



Photo: Expéditions Polaires Françaises, Jacques Masson

Fig. 1. The plastic igloo used in Greenland.



Photo: Expéditions Polaires Françaises, Jacques Masson

Fig. 2. M. Paul-Emile Victor at his desk at the Expéditions Polaires Françaises.

Commentary

THE FRENCH POLAR EFFORT AND THE EXPEDITIONS POLAIRES FRANCAISES

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Introduction

SHORTLY after the Second World War the last thing that France and the Fourth Republic were interested in, was a polar expedition. Nonetheless, a Frenchman, M. Paul-Emile Victor, convinced the government that it should support just such an operation. M. Victor had organized 3 French expeditions to Greenland before the war. During the war he had served in Alaska as a member of the U. S. Army Air Corps and in 1946 he returned to France to attempt to organize a full-scale polar expedition.

Although his first thoughts had been to continue the research begun before the war, he was convinced that the program should include also activities in Adélie Land, the "French" antarctic sector. He accordingly submitted to the French Government a proposal to establish polar expeditions to both Greenland and Adélie Land. In 1947 the Council of Ministers agreed to support the proposal and M. Victor was empowered to set up the organization "Expéditions Polaires Françaises-Missions Paul-Emile Victor" (E.P.F.) to carry out his program.

At first the E.P.F. was a non-profit organization depending upon government funds for its operations. It was established on a temporary basis and received no official status or constitution. Although its status is still essentially the same, its internal nature and its relationship with the French Government are now different in response to changes in France's scientific and political outlook on the polar regions.

Whereas the government agreed to finance the E.P.F., neither the government nor the scientific lay population took any special interest in its activities during the first 7 or 8 years of operation. The E.P.F. was the sole centre of interest in polar activities and combined under one roof the researchers, the planners, and the administrators necessary to carry out complete polar expeditions. In January 1949 the government did, however, appoint a special 35-man scientific commission to draw up the scientific research program for each expedition and to observe the programs then under way and the resulting data reduction. In practice, however, the supervision was nominal.

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During the first years the E.P.F. conducted annual expeditions in Greenland and Adélie Land and several summer operations in Iceland, all with a minimum of governmental control. However, this was to change. To understand the development of the E.P.F., it is necessary to review briefly some of the recent political history of France, particularly with regard to her southern territories.

As a result of French exploration and operations during the past two centuries, the islands of Crozet, New Amsterdam, St. Paul, the Kerguelén Archipelago and Adélie Land in Antarctica had been claimed as territories of France (see Fig. 3). The islands of Crozet, New Amsterdam, and St. Paul were uninhabited and had little importance. Kerguelén Archipelago, on the other hand, had been used regularly for over a century by American and Norwegian whalers and seal hunters since its discovery in 1772. Nonetheless, the islands were politically forgotten until 1941, when the Germans occupied them as a naval base. This event demonstrated to the great powers the strategic value of islands halfway between Australia and South Africa.

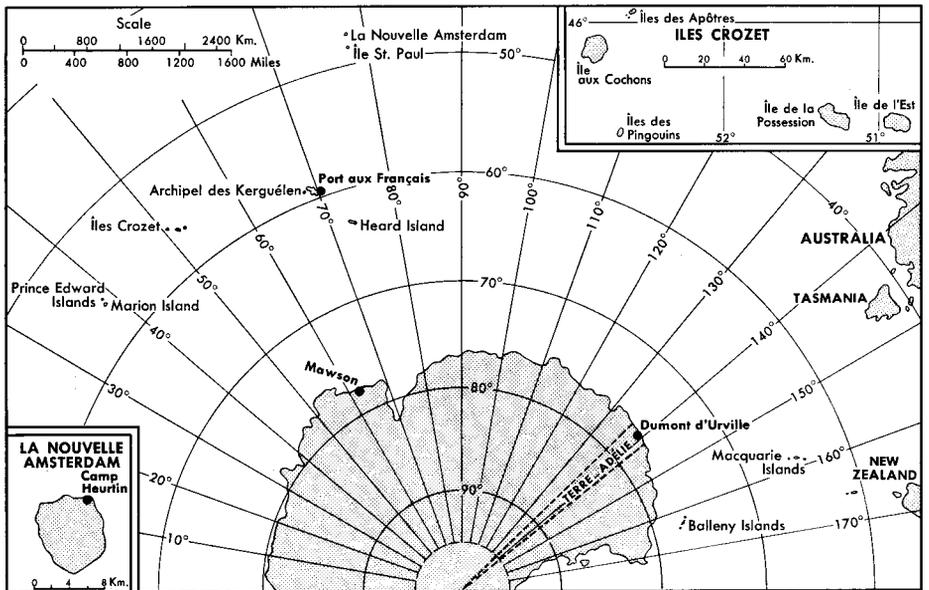


Fig. 3. Map of the Terres Australes et Antarctiques Françaises.

