the European convicts proved unable to work in the tropical climate and died quickly, the penal colonies were continued for over 90 years, thus bringing French Guiana into disrepute. The penal system was not abolished until 1945.

The inhabitants of French Guiana have had full French citizenship and the right to vote since 1848 and representation in the French Parliament since 1870. They rallied to France in the wars of 1870 and 1914, and in World War II joined the Free French cause in 1943. The territory became a French département in 1946.

Peoples and population. Out of the total population of about 44,000 at the 1967 census, about 36,000 lived in Cayenne or its vicinity. About 25 percent of the population consists of Europeans. The majority of the population is, however, Creole, although there are some Negroes, Amerinds, and immigrant minorities. The Creoles stem from the continual ethnic and social intermixture of the groups that entered the country from Europe, Asia, and Africa, as well as from other parts of South America. Following a European style of life, they speak an Antillean Creole dialect, as well as French.

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"Negroes

Some of the Indians and Negroes live as Europeans, but most follow their traditional patterns of living. All are French citizens with the right to vote. The "Negroes of the Woods," as they are called, who are the descendants of escaped slaves, live on both banks of the frontier rivers, particularly the Maroni River; they form a community of about 4,000, living under either French or Dutch protection. While they have preserved an African tribal mode of life, their language has absorbed English, French, Spanish, and Dutch influences.

The Amerinds, who are the original inhabitants of Guiana, number scarcely more than 1,000, as compared with 15,000 at the end of the 17th century. They are divided into the Galibi, Arawak, and Palicur (Palikour) tribes on the coast, and the Wayana, Oyampi, and Emerillon tribes in the hinterland. The coastal groups participate in the cash economy to some extent, while those in the hinterland live by hunting, fishing, and shifting agriculture;

their numbers are increasing slowly.

Among other minorities, ethnically separate communities are formed by the metropolitan French (most of whom remain only a few years), the Lebanese, and the Chinese, both of whom arrived in the 19th century under Catholic auspices. There is also a small Indonesian community, which came from Surinam in 1952. Religious affiliations are varied, but Catholicism, rather than Protestantism, predominates. The Negroes and Amerinds have preserved their traditional religions, as also have the Chinese and Indonesians. The population as a whole is increasing.

	area		population		
	sq mi	sq km	1967 census	1972 estimate	
Arrondissements					
Cayenne	19,112	49,500	36,270		
Saint-Laurent-du-Maroni	15,637	40,500	8,122		
Total French Guiana	34,749	90,000	44,392	50,400	

Economy. French Guiana has an artificial economy, sustained by aid from France. Agriculture is far from meeting the demand for food, which has to be increasingly imported. There is little stock raising. Fisheries, however, are able not only to meet local demand but also produce enough for export. Two shrimp canning and freezing factories, supplied by 200 trawlers, supply the American market. Some shrimps are also exported to France. Forestry, which has a considerable potential, has encountered some difficulties. Some gold, obtained by panning, is exported. The quantity varies from year to year; in 1969, for example, it represented only 3 percent of the value of all exports. There are prospects for exploiting bauxite deposits at Kaw, which amount to 50,-

000,000 tons. The fact that economic and social legislation requires that salaries match those paid in metropolitan France has hindered further economic development, for which prospects are not bright.

Transport. A road in the coastal region links Cayenne with Saint-Laurent-du-Maroni; from Saint-Laurent-du-Maroni one may cross the Maroni River by ferry to Surinam. There are no other major roads, although one is being built to link Cayenne to the Brazilian frontier. Access to the hinterland is by river or by air. Rivers are easily navigable for the first 10 or 15 miles, after which rapids are encountered. A private air service maintains seven airports for domestic flights. From the international airport at Rochambeau, near Cayenne, regular flights leave for France (via Martinique and Guadeloupe) and for Brazil. There is a port at Cayenne and landing places at Larivot on the Cayenne River, Kourou, and Saint-Laurent-du-Maroni. A port to accommodate larger ships is under construction at Dégrad des Cannes on the Mahury estuary. Shipping arriving in French Guiana consists almost entirely of cargo vessels.

