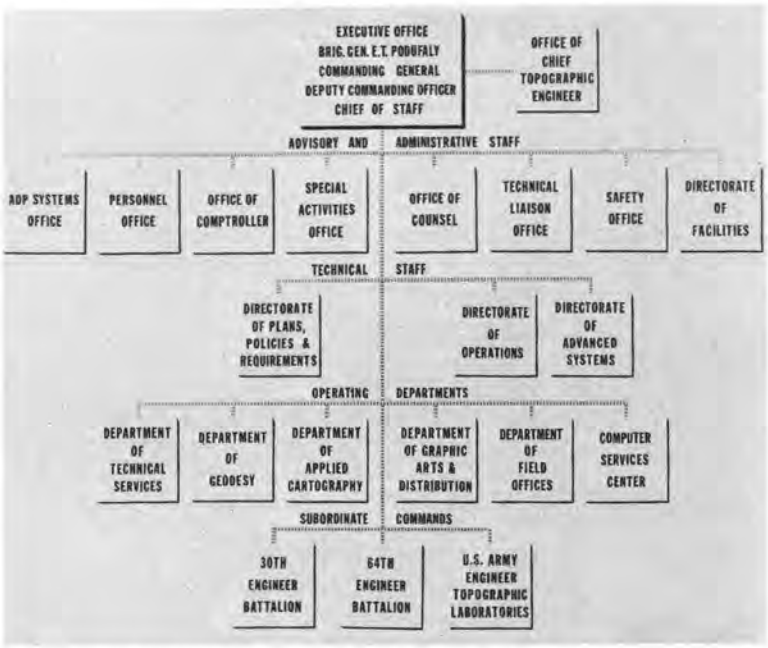

FIG. 1. Organizational chart of the new U. S. Army Topographic Command, TOPOCOM.

BRIG. GEN. EDWARD T. PODUFALY*
U. S. Army Topographic Command
Washington, D. C. 20315

The Army's New TOPOCOM

The main reason for the new organization is to keep abreast of the new equipment, skills and techniques that are already upon us or are just over the horizon.

IT IS INDEED A PLEASURE and privilege to appear before two such distinguished professional groups. During the past few days you have read professional papers and listened to learned presentations of a very technical nature. Mine is neither difficult nor complicated but it does have a direct impact on many of you.

We represent a sort of end product of your individual and collective academic, professional and engineering know-how. We represent the practical user of your expertise. As a major producer in the world of mapping and geodesy, I would like to introduce to you a new organization—the U. S. Army Topographic Command, or TOPOCOM, for short. I must report also that the well-known name of Army Map Service has ceased to exist because it has been absorbed into this new organization.

Figure 1 illustrates the TOPOCOM organization. The units that are assigned to TOPOCOM are shown on the bottom line including: (1) the Engineer Topographic Laboratories that conduct our Research and Development on equipment, techniques, and processes pertinent to the fields of geodesy, cartography, photogrammetry, electronics, reproduction and geography, as well as pure research; (2) the 30th Engineer Topographic Battalion at

* Presented at the Annual Convention of the American Society of Photogrammetry, Washington, D. C., March 1969 under the title "The Army's New Topographic Organization—TOPOCOM.

Fort Belvoir, Virginia which mainly performs surveys in support of the military in the United States; and (3) the 64th Engineer Topographic Battalion located in Italy, with active projects in Liberia, Ethiopia and Iran.

The top row shows the advisory and administrative staff, normally a part of any military or business organization. The three technical directorates are the heart of the organization. They manage, direct and supervise the operating departments and subordinate commands. Not only must they direct day-to-day activities but they must also plan for the future as far ahead as the 1980–1990 time frame. We must plan so far ahead in order to take advantage of the rapid pace of science and technology. Current production operations must be updated continuously to keep pace with today's and tomorrow's research and development.

The six production departments are organized along functional lines. In addition, productive effort is carried out at field offices located in San Antonio, Kansas City, Louisville, and Providence. The headquarters staff and the major portion of the command is located here in Washington. Our total authorized strength is about 5,600.

