



*A New Survey of Universal Knowledge*

# ENCYCLOPÆDIA BRITANNICA

Volume 20

SARSAPARILLA TO SORCERY



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\*

"LET KNOWLEDGE GROW FROM MORE TO MORE  
AND THUS BE HUMAN LIFE ENRICHED."



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## Volume 20

### SARSAPARILLA TO SORCERY

**SARSAPARILLA**, a drug prepared from the roots of several species of the genus *Smilax* (lily family). The origin of the name is Spanish, *zarza* meaning "bramble" and *parilla*, "little vine." The plants are indigenous to Central America from the southern and western coasts of Mexico to Peru. Only three species have been identified with certainty: *Smilax aristolochiifolia*, *S. regeli* and *S. febrifuga*, known in commerce, respectively, as Mexican, Honduras and Ecuadorian sarsaparillas. Other varieties, known commercially as Ecuadorian (or Guayaquil) and Central American (Jamaica or Guatemala), are derived from unidentified species of *Smilax*. The plants are large perennial climbing or trailing vines, growing from short, thick, underground stems from which rise numerous semiwoody flexuous angular stems, bearing large alternate-stalked leaves. The tendrils that provide support for the plants spring from the bases of the leaves. The roots are dried in the sun, then gathered loosely into bundles or bound tightly into cylinders, depending on the place of origin, and exported. Several sterols and a crystalline glycoside, sarsaponin, which yields sarsapogenin on hydrolysis, have been isolated from the root. Sarsapogenin is related to steroids such as progesterone and is used in their synthesis. Sarsaparilla is regarded popularly as a tonic, but in fact is inert and useless. A liquid extract in which it is combined with other flavouring agents is an ingredient of such carbonated drinks as the American root beer.

(V. E.)

**SARFIELD, PATRICK** (?-1693), titular earl of Lucan, Irish Jacobite and soldier, belonged to an Anglo-Norman family long settled in Ireland. He was born at Lucan, but the date is unknown. Patrick, who was a younger son, entered Donagan's regiment of foot on Feb. 9, 1678. During the last years of Charles II he served in the English regiments which were attached to the army of Louis XIV of France. The accession of King James II led to his return home.

He took part in the suppression of the Western rebellion at the battle of Sedgemoor on July 6, 1685. In the following year he was promoted to a colonelcy. King James had adopted the dangerous policy of remodelling the Irish army so as to turn it from a Protestant to a Roman Catholic force, and Sarsfield, whose family adhered to the church of Rome, was selected to assist in this reorganization. When the king brought over a few Irish

soldiers to coerce the English, Sarsfield went in command of them. Sarsfield had a brush with some of the Scottish soldiers in the service of the prince of Orange at Wincanton. When King James fled to France, Sarsfield accompanied him.

In 1689 he returned to Ireland with the king. During the earlier part of the war he did good service by securing Connaught, and was promoted to brigadier, and then major general. After the battle of the Boyne (July 1, 1690), and during the siege of Limerick, Sarsfield came prominently forward. His capture of a convoy of military stores at one of the two places called Ballyneety, between Limerick and Tipperary, delayed the siege of the town till the winter rains forced the English to retire. This achievement made him the popular hero of the war with the Irish. When the cause of King James was ruined in Ireland, Sarsfield arranged the capitulation of Limerick and sailed to France on Dec. 22, 1691. He received a commission as lieutenant general (*maréchal de camp*) from King Louis XIV and fought with distinction in Flanders till he was mortally wounded at the battle of Landen (Aug. 19, 1693). He died at Huy two or three days after the battle. In 1691 he had been created earl of Lucan by King James. He married Lady Honora de Burgh, by whom he had one son, James, who died childless in 1718.

See J. Todhunter, *Life of Patrick Sarsfield* (1895).

**SARTHE**, a *département* of France, formed in 1790 out of the eastern part of Maine, and portions of Anjou and of Perche. Pop. (1954) 420,393. Area 2,411 sq.mi. It is bounded north by the *département* of Orne, northeast by Eure-et-Loir, east by Loir-et-Cher, south by Indre-et-Loire and Maine-et-Loire and west by Mayenne. The *département* includes the greater part of the basin of the Sarthe, which drains the large bay in the southern flank of the hills of Normandy, and the city of Le Mans is at the focus of this bay, where the Sarthe from the northwest joins the Huisne from the northeast. It is floored largely by Jurassic and Cretaceous rocks succeeding one another eastward, with the Armorican Palaeozoics on its western border. Southeast of the Huisne the Eocene deposits stand out, forming a relatively poor territory. The Loir flows through the southern edge of the *département* to join the Sarthe in Maine-et-Loire; along its chalky banks caves have been hollowed out which, like those along the Cher and the Loire, serve as dwelling houses and stores. The

mean annual temperature is 51° to 52° F. The rainfall is between 25 and 26 in.

