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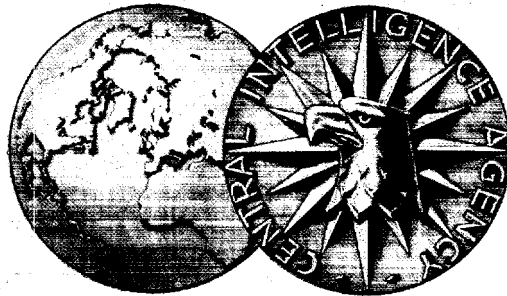
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FOREIGN OFFICIAL AND PRIVATE MAP PUBLISHERS ARGENTINA

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M-9

Published September 1949

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I. INTRODUCTION

A. Present Status of Map Publishing.

Argentina is more advanced cartographically than any other Latin American country. Not only are the maps in general of better quality than those produced in other countries, but they are also more abundant and more widely used. Ten official and eight private agencies produce most of the maps of Argentina.

The Instituto Geográfico Militar (IGM)¹ is the publisher of the only two set maps that cover the entire country -- the Carta Provisional de la República Argentina in 112 sheets at 1:500,000, and the Carta Aeronáutica in ten sheets at 1:1,000,000. The 1:500,000 set, whose sheets are revised currently, is the most detailed and probably the most accurate map available for all of Argentina. Relief is shown by shading. The aeronautical chart has form lines and includes much recent aeronautical and cultural information, but it is published on awkwardly large sheets.

The IGM has also published the best as well as the largest number of large- and medium-scale topographic maps of Argentina. Only 0.4 percent of the total area of Argentina, however, has been

1. The complete names of all mapping agencies, their English translations, and abbreviations used in this paper are given in the list of Map Publishers at the end of the report.

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covered by IGM maps at 1:25,000; 7.5 percent by maps at 1:50,000; and about 20 percent by maps at 1:100,000. The source materials used are planetable and stereophotogrammetric surveys based on standard triangulation of first to fourth order. The maps, though comparable in precision to US Geologic Survey maps at similar scales, do not have the finished cartographic appearance characteristic of maps made in the United States. All IGM maps are lithographed.

Several other government agencies also publish topographic maps of high quality. The Dirección General de Minas y Geología (DGMG) has published 38 sheets of a 1:200,000 set that will eventually cover all mineral areas of Argentina. These maps are based on special topographic reconnaissance surveys developed by the DGMG. The degree of precision, though not as high as that of the IGM, is considered adequate for maps at 1:200,000. Yacimientos Petrolíferos Fiscales (YPF) has produced topographic sheets of petroleum areas at scales of 1:10,000, 1:50,000, and 1:100,000. Although well regarded in Argentina, these sheets are practically unknown in the United States because their distribution is highly restricted. The same is true of the maps issued by the División de Límites (DL) of the Ministerio de Relaciones Exteriores, but the number of maps issued is smaller. Although the DGMG, YPF, and DL work is of high reliability, their geodetic observations are not recognized by the IGM unless IGM observers are present during surveys. The DGMG maps are lithographed.

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Those of the YPF are reproduced on ozalid or multilith machines. Most of the DL maps are still in manuscript form, but a few have been lithographed.

Although the IGM produces most of the general maps of Argentina, the DGMG has recently published a base map of excellent reliability. Private publishers such as Peuser, Kapelusz, Bemporat, and Ludwig have also made general maps but these firms do not have access to the detailed information available to the official agencies, and their cartographic standards are lower.

A number of organizations, both official and private, have published specialty maps. Weather maps are issued daily by the Servicio Meteorológico Nacional (SMN), and by the Dirección General de Navegación e Hidrografía (DGNH). The SMN also publishes special rainfall, ocean temperature, vapor tension, and isogonic maps. The Dirección General de Minas y Geología (DGMG) issues detailed geological maps at 1:200,000 as overprints on the topographic sheets and generalized maps at 1:2,000,000 and 1:5,000,000. Road maps at various scales are compiled by the Administración General de Vialidad Nacional (AGVN) and by the Automóvil Club Argentino (ACA). Both agencies produce maps that are considerably more reliable than the corresponding maps of private map publishers -- Peuser, Bemporat, and Ludwig. Maps of agricultural production are made chiefly by the Dirección General de Economía Agropecuaria y Coordinación (DGEAC) for

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inclusion in official reports. Hydrographic charts of the Dirección General de Navegación e Hidrografía (DGNH) are rated as excellent by the US Hydrographic Office. Other types of maps and map publishers are mentioned in greater detail in Section II of this report.

B. Development of Mapping.

Modern cartography is said to have begun in 1866 with the publication of Martin De Moussy's Atlas de la Confédération Argentine, although the territory now included in Argentina had been represented on maps since the early 1500's. Between the earliest colonial times and the middle of the 19th century, explorers from many nations and settlers in increasing numbers had sketched the interior of the country. Coastal surveys had been made by the Spanish, British, French, and US governments. Most of the maps, charts, plans, and traverses covered only small isolated districts and no large continuous area had actually been well mapped. In the compilation of the De Moussy atlas, all important source materials up to the date of publication were used for the first time. The atlas, like the Codazzi maps of Colombia and Venezuela and the Pissis atlas of Chile, was so carefully compiled and so comprehensive that it has been much used as source material in the compilation of more recent maps.

No important general maps were produced in the next twenty-year period. During that time, however, there was a notable growth of geographic knowledge and a corresponding development in the mapping

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of previously little known areas of Argentina. Military expeditions sent out by the government to subjugate the Indians of the Pampas and Patagonia returned with surveys, sketches, and graphic descriptions of those regions. A topographic study of La Pampa and Río Negro territories was made by a group composed of Argentine army men and German scientists. The land along the base of the Andes south of Lake Nahuel Huapi and the interior of Patagonia were explored. Surveys were made of the Santa Cruz, Chico, Bermejo, Pilcomayo, Paraná, and lower Paraguay rivers. Special studies of various parts of the country were made by Argentine and foreign scientists. Surveys for the expanding railroad net also provided new cartographic materials.