ABSTRACT: TOPOCOM *is the short name for the new U. S. Army Topographic Command that includes the former Army Map Service as well as the U. S. Army Engineer Topographic Laboratories, the 30th Engineer Battalion and the 64th Engineer Battalion. The change has been made to accommodate better the modern improvements in the state-of-the-art, such as Secor, satellite geodesy, the* UNAMACE, *the Automatic Photomapper, etc. Another reason for the change is the recognition by the Army of the growing importance of mapping and map related products to our military readiness. Of particular importance is the Topographic Data Center.*

So much for *how we are organized*. Now a few words as to *why*. There are several reasons but I'll mention only two which are of interest to this group. For the major reason we need to look no further than the equipment exhibit halls of this convention.

The technical papers being presented and the sophisticated equipment being displayed speak for themselves concerning the technological advances taking place in your composite disciplines. I'll show you in a minute or two some of our equipment which has had a dramatic impact on our capabilities to produce maps. This same equipment provides us the opportunity to produce many new end products for the military. The line topographic map that we have used in the past may not be enough. A variety of other products will be needed. Map and terrain information may be furnished in one form to the artillery, another to the infantry, another to the engineers, and still another to the high-level staff planners.

This new equipment and an increasing variety of end products required by the military forces us to plan our future in precise detail. As we must plan so far ahead, we need close coordination between our research and development and operating elements to ensure the latter are ready to use the new equipment and to train personnel ahead of time for the new skills and techniques that we will need in the years ahead. An integrated organization such as TOPOCOM can best provide this necessary link between present and future operations and can, more importantly, wisely invest our annual fund appropriations.

Now I would like to give you a sampling of some of our newer equipment. In the field of geodesy the reliance on satellites for position measurements is increasing. Most of you are familiar with SECOR (Sequential Collation of Range).

SECOR began its operational program in the fall of 1964 and since then has occupied 52 stations effecting ties of Japan to Hawaii and has accomplished approximately 80 percent of an Equatorial Network (Figure 2). This will permit us to determine a better value for the semi-major axis of the earth. We are thinking of integrating SECOR with a doppler system to provide expanded coverage for the future. We are also using the BC-4 camera which photographs a large reflecting satellite, such as the ECHO, against a star background.

TOPOCOM and the U. S. Coast and Geodetic Survey are currently in a collaborative program comprising a 46-station global network (Figure 3). Fifteen sets of BC-4 equipment are currently deployed covering most of the southern hemisphere including Antarctica. This is indeed a program with an inter-

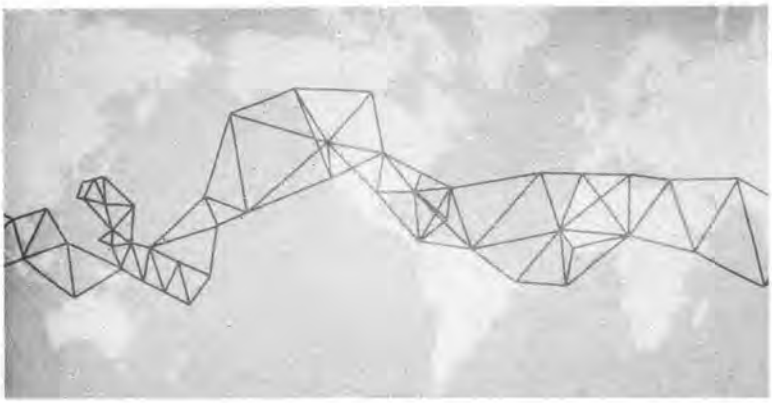

FIG. 2. SECOR (Sequential Collation of Range), a system of satellite geodesy, has nearly completed an equatorial network.

national flavor with American, British, South African, and German teams participating.

For several years now aerial photography has been a major component of the map making process. Continued research and development has produced vastly improved optical systems both in cameras and photogrammetric instruments. These have materially increased the speed and accuracy of map making. This in itself, has been an evolutionary development; but when these improvements are married to a computer, you have a revolution.

This is the UNAMACE—Universal Automatic Map and Compilation Equipment*—(Figure 4) developed by our laboratory and currently in operation in our base plant. Its on-line computer has facilitated considerably the compiling capabilities. This same type of equipment is being modified into mobile van units for use by topographic field units. Figure 5 shows the Automatic Photomapper Equipment mounted in a van for use in the field.

Additional items that have been developed for field elements and are now being tested are the 5-color electrostatic printer and the Target Map Coordinate Locator.