With Hitler defeated, France began to recognize the necessity for actually occupying these islands if she wished to keep control over them. In May 1948 there was already discussion in the National Assembly of a plan to create an office in Paris to oversee these territories. At the same time, preparations for establishing bases on the islands were under way. Under the Ministry of Overseas France an office was established to administer the southern expeditions.

Since 1950 international events have caused France to take a much closer look at these southern areas. Many of the traditional French colonies were becoming independent and, whereas France had previously spent the major part of her extraterritorial energies in Africa and the Far East, she now began to think more about her southern interests. The I.G.Y., the decision by the participating countries to continue post-I.G.Y. antarctic research, and finally the drawing up of the Antarctic Treaty, caused France to recognize the importance of developing her southern interests, and so maintain a voice in international antarctic affairs. An administrative system to handle the affairs of her southern and antarctic territories and perpetuate interest in them followed quickly. As a result, increased interest in the Antarctic beginning with the I.G.Y., and realization of the growing strategic importance of the islands, have interacted and strengthened the one administrative unit that controls both interests.

The E.P.F. has of necessity been drawn ever more closely into the government administrative system. It is, therefore, necessary to examine the French polar efforts within this larger framework to gain an appreciation of their present status and the possibilities for future activities.

Terres Australes et Antarctiques Françaises

From its inception until 1955, the E.P.F. received funds for both its arctic and antarctic expeditions from the National Scientific Research Centre (C.N.R.S.). Under this arrangement, which was free of political considerations, the E.P.F. had a good deal of freedom in its operations and retained its identity as a private polar organization.

France's increasing awareness of her southern and antarctic territories was finally manifested in August 1955 when a law proclaimed Adélie Land, Crozet Archipelago, Kerguelen Archipelago, and the two islands of New Amsterdam and St. Paul as an official territory. This group of widely spaced lands was politically consolidated not because of the proximity of its constituents but because it has common problems of administration. This territory (hereafter referred to as "the Territory") is divided into the districts of Adélie Land, Crozet, Kerguelen, and New Amsterdam, the island of St. Paul being included in the last-named district. The official name, Terres Australes et Antarctiques Françaises (French Southern and Antarctic Lands), was given to the Territory, and the office originally created in 1948 to be responsible for establishing bases on the islands then became a territorial office with the same name, generally abbreviated "T.A.A.F." and the Territory received administrative and financial autonomy.

Originally, the E.P.F. funds were entirely administered by the C.N.R.S. Now however, T.A.A.F., which is responsible for all French antarctic activity, administers the funds for the E.P.F.'s work in Adélie land. Although the French arctic work is still funded by the C.N.R.S., increasing antarctic activity has drawn the E.P.F. more closely into T.A.A.F.'s politically oriented orbit and away from the more scholarly C.N.R.S. Fig. 4 shows the present

relationship of the E.P.F. with T.A.A.F., as well as the general organization of French antarctic activity. T.A.A.F. is charged with the administration and maintenance of the bases in the four districts of the Territory. Its office in Paris makes all purchases for the bases in the three island districts. Goods and services for the base in Adélie Land, however, are provided on a contract basis by the E.P.F.