After the organization of the Instituto Geográfico Argentino in 1879 (with government support), all cartographic and geographic materials were assembled for use in compiling maps. The resulting Atlas del Instituto Geográfico Argentino, published between 1885 and 1893 under direction of Arthur Seelstrang, consisted of 29 maps at scales of 1:1,000,000 or 1:2,000,000. Data used included the work of institutions and private individuals, and materials in the map collections of the various federal and provincial government departments. The maps by Brackebusch of Jujuy, Salta, and Córdoba provinces, Gussfeldt's maps of parts of the Andes, and Francisco P. Moreno's maps of portions of Patagonia, which were used as sources by IGA, are still considered as among the best available maps of those areas.

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Of the great number of general maps published since 1893, none has drawn upon as large a percentage of the cartographic sources available at the time of publication as did either the De Moussy or the IGA atlas. The best and most complete recent map is the 1:500,000, Carta Provisional de la República Argentina issued by the Instituto Geográfico Militar. Nevertheless, Argentine engineers and geographers, desirous of speeding up production of reliable topographic maps, have criticized the Carta Provisional because practically no precise surveys were used as source material for the mapping of over 80 percent of the area covered. Consequently, any planimetric or other details are of doubtful accuracy.

In 1912, representatives of the principal official mapping agencies were appointed members of a Comisión de la Carta to draw up uniform mapping requirements. The plans of the commission were presented to the National Congress in 1914 for ratification but were dropped because of World War I. They were later revised somewhat and finally approved in 1941. The IGM was charged with carrying out the provisions of the new law which is subject to modification in accord with scientific advances. A supplementary law was passed in September 1946, making mandatory a rigid inspection by the IGM of all official or privately published maps before their release for public distribution. If the provisions of both laws are carried out, the quality of Argentine maps should be greatly improved. Furthermore,

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the inauguration in January 1947 of Perón's "Five Year Plan" for developing and strengthening the government, economic position, and defense of Argentina will stimulate the preparation of maps by government agencies.

Geodetic observations to determine the locations of several of the major cities were made as early as 1784, but little accurate work was attempted before the middle 1800's. Except for a few detailed surveys that had been made of small areas along the sea-coast, geodetic surveying had advanced no further in Argentina than in other countries of Latin America. In 1878, official observations to determine the exact longitude of Buenos Aires were made. Using Buenos Aires as a known point, observations were later made of the locations of Córdoba and other towns. In 1918, the Instituto Geográfico Militar was made responsible for all geodetic work of the country. The various branches of the federal and provincial public works departments have cooperated with the IGM, and triangulation of high quality is progressing satisfactorily.

Altimetry was little developed before 1850. By 1892, only 2,071 spot elevations had been recorded, and only a few of these had been checked precisely. The great majority of the points were located along the railroad lines and had been measured during periods of railroad extension. The Inspección General de Obras Hidráulicas, now the Dirección General de Navegación y Puertos, in the Ministerio de Obras

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Públicas (MOP), began precise leveling in 1899 and the Comisión de Nivelación was created shortly thereafter within the Estado Mayor de Ejército. The first catalogue, issued in 1913, gave 430 provisional elevations along a distance of 3,860 kilometers. By 1939, MOP leveling covered 14,000 kilometers and the IGM 8,471 kilometers. To 1 January 1948, IGM leveling covered 10,708 more kilometers and included 10,182 bench marks.

Geomagnetic observations in Argentina were first made by US (1852-53), Austrian (1860) and French (1883) geophysicists. Between 1884 and 1905, an Argentine professor at the University of Córdoba observed 150 positions in northern Argentina, but these data were not officially checked or used. Official observations were started in 1904, when a Magnetic Section was created within the Oficina Meteorológica Argentina, now the Servicio Meteorológico Nacional. In 1904-05, maps showing isogonic variations for Argentina and adjacent parts of the South Atlantic Ocean were made using data from 45 stations. By 1908, information received from 90 stations was incorporated into an isogonic map. Personnel from the Carnegie Institution of Washington worked with the Argentinians from 1907 to 1926, on geomagnetic and astronomic observations at 70 stations. The results were published in map form, using values for 1931. By 1936, there were 144 stations. Field work from 1936 to 1944 resulted in the observation of 180 stations. These data have

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been worked into isogonic maps for 1944. Two of the three permanent geomagnetic observatories, Pilar in Córdoba Province and Isle Laurie in the South Orkney Islands, have been operating continuously since 1904; and the third, at La Quiaca in Jujuy Province, since 1920. The Astronomical Observatory of La Plata is setting up two additional permanent observatories -- one in southern Buenos Aires Province, and the other at about 50° S and 71° or 72° W.

Photogrammetry was first used in Argentina by the Comisión de Límites con Chile. Up to the beginning of World War II, about 10,000 square kilometers had been surveyed from the air by the Instituto Geográfico Militar. To date, the IGM has flown more than 55,000 square kilometers of aerial photography, chiefly for use in constructing topographic maps. The Dirección General de Navegación e Hidrografía of the Ministerio de la Marina has been making scattered photogrammetric surveys along the coast since 1925, and the Instituto Foto-Topográfico Argentino, a private concern, has been active for about the same length of time. The areas covered by these two agencies, however, is not great.

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II. INDIVIDUAL MAP PUBLISHERS

A. Official Mapping Agencies

1. Administración General de Parques Nacionales y Turismo,
Ministerio de Obras Públicas (General Administration for National Parks
and Tourism, Ministry of Public Works)
Av. Santa Fe 690, Buenos Aires

Cnel. (Retired) Napoleón A. Irusta, Administrator General

The Administración General de Parques Nacionales y Turismo (AGPNT) is similar to the US National Park Service but not so well developed. Maps and pamphlets on the few national parks are prepared for official use and for public distribution, especially to tourists. The organization is small and the cartography section consists of only two persons.