Administration and social services. As a French overseas département, French Guiana is administered by a prefect and has an elected council-general of 16 members. It is also represented in the French Parliament through one deputy each in the National Assembly and Senate. Education, public health, and social security services are patterned on those provided in France. A number of students travel to French institutions in the Caribbean, or to France itself, for further education; many do not return. Radio and television programs are broadcast in French and Creole; cinemas, libraries, museums, and tropical research institutes, including the Institut Pasteur, are in Cayenne. Traditional culture has been preserved by the Amerinds and Negroes. Creole cultural manifestations include carnivals, dancing, and music, but Creole culture is slowly fading.

Prospects for the future. Prospects for future development are at best uncertain. It had been hoped that with the establishment of the Guianan Space Centre proving ground, and the associated establishment of a new town at Kourou, there might be some acceleration of local economic development; there is little sign that this has occurred. It appears likely that it will be many years before French Guiana begins to develop economically, nor is it as yet possible to see what form this development will assume.

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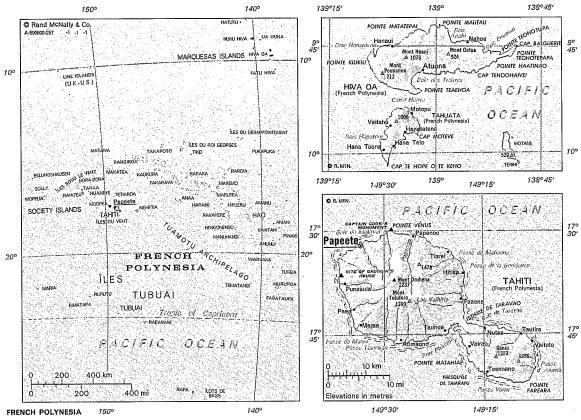
(Je.-M.B.)

## French Polynesia

French Polynesia comprises about 130 islands with a total land area of some 1,500 square miles (4,000 square kilometres) scattered over an area of the south central Pacific between latitudes 7° to 27° S and longitudes 134° to 155° W. The islands form an overseas territory of France. Their population in 1971 was approaching 120,000. (H.La./J.Fa./C.R.)

History. European discovery of the islands of French Polynesia was gradual. The southern Marquesas Islands; were discovered in 1595 by Álvaro de Mendaña de Neira: his successor, Pedro de Quiros, in 1606 discovered some of the Tuamotus. The Dutch explorer Jacob Roggeveen in 1722 discovered Makatea, Bora-Bora, and Maupiti. Capt. Samuel Wallis in 1767 discovered Tahiti, Moorea, and Tubuai-Manu. The Society Islands were named after the Royal Society, which sponsored the expedition under Capt. James Cook that observed from Tahiti in 1769 the transit of the planet Venus. In that year Cook discovered the Huahine islands, Raiatea, Tahaa, and also Rurutu in the Îles Tubuai; Tubuai itself was discovered on Cook's last voyage (1777). Rapa was discovered by George Vancouver in 1791, and in the same year Capt. Joseph Ingraham of the U.S. trading vessel "Hope" traversed the Marquesas Islands and discovered their northern group. The Îles Gambier were discovered in 1797 by Capt. James Wilson of the British missionary ship "Duff."

Lack of roads



The history of the Society Island groups is virtually that of Tahiti, which was made a French protectorate in 1842 and a colony in 1880. French missionaries went to the Gambier group in 1834, and in 1844 a French protectorate was proclaimed, followed by annexation in 1881. The Îles Tubuai were also evangelized from Tahiti, and as late as 1888 Rimatara and Rurutu sought British protection, which was refused. They were placed under the French protectorate in 1889 and annexed in 1900. The Tuamotus were part of the kingdom of the Pomare family of Tahiti, which came originally from Fakarava. These islands were claimed as dependencies of Tahiti within the protectorate by France in 1847 and became part of the colony in 1880. In the Marquesas, Nuku Hiva was annexed to the United States in 1813 by Capt. David Porter of the frigate "Essex," but the annexation was never ratified. French occupation of the group followed the landing of forces from a French warship, requested by the chief of Tahuata (near Hiva Oa). Soon after there was a quarrel with the French; in 1842 the chiefs ceded sovereignty to France.

