the transmittal message which accompanied it, that the improvement of surveying and mapping was an important question which had still not been answered, and promised that due attention would be given to it. Accordingly, the Bureau of the Budget, in the Executive Office of the President, reviewed all the previous

studies and made a thorough investigation of current activities. The result was what might be called the "eighteenth report." This report has never been formally published, but action has followed its recommendations.

As a result of the Budget Bureau study, the President issued an Executive order which directed the Budget Director to do whatever was necessary to improve and to coordinate all Federal activities in surveying and mapping. The wording of the Order is broad, but the procedures set up in the Bureau to carry it out are pointed and specific. They emphasize (1) that in respect to the basic maps and charts produced by or procured by the Federal government, the consumers' needs are paramount; and (2) that these needs are to be satisfied in terms of satisfactory quality of the final map or chart production at the lowest practicable cost and prompt delivery so that they may be available in time for use. The first consideration, therefore, is to determine what these needs are, and to project them in the form of definite advanced programs, prepared annually as the basis of operations for the succeeding year. The second concern is efficiency and economy of production.

To produce these desired results the Budget undertakes two concurrent activities. On the one hand, an organized effort is made to determine exactly what maps and charts are needed in the consumer's interest. On the other, there is an active process of coordination of the activities of all Federal agencies that produce or procure the principal series of maps and charts. Each of these activities, preparation of program and coordination of production, is pursued in collaboration with a group of advisors or reporters.

The principal Federal departments and establishments that are important users of maps designate representatives who analyze their own map information needs and individually and jointly advise the Budget staff in the preparation of the annual program. In addition to these direct representatives of the departments, full use is made of any other organizations which can assist in the programming process. Included in these are the Air Coordinating Committee, the Map and Photo Committee of the Joint Chiefs of Staff, State Planning Boards, the Pan American Institute of Geography and History, and the International Civil Aviation Organization.

For the coordination of all surveying and related activities necessary to effectuate the program, the Bureau's staff receives reports on production and advises and assists producing agencies toward economy in operations. Such economy is seen in terms of, on the one hand, avoidance of duplicated effort, and, on the other, in the utmost encouragement of collaborative effort. The Government of the United States is the unit which all Federal agencies serve, and collaboration in the field of surveying and mapping, across departmental and agency lines, is sensible and is increasingly practiced.

The results of the procedure described are encouraging. I should be the last to say that any such plan was not always subject to improvement, but I am sure that it is accurate to say that our national mapping affairs are now on a better basis than they ever have been. In substantiation of this I should like to direct your attention to the situation as it now stands.

There is now greater comprehension than ever before of the need for basic map and chart information. Growing out of this realization, there has been a substantial increase in the amount of funds made available to the principal mapping and charting agencies. The money being currently spent is in all cases producing maps or charts of quality equal to those of ten years ago, and in most cases of superior quality. To illustrate, an example of the drive toward not only a more adequate supply of map information but maintenance and even increase of quality, can be given in the case of topographic mapping.

Standard topographic maps for civil use are produced in domestic United States by the Geological Survey, the Forest Service, Tennessee Valley Authority, and the Coast and Geodetic Survey; and editions for military use, by the Corps of Engineers. In areas outside of the United States and its territories and possessions, topographic surveying is done by the Corps of Engineers. All mapping in United States is done to uniform standards, according to specifications developed under the advice of representatives of the Federal map using departments and establishments. All maps made to these standard specifications are tested in the field before final publication, and, after such testing and any necessary corrections, are certified by the surveying agency as meeting the standard accuracy requirements. Maps surveyed and compiled by the other agencies are edited, published, and distributed by the Geological Survey, so that any map user has but one place to go to procure a topographic map made for distribution and sale to the public.