The AGPNT produces maps of Argentine national parks exclusively. The scales vary with the size of the park. Hand-colored ozalid prints of eight of the national parks are available but the information shown is scant and highly generalized. The sketch and colored maps in tourist pamphlets are more usable. AGPNT indexes show that most of the parks have been or are to be mapped at large scale. Mapping of new parks and monuments is planned.

Only general maps showing park outlines, hydrography, and occasionally roads have been published. No information on the sources of information used in the compilation is available for most of the maps. Large-

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scale IGM topographic sheets do not cover all of the parks, but the complete set at 1:500,000 seems to have been used to supplement data on file in the AGPNT.

José Anesi, who prepared a map of the Nahuel Huapí park on contract, used his private collection of maps and data in compiling the map.

No general statement concerning reliability of the maps can be made.

2. Administración General de Vialidad Nacional, Ministerio de Obras Públicas (General Administration for National Roads, Ministry of Public Works)
Calle San Martín 871, Buenos Aires

Tte. Cnel. Casas, Administrator General

The Administración General de Vialidad Nacional (AGVN) is the official highway department of the government and produces maps showing the status of the highways of the country. The staff as a whole is large but the cartographic section is comparatively small, as is also the number of maps issued.

The AGVN produces only road maps of Argentina. These include road maps of large cities and surrounding areas at scales of 1:50,000 and 1:100,000, smaller-scale maps of provinces, and annually issued maps of the entire country at 1:2,000,000 and 1:4,000,000. Although route traverses, road plans, and sketches of profiles, bridges, and culverts are made, they are not distributed generally.

Principal sources of data for the road maps are official reports and surveys made by AGVN engineers and by the various provincial

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highway departments. The AGVN has cooperated with the Automóvil Club Argentino (ACA) in the production of a 1:4,000,000 map of the principal roads of Argentina, the ACA providing checks on the conditions of roads and the AGVN information on the status of roads under construction or projected.

None of the maps produced by the AGVN is outstanding in quality although they are generally accurate as to road conditions. Road information is detailed except on small-scale maps. The principal use of the maps for US mapping agencies would be for the location and condition of roads.

3. Dirección General de Economía Agropecuaria y Coordinación, Ministerio de Agricultura (General Bureau of Agricultural Economy and Coordination, Ministry of Agriculture) Paseo Colón 974, Buenos Aires
Dr. Alberto Astort, Director General

The Dirección General de Economía Agropecuaria y Coordinación (DGEAC), successor to the Dirección General de Economía Rural e Estadística is a small branch of the Ministerio de Agricultura producing statistical maps for official reports and studies. The staff is small but eight to ten maps are produced each month to accompany crop-condition reports.

The DGEAC makes maps of Argentina only, usually at the scale of 1:11,000,000. Most of the maps include the entire country and show the stage of development or condition of each of the major crops for each month of the year. The organization plans to continue map production at the current rate or increase it somewhat under the Five Year Plan.

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Official statistical data of the Ministerio de Agricultura are the principal source materials used. In general, only five types of crop conditions are shown on a single map. The maps are at such small scale that they are of necessity highly generalized. Nevertheless they serve the purpose for which they were designed, and within the limits of the scale are reliable. Agricultural data are superimposed on outline base maps, which are then reproduced by rotoprint.

Because of generalization, the use of the maps is limited. They are most effectively used in series to show the changing status of crop production over a period of a year or more. The maps are not of high quality cartographically and cannot be reproduced well.

4. Dirección General de Minas y Geología, Ministerio de Industria y Comercio (General Bureau of Mines and Geology, Ministry of Industry and Commerce) Av. Peru 566, 1st floor, Buenos Aires

Dr. Perfecto José Sánchez, Director General
Ing. Remigio Rigal, Director of Mines
Ing. Roger Lambert, Chief, Geology Division
Dr. Hildebrando Boccio, Chief, Cartography Division
Dr. Pablo Czenik, Chief, Lithography Division

The Dirección General de Minas y Geología, (DGMG) is the second largest topographic mapping agency in Argentina. It is the Argentine equivalent to the US Geological Survey and produces geologic and topographic maps, most of which accompany reports on the geology of various parts of Argentina. Maps are produced principally for official use of government agencies but are also available to the general public. The staff is considerably smaller than that of IGM, as is also the number of maps produced.

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Only maps of Argentine territory are published. The usual scale is 1:200,000 for topographic and geological maps, but many larger-scale maps of small mining areas have been made for inclusion in reports. General maps at from 1:2,000,000 to 1:5,000,000 have also been prepared. To date, 38 topographic maps and 9 geological maps of the principal mineral bearing areas of Argentina at 1:200,000 have been published. Twelve to fifteen more topographic, and five geological maps have been drafted. It is planned to continue work at the basic scale of 1:200,000 and eventually cover all of Argentina.

Topographical and cultural information used in the compilation of the maps is based on topographic reconnaissance surveys and good quality triangulation. Geological data are overprinted on the topographic maps at a later date, when the detailed geological surveys have been completed.

Lithographic methods and reproduction equipment are far from new but the results are surprisingly good. Although the legend itself is often inadequate, other marginal data are fairly detailed. As the maps usually cover undeveloped areas, very little cultural detail is given. Hydrographic and topographic information are somewhat generalized.

The DGMG maps are particularly useful because they cover territory not mapped by any other organization and because they are generally reliable.

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5. Dirección General de Navegación e Hidrografía, Ministerio de Marina (General Bureau of Navigation and Hydrography, Ministry of the Navy). Calle Lavalle 1634, Buenos Aires

Contra-Almirante Athos Colonna, Director General
Capitán de Fragata Pedro P. Rivero, Chief, Division of Hydrography
Capitán de Fragata Gerardo Fernández Rubio, Chief, Division of Navigation
Tte. de Navío Luis M. Iriart, Chief, Division of Meteorology
Sr. Leon Picard, Chief, Cartography Section.