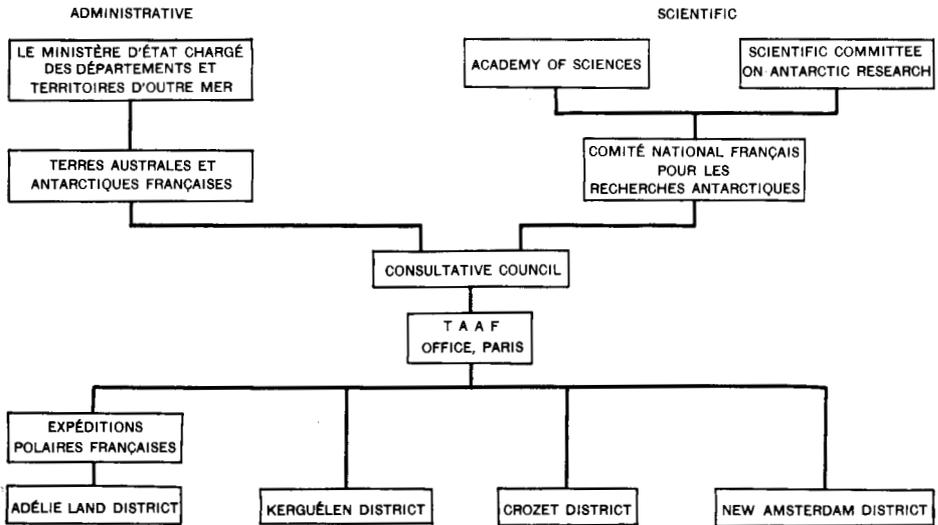


Fig. 4. General organization for French antarctic activities.

The present Administrator-in-Chief of T.A.A.F., M. Pierre Rolland spends about half of his time at the T.A.A.F. office in Paris, and the remainder working in the various districts or on diplomatic assignments, where he represents the French Government in subantarctic and antarctic matters. He is assisted by a Consultative Council which convenes at least twice a year.

The general administrative work of T.A.A.F. is performed by an office headed by M. J. M. Roly, who assumes M. Rolland's responsibilities during the latter's periodic absences. In addition, the T.A.A.F. headquarters contains a scientific liaison office headed by M. R. Bost, who is also the French representative at the Scientific Committee on Antarctic Research (SCAR) Communications Working Group.

The budget for T.A.A.F. has remained fairly constant during the past few years; an average budget breakdown is shown in Table 1. The scientific programs and logistic activities for the island districts are administered directly by T.A.A.F., whereas the total budget for Adélie Land is turned over to the E.P.F.

T.A.A.F. publishes a quarterly review of its activities similar to *Arctic*. In addition, it has recently begun the publication of selected monograph-length works.

Although the Ministry of which T.A.A.F. is a part has undergone many changes in the past decade as a result of France's changing national and international policies, the organization of T.A.A.F. appears to be stable and is receiving a gradually increasing budget, in contrast to several other offices in the Ministry that are being reduced. In any event, T.A.A.F. is likely to become more and more important as France's official voice in antarctic affairs.

Table 1. Average annual budget for T.A.A.F.

<i>Total</i>	<i>Districts</i>			
	<i>Kerguelen</i>	<i>Adélie Land</i>	<i>New Amsterdam</i>	<i>Crozet</i>
10,000,000*	4,000,000	4,000,000	1,000,000	1,000,000
2,060,000	822,000	822,000	206,000	206,000
Logistic	3,000,000	2,000,000	800,000	1,000,000
	618,000	411,000	164,000	206,000
Scientific ¹	1,000,000	2,000,000 ²	200,000	———— ³
	206,000	411,000	41,000	
<i>Average number of wintering personnel</i>				
Scientific	22	10	7	———— ³
Support	38	10	13-18	———— ³

* Upper figures in new francs, lower figures approximate equivalent in dollars.

¹These funds are for salaries and equipment for scientific investigators. They do not include the salaries and equipment for organized national programs, such as that of the Weather Bureau, which pays its own men and sends its own equipment.

²During the season of 1962-3 the base at Adélie Land was being rebuilt, necessitating an increase in logistics costs and a reduction in scientific work. Of the 4,000,000 NF budgeted, approximately 3,000,000 was for logistics and 1,000,000 for the scientific program.

³A permanent station is to be completed at Crozet during the summer 1963-4. The scientific work is to begin the following season and will have the same budget and personnel distribution as New Amsterdam.

The Expéditions Polaires Françaises

The Expéditions Polaires Françaises is the heart of the French polar effort and deserves credit for having influenced the French Government to support its work long before the I.G.Y. aroused both national and international interest in polar regions. Its role, however, has changed from that of constituting essentially the entire French arctic and antarctic program to its present function of supplying the logistics for a larger, more developed, permanent program. In tracing the development of the E.P.F. it must be remembered that it began as and has remained a private organization. In this role it differs remarkably from the government-operated organizations of all other countries having major polar programs.