The basic laws governing the operations of the Interior Department, the Agriculture Department, Commerce Department and the Department of the Army, all permit the making of topographic surveys. In order that the surveying operations of agencies within these departments may be conducted on a proper basis, without duplication of effort and with the maximum of collaboration, inter-departmental agreements are entered into by the departments concerned. In respect to topographic mapping for example, there is an agreement between the Department of the Interior and the Department of the Army to the effect that for topographic surveying in domestic United States, the Army Engineers will call first upon the Geological Survey and other Federal agencies, before undertaking the work with the Corps' personnel, or contracting it to commercial concerns. Similarly, there is an agreement between the Departments of Interior and Agriculture by which the Forest engineers make standard topographic surveys of National forest areas and then turn over the results to the Geological Survey for final editing, publishing and distribution to the public. An agreement between Departments of Interior and Commerce provides for close collaboration along the coastal areas of United States, to the end that the Geological Survey and the Coast and Geodetic Survey may work with the maximum degree of collaboration in procuring the topographic information that must appear on both coastal charts and topographic maps.

In respect to hydrographic charting, a distinction is made between foreign and domestic waters. The Coast and Geodetic Survey makes nautical charts of United States, its territories and possessions, and the Hydrographic Office of the Navy makes similar surveys of foreign waters.

Aeronautical charting operations include the production of charts needed for both civil and military purposes. Responsibility for charts of the United States, being primarily for civil aviation needs, has long been vested in the Coast and Geodetic Survey. That agency also prepares the strip charts of commercial flying routes outside of the United States, where previously prepared charts of this type produced by Army or Navy are not available. All other aeronautical chart needs outside the United States are supplied by Departments of Air Force and Navy.

In the procedure for programming and for coordination of production as now practiced, two governing principles may be detected. First, that the interest of the real consumer is paramount and, second, that economy of production is to be found not in a monopoly of production facilities, but in the collaborative efforts of agencies, within and without the government, working toward standardized results. To give one agency an absolute monopoly in the production of topographic maps for example, seems less desirable than having one agency assume

the principal part of the United States topographic surveying job, and of preparing for publication and distribution the work of the other agencies making such surveys. Expressed in one way, it might be said that this is an encouragement of competition between the agencies concerned. In more appropriate terms, it can be said that this procedure provides for collaboration in a total effort toward consistently decreasing unit costs. The quarterly reports on progress and cost, received by the Budget from the topographic mapping agencies, provide information to the agencies concerned as to how new and presumably better technical methods and instruments are working out in actual tests. They also may furnish clues as to better management of production operations. It may, therefore, be said that to the extent that there is any competition between Federal agencies operating in this field, it is competition upon the basis of interchange of ideas and information of the highest professional type.

Just as the agencies of the Federal government are working together in respect to topographic mapping, it also is to be reported that qualified commercial concerns also have their part in production. The Corps of Engineers and the Reclamation Service of the Interior Department, have let contracts, not only for aerial photography, but for compilation of topographic maps. This work is supervised by the Corps of Engineers for the Army and by the Geological Survey for the Interior Department. The work is performed according to National specifications and is tested before acceptance. Thus, we are making an honest effort to draw upon our best professional resources, and members of this Society and others, inside of Government and out, are contributing in our topographic mapping progress.

It is to be noted that the specifications adopted for topographic mapping in domestic United States have been officially accepted by the Pan American Institute of Geography and History for use in all the American Republics. Similarly, standards for the principal series of aeronautical charts have been adopted by the Institute and by the International Civil Aviation Organization. Specifications governing hydrographic charts are consistent with those of the international Hydrographic Bureau and the Institute.

The fact that we in the United States increasingly recognize our need for basic series of maps and charts is perhaps a part of a world-wide appreciation. Certainly, the world needs geographic information of the type which basic maps of the kind discussed here can supply. For progress and for security we need to keep on and to improve our National program. In large measure, the members of the American society of Photogrammetry can contribute to this end.

PRESIDENT SANDERS: Thank you very much, Mr. Randall.

The next speaker on the program is Mr. Harry T. Kelsh. Mr. Kelsh has long been known to all of us as a very inventive individual who has had wide experience in government service and industry. In the past years, Harry Kelsh has done a lot of work, particularly on the slotted templet system. He has also worked on various plotters. All of this has culminated in the development of a plotter which is appropriately named the Kelsh Plotter. This can be seen in the exhibit room, but for the explanation of the plotter I will now refer you to Mr. Harry Kelsh.