The Dirección General de Navegación e Hidrografía (DGNH) is comparable to the US Navy Hydrographic Office. It is the official mapping agency for all Argentine coasts, adjacent waters, and insular possessions, as well as areas claimed by Argentina in the Antarctic. Twenty cartographer-draftsmen and eighteen apprentice draftsmen are employed in constructing and revising charts.

To date, the DGNH has produced 130 different charts, not including revisions.

The DGNH does not reproduce charts issued by other nations but has a collection of foreign charts in its reference files. Publications of the DGNH include hydrographic charts, daily weather maps, and tide tables and charts for all of South America, pilot guides and aids to navigation, as well as data on meteorology, hydrography and oceanography.

The entire coast of Argentina is covered by DGNH charts at scales of 1:300,000 or larger. The principal bays, river mouths, islands, and ports are charted at 1:6,000. Small-scale charts at 1:1,000,000 to 1:5,000,000 have been made for all the southern portion of South America and for the Antarctic. All hydrographic charts are

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revised currently, and surveys of new areas are in progress. Under the Five-Year Plan, it is expected that DGNH work will be greatly expanded.

The DGNH needs additional equipment. A single Santoni Stereocartograph machine, acquired in August 1948, is the only photogrammetric equipment on hand. One old flat-bed press is used for charts and other publications. Two new offset presses, sheets of vinylite plastic, stick-up stock, tide meters, and meteorological instruments are on order in the United States pending the availability of dollar exchange. A new eleven-story building for the DGNH is nearing completion and the new quarters are expected to be occupied in May 1949.

All of the information on the charts and maps is obtained from surveys and observations by DGNH personnel. Bench marks, triangulation points, and other control data are of high reliability. Practically all of the cartographic work is done by hand.

The Argentine hydrographic charts are recognized by USHO as being of excellent reliability and high cartographic quality.

6. División de Límites, Ministerio de Relaciones Exteriores (Boundaries Division, Ministry of Foreign Relations) Av. Arenales 761, Buenos Aires.

Ing. Norberto C6bos, Chief
Ing. Tomas J. Allende, Asst. Chief

The Divisi6n de L6mites (DL) is the smallest of the official topographic mapping agencies. Maps are made for the use of the Ministerio de Relaciones Exteriores only. The office is very small and two cartographers are sufficient to handle the data provided by field parties.

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Topographic maps are made of the areas along the boundaries of Argentina, and large-scale planimetric maps of special areas. Most of the Argentine-Chilean border has been mapped at scales of 1:100,000, and 1:200,000, but much of this work was done between 1890 and 1905. Currently work is concentrated on the Paraguayan border and on the Chilean border south of Mendoza Province. Triangulation for the topographic maps is of good quality but in the Andean region is progressing slowly. Intermediary boundary markers, between those set up in 1903, are being established. A survey of the entire Andean area is projected.

Principal sources of information for the boundary maps are detailed reports and surveys by field parties and IGM topographic maps. The geodetic data are reliable.

No modern time-saving cartographic methods are used and all the maps are drafted by hand. The maps are not continuous, and only areas adjacent to the international boundaries are mapped. Topographic detail sufficient to be of use in exact location of the boundaries is included on all maps.

All published maps are well reproduced, are reliable, and would be of use to US mapping agencies, and particularly to the State Department, if they were available. As practically all maps are restricted in distribution and unavailable in Washington, no further evaluation can be made.

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7. Instituto Geográfico Militar, Estado Mayor del Ejército, Ministerio de Guerra (Military Geographic Institute, General Staff of the Army, Ministry of War) Cabildo 381; Buenos Aires

General de División Otto Helbling, Director General
Tte. Cnel. Maximino Ares, Director, Department of Geographic Services.
Tte. Cnel. Pedro Roberto Quiroga, General Secretary and Chief of Staff
Mayor (R) Walterio von der Stecher, Chief, Division of Cartography
Ing. Agr. Ramón Mario Aguado Benítez, Chief, Library, Map Library and
Publications Section
Mayor Julio Luxardo de Castro, Chief, Division of Topographic Surveys
Tte. Cnel. Felix Reynald, Chief, Division of Calculations.
Tte. Cnel. Roberto Daul, Chief, Division of Geodesy

The Instituto Geográfico Militar (IGM) is the largest and most productive of the official topographic mapping agencies in Argentina.

Its maps are produced primarily for the Ministerio de Guerra but are available to all other government agencies and to private individuals. The IGM has a large staff of several hundred persons and, to date, has produced some 1,950 maps.

With few exceptions, all of the maps are of Argentina. Sections of adjacent countries are covered incidentally on general maps and small scale sets. Maps published include topographic maps at scales of 1:25,000, 1:50,000, and 1:100,000, the general set at 1:500,000, the aeronautical chart set at 1:1,000,000, single-sheet general maps at scales ranging from 1:1,000,000 to 1:17,000,000, and province maps at scales ranging from 1:300,000 to 1:500,000. Work on the 1:100,000 and 1:50,000 maps is progressing most rapidly, and the 1:25,000 series, which covers only the city of Buenos Aires and its environs, is being revised. Maps at all scales are to be revised as they become out of

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date. It is also planned that the 1:100,000 set will cover all of Argentina, even though all of Argentina and parts of adjacent countries have been covered on the 1:500,000 sheets (with shaded relief) and on the 1:1,000,000 aeronautical chart set (with form lines). Maps of fourteen of the provinces, with relief shown by shading, have been published at medium scales. General maps covering Argentina and adjacent countries have been made at small scales, and a 1:3,000,000 aeronautical map of South America on the Mercator projection is nearly completed and has been scheduled for publication in 1949.