The E.P.F. began its operations at the end of the era of privately sponsored polar expeditions, an era that has essentially disappeared since the commencement of the I.G.Y. It was with the spirit of *camaraderie* that characterized the early small dogsled expeditions, that the E.P.F. was founded. This spirit still pervades the organization and has been preserved as a result of the loyalty and enthusiasm of both the administrative staff and the field personnel, many of whom have served with the E.P.F. since 1947. This loyalty is one of the most important advantages that the E.P.F. has over most other polar organizations; its turnover in personnel is low and there are always men on each expedition who have had previous experience. As a result, the valuable operational knowledge and experience that takes so long to acquire is not lost by periodic changes of personnel.

As a small private organization, E.P.F. has found it easier to introduce new ideas and use new logistic concepts that would have difficulty in finding acceptance in a military group. Notable among these are: (1) new para-drop and free-drop techniques used in Greenland with safe recoveries of 100 per cent and 90 per cent respectively attained, (2) establishment of a four-man scientific station completely by para-drop; (3) the first use of under-ice camps; (4) a new six-man, two-story plastic igloo designed and prefabricated by E.P.F. engineers and erected at Station Jarl-Joset in Greenland in 1959 at the bottom of a large pit (Fig. 1).

Before the I.G.Y., the E.P.F. was particularly active in arctic work. It conducted six summer and three winter operations in Greenland and three summer operations in Iceland. The several seismic, gravity and glaciological traverses associated with these expeditions did much to reveal details of the thickness of the Greenland ice cap.

When the arctic program was in full operation, an effort was made in the Antarctic to establish and continue a year-around research program at Adélie Land. Although the first attempt to land a reconnaissance party on the coast of Adélie Land in February 1949 was unsuccessful owing to the lateness of the season and ice conditions, a successful landing was made the following season. A site for the camp "Port-Martin" was chosen near *Cap de la Découverte* and a station was erected. The research programs and reconnaissance traverses continued at Adélie Land until January 1952 when a fire broke out in the Port-Martin workshop and quickly destroyed the main buildings of the base. It was therefore not possible to remain at Port-Martin for the winter, but a seven-man biological team did stay that winter at *Iles des Pétréls*, some 60 miles to the west, in a previously constructed shelter. These men were picked up by ship in January 1953, having completed the planned activity in Adélie Land. No further work was done there until December 1955, when an expedition went back to the *Iles des Pétréls* to set up the station Dumont d'Urville for the I.G.Y.

Up to the end of 1955, the E.P.F.'s operations were truly those of a private expedition. By choice, the majority of their goods and services were purchased on the open market. Aircraft for transportation and air-drops were privately owned and operated, and chartered by the E.P.F. Since 1951,

commercial ships have been used to supply the base at Adélie Land. All scientific reports and data were published by the E.P.F. and several books, pamphlets, and motion pictures describing the polar activities of the E.P.F. were written or produced by M. Victor himself, and his colleagues. This "in-house" activity developed a high degree of closeness and *esprit* among members of the organization, which in turn helped give the E.P.F. its reputation as a highly efficient, non-military polar organization.

By 1956 the change in the E.P.F. had begun. T.A.A.F. now became responsible for administering the activities at Adélie Land, and the E.P.F. became the contractor to carry out T.A.A.F.'s work. Now, rather than being a wholly private organization, the E.P.F. became, with respect to antarctic affairs, a quasi-public one, representing France during the I.G.Y. and retaining this status as a result of the continuing antarctic program.

At the outset, the French scientific community, not having any classical interest in the polar regions, was quite content to let the E.P.F. and its small scientific commission make all decisions regarding the scientific programs. But when the French Government decided to provide some \$2 million for the French antarctic I.G.Y. program, the scientific community was awakened to the interesting problems awaiting solution in the polar regions. As the first investigators returned from their expeditions to the universities and national scientific organizations, they brought back not only their data and reports, but also great enthusiasm, which encouraged their students and colleagues to undertake polar research. This, of course, is as it should be, but as a result, the scientific work, the data reduction, and ultimately the decisions on what work should be undertaken, were all gradually taken from the hands of the E.P.F.

This point is most important and has more to do with the changes made in the E.P.F.'s structure than any other single factor. The French university men, as well as the government scientists, tended to look askance at a private organization that was in a position to direct and control their research. The E.P.F., on the other hand, with the pride born of the knowledge that only 5 years earlier it represented the sole French polar effort, was reluctant to lose the ability to determine the scientific programs.