The islands (administratively termed French Colony of Oceania [EFO]) were originally ruled by a naval government, which was dissolved by an organic decree of 1885. The nearest thing to a constitution that the EFO ever had, the organic decree provided for a French governor and Privy Council and for an 18-member General Council, representing the islands, that had some control over fiscal policies. The powers of the General Council, however, were cut back in 1899, and in 1903 it was replaced by an advisory council that had none of the powers of its predecessor and the function of which was purely administrative. This situation, which was unsatisfactory to the native inhabitants, continued until French Polynesia was made an overseas territory of France in 1946. (Ed.)

The landscape. Five distinct sets of islands may be discerned, all protrusions of parallel submarine ridges trending from the northwest to the southeast.

The Society Islands. These are the most westerly of the group and the most important in terms of land area (40 percent) and population (80 percent). Except for a few small atolls, they are of the "high island" type, resulting from the emergence of underwater volcanoes. The volcanic cones are highly eroded and cut up into high crests and deep, radiating valleys. The often lushly vegetated mountains drop abruptly to narrow coastal strips or directly into lagoons or the sea—from the direct assaults of which the islands are protected by almost completely encircling barrier reefs.

The largest and most highly populated of the Society Islands are Tahiti and its neighbour, Moorea, both situated in the eastern îles du Vent, or Windward Group. Tahiti, formed of two ancient volcanic cones, is particularly striking, because of its dramatic silhouette, which rises 7,333 feet above sea level. The mountains are empty of all human settlement, habitation and planting being limited to the coastal strip and valley outlets. Moorea, separated from Tahiti by a 12-mile-wide channel, is also a high island and is encircled with very white coral sand beaches. It is well connected to Tahiti by boat and taxi planes—a consequence of the booming tourist industry.

Ninety miles to the west of Tahiti are the Îles sous le Vent, or Leeward Islands, made up of five high islands and four atolls. They closely resemble the Îles du Vent in appearance. Raiatea is the largest and most densely populated; it has a coastal plain with coconut groves where stock raising is carried on. Vanilla was once an important crop but is now on the decline. Its port is Uturoa, the second city of French Polynesia. To the east of Raiatea is the island of Huahine, a volcanic structure bisected by a shallow arm of the sea. It is very picturesque and will probably develop as a tourist attraction.

Finally, to the west of Raiatea, lies the beautiful little island of Bora-Bora. It is formed from a volcanic peak rising up to 2,385 feet and dropping down abruptly to the lagoon. It is one of the centres around which the tourist trade revolves in French Polynesia.

The Tuamotu Archipelago. Lying to the east of the Society Islands, this archipelago of 325 square miles and some 7,700 inhabitants consists of more than 80 islands. These are low, flat islands or atolls of coral origin, surrounding a lagoon. The size varies greatly: the largest ones, such as Rangiroa, reach 29 square miles; the smallest are made up of a few acres of land barely protruding above the surface of the sea. Lacking soil, and with no permanent streams, they have no agricul-

Tahiti and Moorea tural potential aside from the ever-present coconut trees. The lagoons, however, are a source of fish, pearls, and mother-of-pearl shell. Only Rangiroa, with its airport, is in close contact with Tahiti. Elsewhere, living conditions are so hard that the people are only too eager to emigrate to Tahiti. In the Tuamotus are situated the French nuclear installations. Test sites are on Mururoa and Fangataufa; the military base on Hao has an airstrip that handles military jets.