In the base plant as well as in the field many new items of equipment have been adopted. These include: the Automatic Contour Digitizer, the Paper Print Processor, the Glass Plate Processor, the Stellar Comparator, the Large Format Comparator, the Semi-Automatic Coordinate Reader, the AS-11 Analytical Stereoplotter, and the Laser Equipped Stereo Comparator. Many of these

* See "The UNAMACE and the Automatic Photomapper" by Dr. Sidney Bertram in the June 1969 issue of this JOURNAL.—*Editor*.

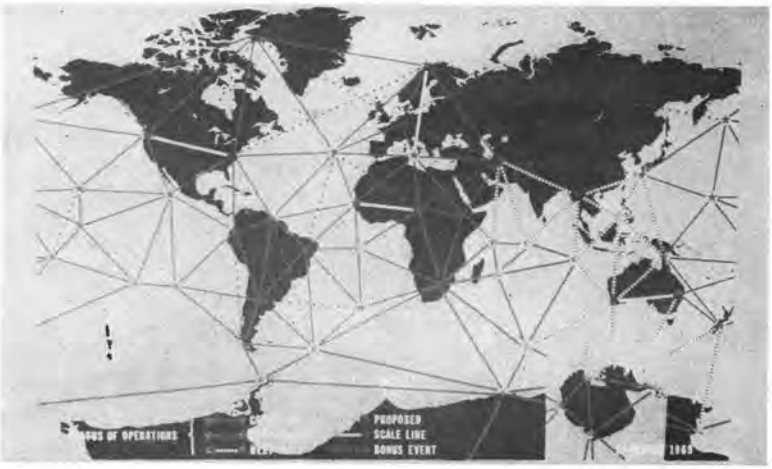

FIG. 3. TOPOCOM and the U. S. Coast & Geodetic Survey are currently in a collaborative program comprising a 46-station global network using 15 sets of BC-4 camera equipment.

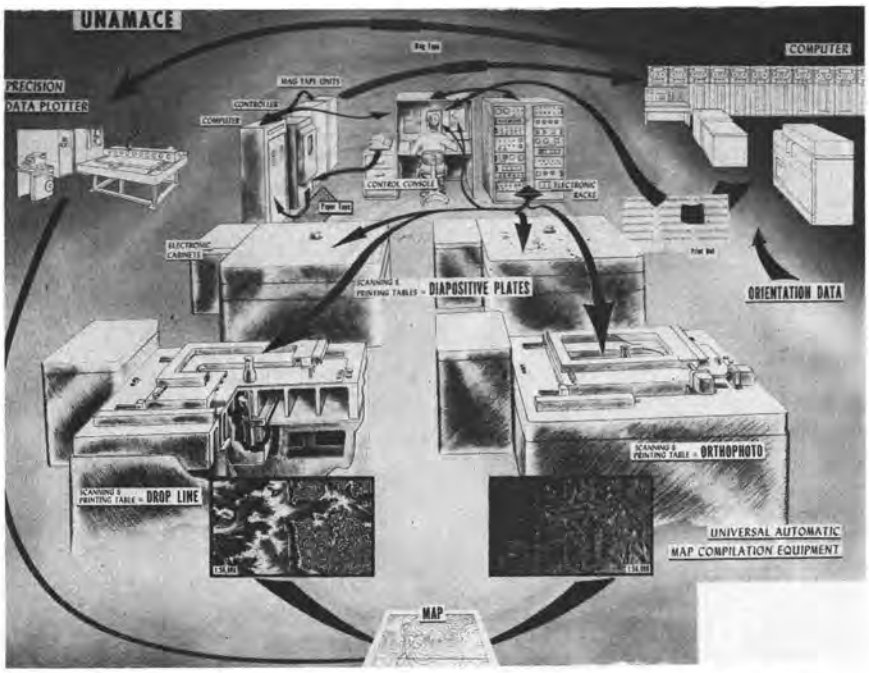

FIG. 4. The UNIMACE—Universal Automatic Map and Compilation Equipment.

instruments were developed wholly or in part by TOPOCOM personnel.

So much for the first reason for organizing TOPOCOM. Another reason is the recognition by the Army of the growing importance of mapping and map related products to our military readiness posture. The Corps of Topographic Engineers, which was established during the Revolutionary War, was abolished shortly after the Civil War (Figure 6). Now, after over 100 years, we again have a Topographer of the Army which is my other title. We are still proud to remain a part of the Corps of Engineers in the U. S. Army, but we are now recognized as a major and important element of the Corps of Engineers. This will enhance the stature and careers of our military and civilians in the Army topographic community.