Most of the information on the topographic maps is taken from actual field surveys, supplemented by some stereophotogrammetry and aerial photography. The geodetic data are of high quality and may be relied upon. Geodetic work by other mapping agencies is rarely accepted by the IGM observer unless an IGM observer is a member of the survey party. Precise leveling and triangulation are proceeding at a satisfactory rate.

Although cartographic methods are not entirely modern, the maps have a consistently high standard. All of the drafting is done by hand on heavy paper. Color plates ranging in number from four to fifteen are drawn separately, and display good choice of colors. Physical, hydrographic, and cultural features are clearly shown; place names are well selected and well lettered; detail is ample; the maps are accurate; and the legends and marginal information are adequate.

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Most of the IGM reproduction equipment is new, and the published maps are in good registry and, in general, free from other types of inaccuracies due to poor printing. The maps may be reproduced in black and white without loss of detail or clarity.

The IGM maps are an important source of compilation data for any maps of Argentina that are made in the United States.

8. Sección de Planificación de Transportes, Dirección Nacional de Transportes, Ministerio de Obras Públicas (Transport Planning Section, National Transport Office, Ministry of Public Works)
Av. 9 de Julio 1925, 13th floor, Buenos Aires

General Aristóbulo Vargas Belmonte, Director, National Transport Office

Comodoro Martín R. Cairo, Director, Transportation Planning Section

The Dirección Nacional de Transportes is a new official agency resembling the Inter-State Commerce Commission. The Sección de Planificación de Transportes (SPT), the statistical research section of the Dirección, makes maps and reports, principally for official use. The cartographic staff is composed of two cartographer-draftsmen who have to date produced only one map of Argentine railroads for general distribution.

The Sección prepares maps and reports on Argentine roads and railroads only. As it has been functioning for only four years, production is low but a number of maps of bus and truck traffic routes of the various provinces have been drafted and should be available soon.

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Source material, consisting of statistical data compiled by offices of the Ministerio de Obras Públicas and by province officials, is plotted on IGM or official provincial maps. All drafting is done by hand, but as it consists chiefly of superimposing on published maps symbols for routes and amount of traffic, the work is fairly simple. Samples observed were neat and readable and were provided with adequate legends. Routes used by regularly scheduled bus and truck traffic are to be shown on the maps, but road conditions and routes used by passenger automobiles will not be given. The railroad map at about 1:2,500,000, which has been published but is not available in Washington, shows state and private railroads in operation as of late 1946.

When received in Washington, all of the maps published by Sección de Planificación de Transportes should be of value to transportation experts and compilers of transportation maps.

9. Servicio Meteorológico Nacional, Ministerio de Aeronáutica
(National Meteorological Service, Ministry of Aeronautics)
Paseo Colón 317, 1st floor, Buenos Aires

Ing. Alfredo G. Galmarini, Director General

The Servicio Meteorológico Nacional (SMN), formerly the Dirección General de Meteorología, Geofísica e Hidrología is one of the larger official map producing agencies. In the past, it has operated under a number of different ministries, but it is now a part of and prepares most of its maps for the Ministerio de Aeronáutica. The cartographic staff numbers about twenty persons but approximately 1,500 are employed.

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in the compilation of statistical data. Some maps have been produced in manuscript form only, but a relatively larger number have been published, principally for inclusion in reports and technical papers of the SMN.

Maps produced by the SMN cover all of Argentina at small scales, and most of the country at medium scales. Nine different types of outline and base maps have been prepared for the use of the organization in plotting data received currently. A daily weather map at 1:5,000,000 includes data from 1,800 weather stations. Rainfall, ocean temperature, vapor tension, and isogonic maps are also published periodically. The meteorological bulletin published daily may include several types of weather maps. Special weather maps for all airfields are prepared in such form that they may be transmitted by radio and reproduced easily. Other publications of the SMN include small-scale hypsometric maps at 1:1,500,000 and 1:2,500,000, a polar map, and manuscript maps of all the river systems and drainage basins of Argentina for use in stream flow studies. Under the Five Year Plan, the agency is expected to double the size of its staff, the number of field stations in operation, and its map output.

All of the material used in the special maps is obtained from reports received from the existing observation stations and from special studies made by SMN engineers, geologists, seismologists, and other scientists.

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The cartographic data are plotted and drafted by hand. Except for the daily weather maps and maps appearing in major reports, all maps are reproduced by the ozalid process.

Although generalized, the maps are neat, readable and useful, and are systematically checked to insure accuracy. The maps should be especially valuable to US agencies interested in meteorology and hydrography. They may be reproduced without loss of detail.

10. Yacimientos Petrolíferos Fiscales, Ministerio de Industria y Comercio State Oil Fields, Ministry of Industry and Commerce
Av. R. S. Peña 777, Buenos Aires

Ing. Julio V. Canessa, President, Board of Directors
Ing. Bracaccini, Chief, Department of Explorations
Ing. Pedro Rey, Chief, Geophysical Section, Department of Explorations
Agrim. Jorge N. Terreni, Chief, Department of Topography
Ing. Ciriaco Saint Germe, Chief, Department of Cartography

The Yacimientos Petrolíferos Fiscales (YPF) is the third largest topographic mapping organization in Argentina. It has a staff of about ten cartographer-draftsmen as well as a large number of topographers and geologists who work in the field.

Maps of petroleum deposits, producing areas and prospective oil fields are made principally for the use of the YPF and the Ministerio de Industria y Comercio. The YPF also publishes topographic maps, detailed plans of oil fields, and large-scale gravimetric maps of subsurface formations. Most of the maps are not available for general distribution.

The topographic maps at 1:10,000 and 1:25,000 are classified and, consequently, nothing is known concerning the area covered at these

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scales. Eleven topographic sheets at 1:50,000 of part of Neuquén Territory and three sheets at 1:100,000 of a portion of Mendoza Province are available in Washington, however. At the scale of 1:200,000, a set of sixteen planimetric sheets covering all of Salta Province, three of ten sheets for Santa Cruz, and one of an undetermined number for Neuquén Territory are also available, as well as one sheet at 1:500,000 covering all of Mendoza Province. Work is in progress on topographic and planimetric maps, plans, profiles and other types of maps at a variety of scales. Eventually all petroleum bearing areas of Argentina are to be mapped in detail by the YPF.