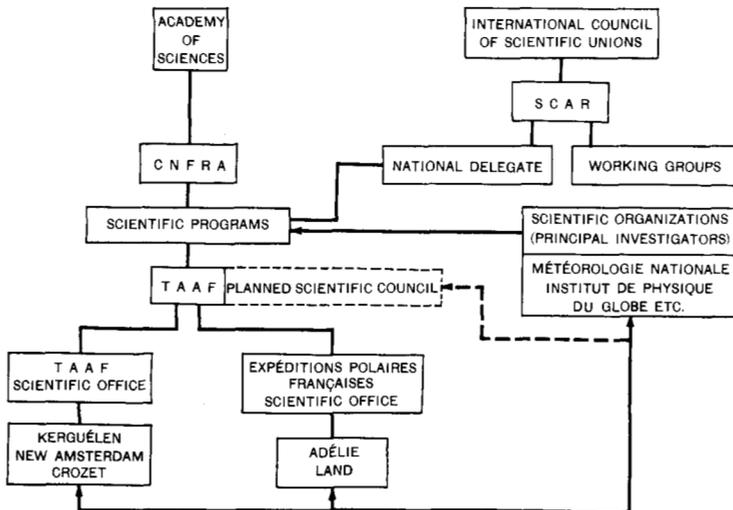
Nevertheless, since the I.G.Y. the central position of the E.P.F. has diminished and most of the French antarctic scientific work is now conducted by 11 different organizations (see Table 2). Reflecting their new interest in the polar regions, the French Academy of Sciences in 1958 appointed a Comité National Français pour les Recherches Antarctiques (C.N.F.R.A.) composed of some 60 scientists and administrators, to co-ordinate the French scientific program with the international objectives of SCAR. The C.N.F.R.A. had its first meeting in May 1958, and from then on this organization has determined the French antarctic program.

With the realization that their antarctic work would be put on a continuing basis, the newly developed scientific and administrative structures stabilized. Gradually the scientific organizations and the E.P.F. are coming to recognize and to agree where their particular responsibilities should lie.

Table 2. Agencies contributing to the French antarctic scientific program.

<i>Agency or institute</i>	<i>Discipline</i>
Météorologie Nationale	Meteorology
Institut de Physique du Globe de Paris	Geomagnetism
Centre National d'Etudes des Télécommunications (Groupe de Recherches Ionosphériques)	Ionosphere
Institut d'Astrophysique	Aurora and Air Glow
Muséum National d'Histoire Naturelle	Biology-Zoology
Commissariat à l'Energie Atomique	Radioactivity
Centre National de la Recherche Scientifique (Science d'Aéronomie et de Physique Cosmique)	Cosmic Rays
Laboratoire de Physique de l'Atmosphère	Ozone Studies
Faculté de Médecine de Paris — Laboratoire de Physiologie	Biology
Institut Géographique National	Cartography
Service Hydrographique de la Marine	Hydrography

Fig. 5 shows the current and probably permanent relationships. Administratively, an official agreement made in October 1959 between T.A.A.F. and the E.P.F. outlined the responsibilities of each organization in the Antarctic and particularly the role that E.P.F. is expected to play. Accordingly, the E.P.F. may well retain its present role as a polar logistic organization with respect to French Antarctic activities.

**Fig. 5.** Scientific organization for French antarctic activities.

The I.G.Y., and the interest it aroused, was definitely antarctic-oriented. The funds originally received by the E.P.F. from the C.N.R.S. in 1947 to organize both the Greenland and Adélie Land expeditions were given on a one-time basis and when the originally proposed program was completed the expedition was terminated. With additional financing promised by the

I.G.Y., followed by the present permanent antarctic program, a yearly expedition to Adélie Land was assured.

The E.P.F., however, also wished to extend its activities in Greenland beyond 1953. This was later made possible by the organization in 1954 of the Expédition Glaciologique Internationale au Groenland (E.G.I.G.). The E.G.I.G. was an outgrowth of a meeting in September 1954 in Rome during the general assembly of the International Union of Geodesy and Geophysics. At that time regret was expressed that the E.P.F.'s Greenland program had stopped, and it was suggested that an international effort be made to continue the E.P.F.'s work. Shortly thereafter the E.G.I.G. was officially formed and the E.P.F. was asked to take the responsibility of organizing a continuing series of expeditions to Greenland. With this new responsibility, the E.P.F.'s stature as a truly polar organization was greatly enhanced.