I have now given you two of the reasons for the organization of TOPOCOM but reorganization by itself to take advantage of new technology is not enough. We need to modernize our procedures for producing maps and map-related products. We in TOPOCOM plan to embark on a new mapping concept schematically

FIG. 5. The Automatic Photomapper Equipment—a relative of the UNAMACE—is mounted in a van for field use.

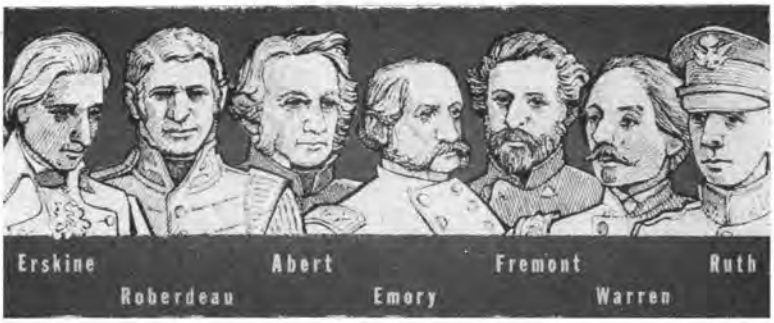

FIG. 6. Former Topographers of the historical Corps of Topographic Engineers.

shown in Figure 7. A Topographic Data Center would be organized to contain input data including photography, preprocessed geodetic control data, names, and other map source information. This data could be retrieved or displayed on call so we can rapidly produce a map, orthophotomap or other map related product. Photography would be kept current so that the product eventually supplied the user will contain the most up-to-date terrain data available. We would produce these as needed and thus eliminate to a large extent our bulk storage of maps.

Geodetic data bank items will consist of precise horizontal and vertical points determined by photogrammetric techniques in addition to those obtained from survey systems and off-shelf acquisition programs. The data bank would include other processed source materials such as radar photography, field classification, gazetteers, atlases, maps, miscellaneous reports, documents, periodicals and books.

I believe that this concept has already been partially discussed at this convention, but we believe that our data bank concept is more than a dream; we think it technically possible. We hope to start a pilot model soon. There is a long way to go but at least we are on the way. And remember, we are looking 10 to 20 years ahead.

In closing, I should like to reiterate that the main reason for the organization of the U. S. Army Topographic Command is to keep up with the new equipment, skills and techniques that are upon us or over the horizon. This last concept I mentioned is illustrative of our forward thinking.

TOPOCOM is a brand new Army outfit. We are proud of our predecessors. We will retain the best of their traditions while we set our course for the exciting future. Wish us well.

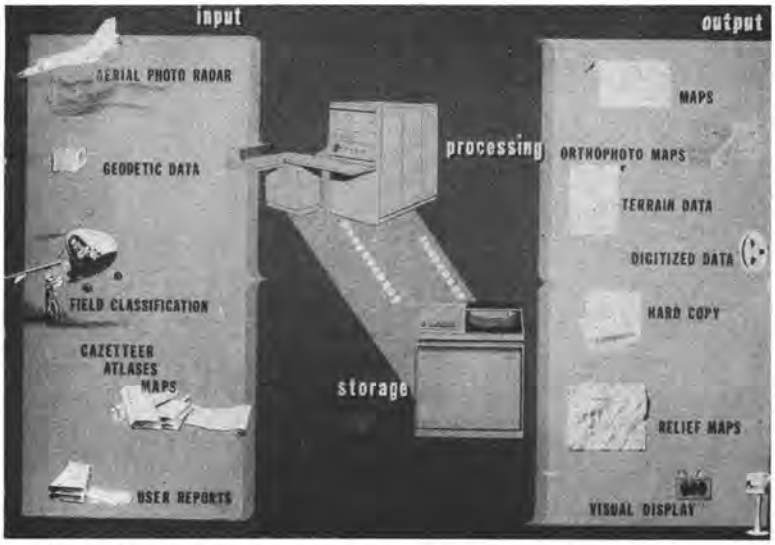

FIG. 7. Data bank and retrieval concept of a Topographic Data Center.