The îles Gambier. Morphologically different, the îles Gambier lie at the southern extremity of the Tuamotu Archipelago and include four large, high islands and a few islets (14 square miles, some 600 inhabitants). The

main island is Mangareva.

The Marquesas Islands. There are 14 Marquesas Islands lying 900 miles to the northeast of Tahiti. They have a land area of 255 square miles and a population of about 5,600. Some of them are high islands (over 3,000 feet), with sharp and twisting contours. Unlike the Society Islands, they are not protected from the sea by a barrier reef, with the result that they lack a coastal plain. Approaching the islands from the sea is difficult. People live exclusively in the valleys, where they engage in farming.

The Îles Tubuai. Situated 450 miles south of Tahiti, the Îles Tubuai, or Austral Islands, make up the southern-

most part of the territory.

Rainfall

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This chain of four islands, with the addition of the isolated island of Rapa in the southeast, covers 54 square miles and contains over 5,000 inhabitants. All of the islands are of volcanic origin but of little height (300 to 1,000 feet) and with unpronounced contours. Income is derived from agriculture (taro, market vegetables) and pandanus plaiting. This plait work is sold in Papeete.

Like the Marquesas and the Tuamotu-Gambiers, the Tubuai group have poor connections with Tahiti. As elsewhere, the hard living conditions provoke a rural exodus,

to the benefit of Tahiti and Papeete. Administratively part of French Polynesia is the island of Clipperton (10° 18' N, 109° 15' W), some 600 miles off the coast of Mexico. An atoll of about five miles in circumference, it is presently uninhabited.

Climate. The climate is tropical—warm and humid. There is a warm rainy season from November until April and a relatively cool dry season from May until October. The dispersion of the islands through 20° of latitude, however, results in local and regional climatic variation. Except in the Marquesas and the northern Tuamotus, rainfall is abundant, falling in the form of violent showers. As much as 120 inches fall on the coastal areas. There are local variations due to differing exposures; on average, the coasts exposed to the winds receive more precipitation.

The temperature varies but slightly throughout the year. At Papeete, the mean average annual temperature is 79.0° F (26.1° C); the high mean average is 90.7° F (32.6° C) in March and the low mean average 70.0° F (21.1° C) in August. The Îles Tubuai (Austral), further south, enjoys a cooler climate; the low mean average can go down to 64°F (18°C) in September. The relative humidity is always high—80 to 90 percent on the average. The high areas are continually enveloped in a heavy cloud formation.

The territory is in the trade-wind zone. The dominant winds thus blow from the north and northeast, but they tend toward the southeast between May and October. There are large periods of calm (April, May, June) but with occasional tropical hurricanes or cyclones. Land breezes cool the night to 13° F (7° C) below the daytime

Vegetation and animal life. Because of the recent origin and the isolation of the islands, there is little variety in terrestrial flora and fauna. Most of the plant species were introduced by the first Polynesians, others being introduced by Europeans.

The vegetation's appearance varies with the ecological conditions. On the limestone soils of the atolls, it has a pronounced xerophious (desert-plant-type) character. On the high volcanic islands it is more diversified; ferns have

French	Polypecia	Area	hne	Population

**	area*		population		
	sq mi	sq km	1962 census	1971 census	
Circonscriptions			• , ''		
Iles Australes	54	141	4,000	5,000	
Iles du Vent	459	1,188	52,000	85,000	
Iles Marquises	255	661	5,000	6.000	
Iles sous le Vent	154	399	16,000	16,000	
Iles Tuamotu et Gambier	339	877	7,000	8,000	
Total French Polynesia	1,261	3,265†	85,000†	119,000†	

Inhabited islands only; total area is 1,500 sq mi (4,000 sq km). †Figures do not add to total given because of rounding. Source: Official government figures.

often conquered the hills and plateaus, whereas rain forests are established in the upper valley areas. On coastal plains flourish coconut, breadfruit, and various fruit trees.