Principal source materials for the construction of the topographic maps are planetable and stereophotogrammetric surveys. The planimetric maps are compiled from YPF, IGM, and DGMG maps and surveys. Geodetic control data are taken from observations by YPF, IGM, and DGMG and other official agencies. Details of relief features are adequate and reliable.

The cartographic section of YPF is well organized but all maps are drafted and lettered by hand. The 1:10,000 and 1:25,000 maps (on small sheets) are reproduced in the office on a small rotary press, whereas smaller-scale maps are reproduced as ozalid copies of fair drawings.

As most of the petroleum deposits are in sparsely populated areas, little cultural detail can be shown. The YPF topographic and planimetric maps are especially valuable as they cover otherwise inadequately mapped areas.

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B. Private Map Publishers.

1. Automóvil Club Argentino (Argentine Automobile Club)
Av. Alvear 2750, Buenos Aires

Angel Enrique Centaro, Chief, Road Information, Guides and
Cartography Division.

José D. Rucci, Assistant Manager

The Automóvil Club Argentino (ACA), like the American Automobile Association, is a private organization that publishes road maps, guides and other touring information principally for the benefit of its members and cooperating government agencies. The organization has a staff of about twenty cartographic draftsmen. Eight to ten maps and a large number of strip route guides are produced annually.

Although maps are usually limited to Argentina, the ACA cooperated with Peruvian road authorities by preparing and printing the 1946 highway maps of Peru. Maps of eight Argentina areas of special scenic or recreational attractions for motorists have been made at scales of from 1:200,000 to 1:800,000, usually with larger-scale insets showing major cities and their environs. A highway map of Argentina at 1:4,000,000 formerly prepared in cooperation with the AGVN, is now issued annually by the ACA. Special route guides in the form of strip maps are issued for all of the national highways. The three published guidebooks of central and northern Argentina include through-route maps for some of the major cities. A 1:100,000 road map of Buenos Aires Province was compiled and published in 1945 for the highway

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department of the province. Additional maps, route strips, and guide-books are planned for areas being opened to motor traffic, and special maps are to be made for aeronautically minded members.

Most of the source materials for maps, strips, and guidebooks are obtained from the systematic surveys and checks made by ACA field teams, from AGVN, and from provincial highway and tourist departments. Road locations and conditions, with few exceptions, have been found to be accurate.

The cartographic methods used are the most modern in South America. Base maps printed in non-photographic blue are used for each color plate. Place names, mileage figures, and all symbols are preprinted on opaque paper and attached to the maps with gum arabic. The drafting room is uncrowded and well lighted. The well-catalogued reference library contains road surveys, and IGM, AGVN, and other official maps.

The finished maps are both reliable and pleasing in appearance. Characteristically, the maps show shaded relief in light brown, water areas in light blue, and road information in red and black. Road information is detailed on the 1:50,000 and medium-scale maps, but generalized on the 1:4,000,000. All of the maps are reliable sources of information and reproduce well in black and white.

2. Editorial Kapelusz, S.A. (Kapelusz Editorial Co.)
Calle Moreno 372, Buenos Aires

Jorge Kapelusz, Owner, Manager
Manuel Olano, Chief of Production

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Kapelusz is a private editorial and sales company specializing in school materials. It has no regular cartographic section but contracts for map compilation are let to IGM cartographers, working on their own time, when such work is required. A number of atlases, maps for geography and history texts, and one wall map have been published.

A series of pamphlet atlases containing an outline base map, and maps of physical features and political divisions have been prepared for each of the provinces and territories of Argentina and for the various countries of the Western Hemisphere. Somewhat larger collections of similar maps have been assembled for atlases of Asia and Oceania, Africa, Europe, and the Americas. One general map of Argentina at 1:2,500,000 was published in 1945.

Source materials for the maps vary with the resources of the cartographers who have contracted to compile the maps, since Kapelusz has no organized map or reference library. All drafting is done by hand.

Because of the small scale of the maps produced, they are highly generalized and lacking in detail. Printing of all maps and books, like their compilation, is let out on contract to private firms. The atlases are of use as general reference works only.

3. Instituto Foto-Topográfico Argentino (Argentine Photo-Topographic Institute)
Av. Arenales 1415, Buenos Aires

Agrim. Antonio M. Saralegui, Technical Director

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The Instituto Foto-Topográfico Argentino (IFTA) is a small, private, photogrammetric mapping agency that works on contract for both government and private organizations. Most of the maps produced are road and route surveys of state railroads prepared for the Ministerio de Obras Públicas. IFTA turns over all the completed maps, drafts, and mosaics to the contracting concern at the termination of each job and keeps only a record copy for its files. IFTA has a staff of twenty persons. The number of maps produced is large and most of them are at scales ranging from 1:5,000 to 1:50,000. Topographic maps are made at scales as large as 1:200,000 and cadastral-type maps at even larger scales. Because of the large scales used, only a small part of Argentina has been mapped.

Although most of the maps made are of Argentina, the company might operate in another country on contract. Contracts for work have been made with the Ministerio de Obras Públicas, YPF, DGNH, the State railroads, Ministerio de Agricultura, the Provinces of San Luis, Buenos Aires and Tucumán, and with colonization and real estate companies. Work of the same type will be continued and may increase with the demands of the Five Year Plan on all official agencies.

All of the material used in the maps, plans, and mosaics is from field surveys and aerial photographs made by IFTA. The work is of good quality both in presentation and in accuracy. None of the maps is available in Washington for evaluation. They can be obtained only from the contracting agencies.