The scientific committee of the E.G.I.G. is responsible for the entire Greenland scientific program. There is at present a nine-man governing committee composed of members from the participating countries — Austria, Denmark, France, Germany, and Switzerland. The E.G.I.G. has sponsored three summer expeditions and one wintering expedition at Station Jarl-Joset. Another expedition is planned for 1966. Funds to support these expeditions are provided by the governments of the participating countries. The C.N.R.S. continues as the source of the French funds, which are given directly to the E.P.F.

Table 3. The E.P.F. budget.
In NF, approximate equivalent in dollars in parentheses.

	<i>C.N.R.S.</i>	<i>T.A.A.F.</i>
Administrative expenses		
Expeditions to Greenland		
Publications		
1958	540,000 (111,000)	500,000 (102,000) ship paid for by IGY funds
1959	920,000	940,000 (193,500)
	+230,000 supplementary funds for E.G.I.G. operations	
	<u>1,150,000 (236,500)</u>	
1960	920,000 (189,500)	2,200,000 (452,500)
1961	920,000 (189,500)	2,730,000 (561,000)
1962	920,000 (189,500)	2,960,000
		+980,000 suppl. funds to rebuild Dumont d'Urville
		<u>3,940,000 (811,000)</u>
1963	920,000 (189,000)	3,420,000
		+680,000 balance of funds to rebuild Dumont d'Urville
		<u>4,100,000 (844,000)</u>

The E.P.F. in operation

Each year the E.P.F. receives government funds from two separate agencies as shown in Table 3. It must keep two separate accounts of all expenses incurred; those involving activities in Adélie Land pertain only to T.A.A.F., while general overhead and arctic expedition expenses are applied against the budget from C.N.R.S.

The E.P.F. is responsible for procuring all goods and services necessary for the performance of its work. All vouchers for these goods or services must be submitted either to T.A.A.F. or C.N.R.S.

Although it uses some military support, notably for air operations, the E.P.F. prefers to rely upon civilian procured logistics in order to retain as much control as possible over scheduling and operations. It depends upon the Danish Lauritzen Lines to provide shipping in polar waters and French or Icelandic air service companies have provided the air services required in Greenland. A large percentage of the budget is required for the chartering of shipping services: the M/V *Norsel*, used until 1961, cost \$700 per day, but its use has been discontinued in favor of the larger M/V *Magga Dan*, which costs \$1175 per day.

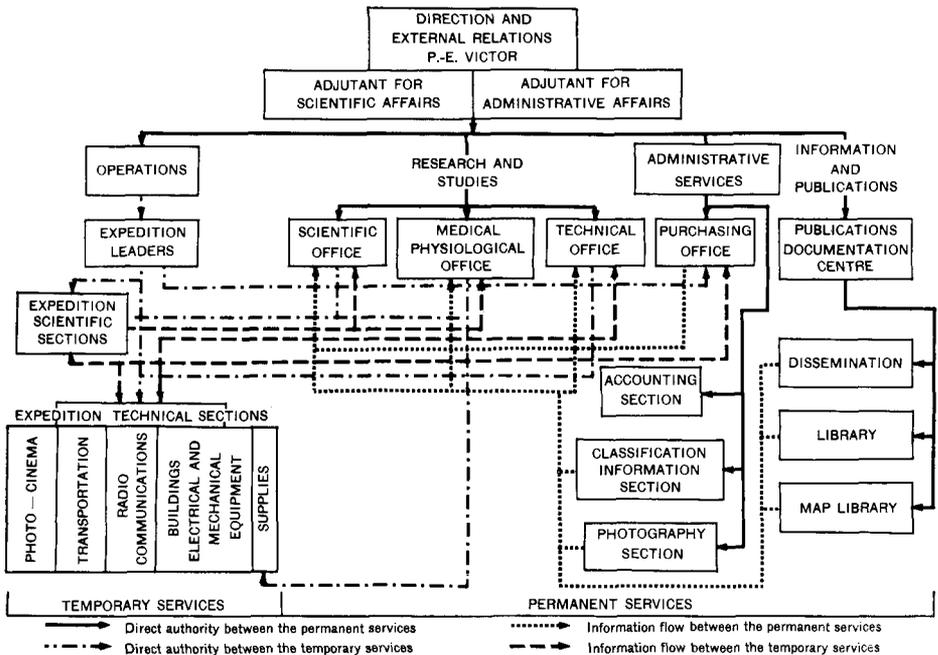


Fig. 6. Organization chart of the E.P.F.