The land fauna is especially limited, and most of the species have been introduced. No mammal is indigenous, but certain ones live wild: goats, pigs, horses, cattle, and, of course, rats.

The streams are inhabited mainly by a fish, nato, and a shrimp (prawn) highly esteemed by gourmets. The marine fauna is rich, with fish of every shape and colour.

Human geography. Patterns of settlement. On the high islands, homes are scattered through the coconut groves along the coastal roads. Every two or three miles occurs a village in which are grouped together the church, the government house, the school, a shop (usually run by a Chinese), the pastor's home, and a few residences. The contemporary rural house is of concrete construction in a yard shaded by fruit trees, with a separate kitchen made from traditional materials (palm, bamboo) where food is prepared and eaten. On the atolls, the population is usually grouped together in villages located close to the passes through the surrounding reefs.

Population and business activity tend to concentrate in the Papeete area. The town consists of the old colonial city (still the business centre), residential areas (often on the heights), and tin-pan alleys hidden by foliage; it extends some 20 miles along the sea front and creeps into the valleys, that are walled in by nearby mountains.

Urban services—water supply, sewage, electricity, and public transportation—remain inadequate, especially in the areas recently occupied by immigrants pouring in from the outer islands.

This influx is connected with the development of a class of salaried workers in French Polynesia that represented 74 percent of the economically active population in 1969.

The people. Most of the people throughout the islands may be classed as Polynesian, speaking eastern Polynesian languages. Polynesians and part Polynesians (called Demis) make up 85 percent of the total. Minority groups consist of Chinese (11 percent) and Europeans and Americans (3 percent). Although relatively few in numbers, the Demis, as a result of their position between two cultures (Polynesian and European) constitute a very important economic force and even more vital political force. Over 60 percent of the population is of protestant persuasion (Evangelical Church of Polynesia); some 30 percent is Roman Catholic, the remainder belonging to various other Christian denominations.

After half a century of decline the population stabilized between 1900 and 1920 and then underwent a considerable increase; in 1968 the birth rate was 4.57 percent and the death rate .91 percent. Polynesian emigration to New Caledonia almost stopped around 1963-64, when the French nuclear testing headquarters was established but then recommenced in 1969 with the expansion of the nickel industry in New Caledonia. With a high birth rate and the death rate reduced by sanitary developments, the population of the territory is likely to double in 20 years. In 1971, one Tahitian out of two (55 percent) lived in Papeete and its suburban area.

Layout of Papeete

Develop-

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transporta-

Economy. Many resources are used for local subsistence, including fruits, products from fishing and planting, and materials for the construction of traditional types of houses and canoes. The main exports—copra, vanilla, and mother-of-pearl shell—have greatly declined. Exports in 1970, in fact, for those products (by volume) were 62, 20, and 32 percent, respectively, of levels of 1960. This, however, has been partially compensated for by an increase in income from tourists, who increased more than twelve-fold in numbers between 1960 and 1971.

The gross internal product in 1969 was 19,185,000,000 Pacific francs (CFP 100 = \$1 U.S.; CFP  $240 = \pounds1$  sterling, on October 15, 1971), 9 percent of which came from agriculture, 18 percent from industry and the building trade, 3 percent from tourism, 41 percent from business and various services, and 29 percent from salaries of civil

service employees.

There have been considerable developments in transportation facilities since the early 1960s, including the construction of a modern port in Papeete, construction of an international airport, and development of air services with some of the outlying islands: Moorea, the Leewards, the western Tuamotus, the Marquesas, and the Tubuai. Schooner connections within the region and with other Pacific areas are still, however, very irregular, and road systems are inadequate or nonexistent.

Administration and social conditions. Represented in the French parliament by a deputy and a senator and placed under French law, the territory is administered locally by an elected assembly and a governor. The latter is head of the territory and is appointed by the French government. Since the early 1960s a large fraction of the population has been demanding a statute of internal autonomy, with enlargement of the prerogatives of the Assembly, creation of ministerial portfolios, and the formation of a cabinet responsible to the electorate.