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IFTA has developed a unique technique for the production of relief models from either terrestrial or aerial photographs by using a stereo-converter. This instrument is similar to the stereoplanigraph except that the pencil is replaced by a cutting tool. The operator, in following contours, cuts away the excess material in such a way that only smoothing-off is necessary thereafter to complete the model.

4. Instituto Topográfico Zodiac (Zodiac Topographic Institute), formerly Instituto Topográfico Garvas (Garvas Topographic Institute) Av. Vertiz 1080, 7th Floor, Buenos Aires.

Ing. Manuel García Güedes, Owner, Engineer-Topographer

The Instituto Topográfico Zodiac (ITZ) is a private map-making agency that specializes in provincial road maps for public sale. The organization consists of the owner and one assistant.

Within the last two years, the ITZ has made maps of seven provinces and three territories at scales ranging from 1:300,000 to 1:800,000. Ambitious plans have been made to revise these maps yearly or at least every two years, and to prepare similar maps for the remainder of the country. The ITZ also plans to prepare road maps for Uruguay, Brazil, Chile, and other Latin American countries as soon as possible.

The sources used for map compilation are official data received from national, provincial, departmental, and city governments, and personal observations of the owner, who has traveled extensively. The road information is shown in good detail and the insets usually included show routes through the larger cities of each province. The maps are planimetric compilations not based on triangulation.

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All maps are hand drawn and are reproduced as ozalid prints, which are hand colored, to show paved and dirt roads and route numbers. The maps are neat and colorful but too large for use in an automobile. If they are revised as planned, the maps will provide a good source of up-to-date road information .

The maps produced are usually good quality and are reliable for general use, but not as source material for compilation since they are entirely compilations and may not be up-to-date.

5. Oficina Cartográfica Bemporat (Bemporat Cartographic Office)
Av. Córdoba 2437, 5th floor, Buenos Aires

A. Bemporat, Owner and Chief Cartographer

The Oficina Cartográfica Bemporat, a small but productive organization, has been functioning for over 35 years. Maps are made entirely for public sale. The small staff consists of Mr. Bemporat, now over 70, and two assistants. Over sixty maps have been produced in the last few years.

The principal publications are maps of Argentina, including city plans of Buenos Aires, Rosario, Mar del Plata, and Montevideo, at scales ranging from 1:7,500 to 1:25,000; maps of partidos and departamentos in the vicinity of Buenos Aires at 1:10,000 to 1:25,000; maps of nine provinces at 1:300,000 to 1:1,000,000; and maps of Argentina at 1:1,800,000 to 1:5,000,000.

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School wall maps of the various continents at scales of 1:8,000,000 and smaller have also been published. As far as is known, plans for the future include only revisions of existing maps.

All of the Bemporat maps are compilations. Sources used are not always official, up to date, or otherwise reliable. The maps contain many errors in location, spelling of place names, boundaries, roads, and other cultural data. The IGM cartographic section, which now checks all Argentine-made maps before they can be released, has a low opinion of Bemporat productions and will require that extensive revisions and corrections be made before further reprints or new maps are approved for distribution.

All of the cartographic work is done by hand, principally by the owner, and has many defects. Atlas grids are used almost exclusively; legends are inadequate; and lettering and lining vary in quality. Printing is done by small commercial firms and the registry is poor. Though much actual detail is shown, its accuracy is doubtful. The maps are not recommended for any but the most general use.

6. Oficina Cartográfica Ludwig (Ludwig Cartographic Office)
Calle Alsina 1146, 1st floor, Buenos Aires

Pablo Ludwig, Owner-cartographer

The Oficina Cartográfica Ludwig is a small private map compiling and selling organization that has been in existence for over thirty years. The owner and one assistant comprise the entire staff and few maps have been made in recent years.

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The maps prepared are local in character, principally city plans and province maps. A few general maps on Argentina have been made but none has been revised recently. City plans of Buenos Aires at 1:10,000 and 1:25,000, port plans of Rosario and Buenos Aires at 1:7,500 and 1:10,000, maps of partidos in the vicinity of Buenos Aires at 1:10,000 to 1:25,000, maps of provinces at 1:200,000 to 1:1,000,000, and a railroad map with hachured relief at 1:2,000,000 (last revised in 1938) are the major Ludwig publications. Publications of the same type are planned for the future.

Although some official information has been used in the copying and compiling of maps, the accuracy of most of the Ludwig maps is extremely doubtful. Few physical features are shown and the cultural data, though detailed, are out of date. The IGM has found so many errors on the maps that at present they are not recommending any additional maps for distribution.

All of the cartographic work for Ludwig maps is done by hand and is neat and legible. The maps are printed by commercial printers.

Maps published by Ludwig are not recommended for any but the most general use.

7. Peuser, S.A. (Peuser, Col), formerly Casa Jacobo Peuser, Ltda., S.A. (Jacobó Peuser Co. Ltd.)
Calle San Martín 200, Buenos Aires

Luis Salmoiraghi, Chief, Department of Cartography
Bartolome P. Fonticelli, Plant Manager
Mario Borio, Chief, Cartography (Drafting and Reproduction) Division.

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Peuser, one of the largest private printing and book selling organizations in Buenos Aires, also makes and sells maps and probably is the largest private map producer and sales agent in Argentina. Five persons are employed in the map sales section of the main store and ten in the map compilation and drafting section at the printing plant. Although the number of individual maps produced each year is not large, the maps are widely distributed by sales to individuals, schools, and other private organizations.

The sales section handles some IGM maps and has contracted for a considerable percentage of the maps published by other private cartographers, such as Bemporat, and Ludwig. Peuser has also bought out José Anesi completely. The firm offers a fairly complete line of city plans of Buenos Aires and other major cities, cadastral maps of departamentos or partidos, general province and territory maps, road and railroad maps, general wall maps of Argentina, atlases, guides and geography texts.