On the payroll are 20 permanent staff personnel in Paris, plus all expedition personnel. For work in Adélie Land there is an average of 20 men in each expedition, who are on the payroll for about 2 years. At any one time there can thus be some 60 persons on the payroll.

This does not include the less frequent E.G.I.G. (Greenland) expeditions, which occur about every 5 years. The last, 1959-60, although having only a six-man wintering party, included summer operations involving 67 expedition members. The next planned E.G.I.G. operation in 1966 will be

of the same magnitude. The E.P.F. will probably receive supplementary funds for this expedition in the same manner as in 1959.

The Scientific and Administrative Services Offices both have liaison functions and coordinate the E.P.F. activities with all interested governmental and university organizations. The Administrative Services Office in particular has become the most important activity centre in response to the present logistic role of the E.P.F.

The Technical Office is responsible for the vast array of logistical supplies required in the carrying out of expeditions. It has a large library of commercial brochures, specifications, photographs, and evaluations of commercially available products, as well as the evaluations of equipment designed in-house. The relationship of these offices can be seen in Fig. 6.

The E.P.F. building itself is admirably suited for the conduct of expedition activities. It was originally built by the Nazis and used by their navy during the occupation. The many vaults in the basement and sub-basement, originally cellars for a large apartment block, now make fine store rooms for the multitude of items required for expeditions. It has loading and unloading facilities and a ramp to the underground garage and shop, where Sno-Cats and Weasels are repaired and stored. This building is located on the outskirts of Paris adjacent to the lovely Bois de Boulogne and far removed from the mainstream of Paris traffic.

The E.P.F. has recognized that the conduct of polar operations is a business, although admittedly an unusual one, and accordingly has applied time-saving business techniques to its administrative procedures. These techniques have minimized the problems that often plague polar logistics.

The E.P.F. and the future

French polar activities will continue and are likely to increase gradually in scope as more investigators become aware of the problems unsolved and as the importance of the polar regions becomes more generally recognized. During 1963 the Base Dumont d'Urville, originally constructed to serve the 2-year I.G.Y. period, has been completely rebuilt as a permanent antarctic establishment. It will be ready for the coming International Quiet Sun Year. Plans are also under way at present for the 1966 Greenland expedition, and thus interest in E.G.I.G. seems likely to continue, insuring a full French polar program.

What remains uncertain is the future status of the E.P.F. Paradoxically, in polar circles outside of France, the E.P.F. and M. Paul-Emile Victor are identified as the French polar effort, whereas in France it is regarded merely as a private laboratory under government contract, performing a piece of government work. Technically of course, this is precisely its status, and as such, it is viewed with some suspicion by university investigators and government administrators alike. As a result of this attitude, it appears that the E.P.F.'s facilities are not used to the fullest extent. On the other hand, it is the Mecca for foreign polar workers who come to France. This world fame must be attributed to the recent period when the E.P.F. constituted the

entire French polar program, to its record of accomplishment and efficiency, and to the undoubted personal drive, sense of purpose and charm of M. Victor himself. Without his foresight and drive it is unlikely that the French would have developed one of the world's finest polar research programs. On the other hand, in view of the international nature of polar work today, the necessity for governmental support and the involvement of many diverse scientific organizations active in polar programs, it is not entirely fitting that a private organization wholly represents the country's activity and deals with the governmental and university organizations of the other major polar "powers." Nevertheless, as long as M. Victor remains at its head, the E.P.F. will in all probability continue its activities in much the same manner as now, but with a trend toward decreasing responsibility in scientific and policy matters. Should he depart, however, a rapid transition can be expected. It appears clear that the entire E.P.F. would become an integral part of T.A.A.F. The E.P.F.'s identity would thereby be lost although its physical plant would be kept intact. What M. Victor is hoping to achieve now is official government recognition of the E.P.F., guaranteeing the continuation of the organization, while still maintaining its identity. With such a status, the E.P.F. would enjoy the benefits attached to both private and governmental organizations.

Whatever the future role of the E.P.F., France now has a well developed, continuing polar program based upon a private organization of unparalleled efficiency, and her investigators are carrying out significant studies. It is therefore advantageous to polar researchers and administrators everywhere to become familiar with France's establishment for polar activities in order to consider seriously what contributions a quasi-governmental polar organization could make in the future. In a larger sense, as encouraged and facilitated by the international scientific rapport established by the Antarctic Treaty, the understanding and appreciation of the polar activities of others can be of benefit not only to polar science but to the furtherance of international understanding as well.

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