Schooling is compulsory and conducted largely in government-aided mission schools; literacy is 95 percent. The population has average health facilities (one doctor for 1,750 inhabitants, one hospital bed for 120 inhabitants). The standard of living is relatively high, annual per capita income being U.S. \$1,450, but there are wide differences of income between the various social groups.

Cultural transition and prospects. Profoundly influenced by the West, French Polynesia's cultural and artistic traditions have been reduced to a sort of folklore, a process stimulated greatly by the tourist trade. In spite of the existence of an ethnographic museum and a local learned society, a great effort is needed to preserve the territory's cultural heritage. The absence of newspapers in Polynesian, the small amount of broadcasting in the Tahitian language, and the nonrecognition of vernacular languages as official languages on a level of equality with French all constitute a real handicap to the protection of indigenous culture.

An ethnically diverse society located at a crossroad of civilizations, French Polynesia is hunting for a cultural identity. This still-confused aspiration is expressed through the medium of political struggles centred around the demand for internal autonomy. The ties of economic dependence with France however, are being reinforced to a dangerous degree, in spite of worthy efforts at all levels to ensure substitutes for activities connected with

the French nuclear program.

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(H.La./J.Fa./C.R.)

## French Revolutionary and Napoleonic Wars

The wars of the period 1792 to 1815, between France and alliances of the other major European powers, were a mixture of old and new. Broadly speaking, the weapons were old. While muskets, bayonets, guns, and cavalry weapons had been slightly improved during the 18th century and continued to be improved during these wars, the slow-firing and cumbrous smooth-bored, muzzle-loaded hand and field weapons of the War of the Spanish Succession (1701–14) were still, in basic essentials, the weapons used 150 years later in the Crimean War (see also European diplomacy and wars [c. 1500–1914]).

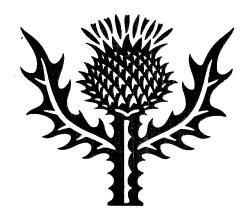
The new element in these wars was political. The aims of the French Revolution were proclaimed to be liberty and equality, an end to autocratic regimes, and government by and for the people. If men had these rights, however, they had a corresponding responsibility to defend them against attack: the corollary of the vote was the duty of military service. In practice this meant large conscript armies instead of relatively small professional ones. As the great military writer Karl von Clausewitz was to point out, while armies of the 18th-century type still existed in France at the outbreak of the Revolution, it was not long before

... such a force as no one had had any conception of made its appearance. War had again suddenly become an affair of the people, and that of a people numbering thirty millions, every one of whom regarded himself as a citizen of the state

This vital change led to much larger armies and, in consequence, to important developments in strategy and tactics. After 1800 Napoleon normally fought his campaigns in command of 250,000 men and occasionally many more, in contrast to the 60,000- to 70,000-man armies of the early and middle 18th century. Moving armies of that increased size swiftly across western and central Europe required good road- and river-transport systems and created a need for supplies that could be satisfied only by some measure of local requisitioning or by living off the land, in contrast to the elaborate and restrictive depot methods of the 18th century. On the battlefield the massed infantry column became an alternative to the thin firing line, partly because the column offered an acceptable way to deploy large numbers of rapidly trained new recruits.

One other general matter must be mentioned. If the French entered these wars in 1792 as a crusade, at first to defend the Revolution in France against the invading armies of Austria and Prussia and then to spread the Revolution to less fortunate nations, that phase of the wars came to an end by 1800, if not before, Certainly from 1805 onward and in some respects during his campaigns against the Second Coalition in 1798–1802, the wars of Napoleon were aggressive, nationalist wars designed primarily to expand French influence either by direct territorial aggrandizement or by the creation of satellite states. As a result, the armies of France, which

New elements in the wars



## FRENCH POLYNESIA

by (in part)

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