Although most of the maps made are of Argentina, the firm also issues wall maps of other countries and of the continents, as well as atlases of Argentina, the Americas, and the world. Single sheet maps on such special topics as railroads and roads, and city plans, especially of Buenos Aires, are made for inclusion in tourist guides published quarterly and annually. An almanac containing maps of crop production is also issued every year. An atlas of Chile for public sale in Chile was printed in 1947. Work on the revision and reprinting of the 1946 Atlas Geográfico de Argentina is

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continuing. It is planned to revise and print in English and Spanish the Atlas of the Americas by José Anesi (1947). An atlas of Europe is to be issued in 1949.

Most of the data used in the compilation of the maps and atlases of Argentina is supplied by IGM and other official sources. The work of Peuser is recognized by the IGM cartographic section as being the best among the private map publishing houses. Although the cartographic methods employed are not the most modern and include much hand work, the reproduction techniques and equipment are excellent. Glass negatives are made of individual fair drawings for transfer to zinc plates for offset printing. All of the old lithographic machinery and stones are being replaced by modern American and European machinery as rapidly as possible, and the old presses are being sold in Brazil where such equipment is still much in demand. Peuser, S.A., now over 80 years old, is much like A.B. Hoen and Co., Baltimore Md., in that all types of printing are done and that the printing plant is still expanding.

8. J. Vital Dupont
Cangallo 2186, Buenos Aires

J. Vital Dupont, Owner and Manager

Mr. Vital Dupont owns a tiny cartographic office which functions at his own pleasure in the production of maps for public sale. The owner-manager does none of the cartographic work but hires one or more cartographers on contract. Only two maps, one of Buenos Aires and the other

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of Argentina have been published by Dupont. Work is in progress on a plan of Montevideo, Uruguay.

Both of the maps produced by Vital Dupont are provided with locator strips. The map of Argentina, at 1:3,500,000 (1946), is unique in that cities and towns have symbols indicating availability of banks, medical and sanitation services, and postal and telegraph offices. Roads and railroads and hydrography are also shown.

The map of Argentina is neatly drafted but colors for the various services are not well chosen. No information is available as to the sources or accuracy of the data shown.

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III. LIST OF MAP PUBLISHERS¹

<u>Name of Agency</u>	<u>Abbreviations</u>
1. Administración General de Parques Nacionales y Turismo, Ministerio de Obras Públicas (General Administration for National Parks and Tourism, Ministry of Public Works)	AGPNT
2. Administración General de Vialidad Nacional, Ministerio de Obras Públicas (General Administration for National Roads, Ministry of Public Works)	AGVN
3. Automóvil Club Argentino (Argentine Automobile Club)	ACA
4. Comisión de la Carta (Map Commission)	
5. Comisión de Límites con Chile (Commission on the Boundary with Chile)	
6. Comisión de Nivelación, Estado Mayor del Ejército, Ministerio de Guerra (Leveling Commission, General Staff of the Army, Ministry of War)	CN-EMG
7. Dirección General de Economía Agropecuaria y Coordinación, Ministerio de Agricultura (General Bureau of Agricultural Economy and Coordination, Ministry of Agriculture)	DGEAC
8. Dirección General de Economía Rural e Estadística, Ministerio de Agricultura (General Bureau of Rural Economy and Statistics, Ministry of Agriculture)	

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1. The following list includes the past and present names of map publishers mentioned in the report. Only ACA, IFTA, IGM and YPF are generally accepted abbreviations; the others are used for convenience.

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LIST OF MAP PUBLISHERS (Cont.)

<u>Name of Agency</u>	<u>Abbreviations</u>
9. Dirección General de Meteorología, Geofísica e Hidrología, Ministerio de Aeronáutica (General Bureau of Meteorology, Geophysics, and Hydrology, Ministry of Aeronautics)	
10. Dirección General de Minas y Geología, Ministerio de Industria y Comercio (General Bureau of Mines and Geology, Ministry of Industry and Commerce)	DGMG
11. Dirección General de Navegación e Hidrografía Ministerio de la Marina (General Bureau of Navigation and Hydrography, Ministry of the Navy)	DGNH
12. Dirección General de Navegación y Puertos, Ministerio de Obras Públicas (General Bureau of Navigation and Ports, Ministry of Public Works)	DGNP
13. División de Límites, Ministerio de Relaciones Exteriores (Boundary Division, Ministry of Foreign Relations)	DL-MRE
14. Editorial Kapelusz (Kapelusz Editorial Company)	
15. Inspección General de Obras Hidráulicas, Ministerio de Obras Públicas (General Office of the Inspector of Hydraulic Works, Ministry of Public Works)	
16. Instituto Foto-Topográfico Argentino (Argentine Photo-Topographic Institute)	IFTA
17. Instituto Geográfico Argentino (Argentine Geographical Institute)	

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LIST OF MAP PUBLISHERS (Cont.)

<u>Name of Agency</u>	<u>Abbreviations</u>
18. Instituto Geográfico Militar, Ministerio de Guerra (Military Geographical Institute, Ministry of War)	IGM
19. Instituto Topográfico Zodiac (Zodiac Topographical Institute)	ITZ
20. Oficina Cartográfica Bemporat (Bemporat Cartographic Office)	
21. Oficina Cartográfica Ludwig (Ludwig Cartographic Office)	
22. Oficina Meteorológica Argentina (Argentine Meteorological Office)	
23. Peuser, S. A. (Peuser Company)	
24. Sección de Planificación de Transportes, Dirección Nacional de Transportes, Ministerio de Obras Públicas (Transport Planning Section, National Transportation Bureau, Ministry of Public Works)	
25. Servicio Meteorológico Nacional, Ministerio de Aeronáutica (National Meteorological Service, Ministry of Aeronautics)	SMN
26. J. Vital Dupont	
27. Yacimientos Petrolíferos Fiscales, Ministerio de Industria y Comercio (State Oil Fields, Ministry of Industry and Commerce)	YPF

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