The *département* is mainly agricultural. There are three distinct districts:—the corn lands to the north of the Sarthe and the Huisne; the region of barren land and moor, partly planted with pine, between those two streams and the Loir; and the wine-growing country to the south of the Loir. Sarthe produces much barley and hemp. The raising of cattle and of horses, notably those of the Perche breed, prospers, and fowls and geese are fattened in large numbers for the Paris market. Apples are largely grown for cider. The chief forests are those of Bercé in the south and Perseigne in the north; the fields in the department are divided by hedges planted with trees. Coal, marble and freestone are among the mineral products. The staple industry is the weaving of hemp and flax, and cotton and wool-weaving are also carried on. Paper is made in several localities. Iron-foundries, copper and bell foundries, factories for provision-preserving, marbleworks at Sablé, potteries, tileworks, glass-works and stained-glass manufactories, curriers, machine factories, wire-gauze factories, flourmills are also important. The *département* is served by the Ouest-État, the Orléans and the State railways, and the Sarthe and Loir provide about 100 mi. of waterway, though the latter river carries little traffic.

The *département* forms the diocese of Le Mans and part of the ecclesiastical province of Tours, has its court of appeal at Angers, and its académie (educational division) at Caen, and forms part of the territory of the IV army corps, with its headquarters at Le Mans. The *arrondissements* are named from Le Mans, the chief town, La Flèche and Mamers. There are 33 cantons and 386 communes. The chief towns are Le Mans, La Flèche, La Ferté-Bernard, Solesmes (*qq.v.*) and Sablé.

**SARTI, GIUSEPPE** (1729–1802), Italian composer, was born in Faenza, Dec. 1, 1729. He studied under the direction of Padre Martini at Bologna, and was organist at the cathedral in Faenza 1748–50. At the age of 22 he completed his first opera, *Pompeo in Armenia*, successfully produced in Faenza (1752). This success was followed by *Il Rè pastore*, in Venice (1753), which with others established his fame abroad.

He was called by Frederick V of Denmark to Copenhagen, where for several years he directed Italian opera and was made court conductor. He was then commissioned by the Danish king to engage singers in Italy for a new company. During his absence in Italy King Frederick died, and Sarti remained in Italy for three years. On his return to Copenhagen in 1768, he conducted the court opera until 1775, when he was dismissed for political reasons. During his stay in Denmark, he composed 20 Italian operas and many Danish Singspiele.

From Copenhagen he went directly to Venice, where he was made director of the Ospedaletto conservatory. In 1779 he won the directorship of the cathedral in Milan, in competition with the leading musicians in Naples. This gave him the opportunity to write several masses, a *Miserere a 4*, and motets. It was during this period that he achieved his greatest dramatic success by writing some 15 operas, among them *Giulio Sabino* (Venice, 1781) and *Fra i due litiganti il terzo gode* (*Le Nozze di Dorina*) (Milan, 1782). This great success established his reputation and brought him many students of note, among them Cherubini, who became his assistant.

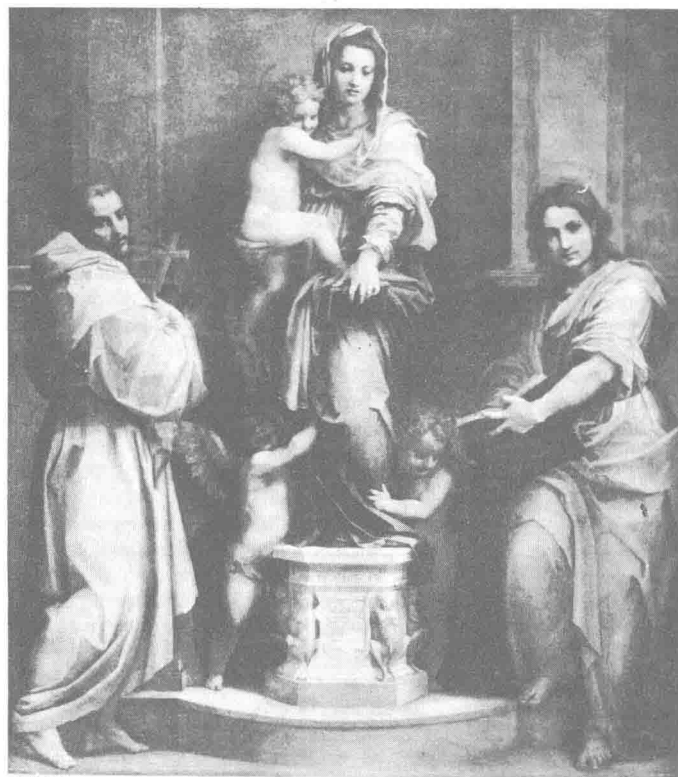
Sarti left Italy again upon invitation from Catherine II of Russia (1784) to go to St. Petersburg. On his way he stopped in Vienna, where he was received in court by the emperor, and met Mozart, who was then in his prime. In St. Petersburg, Sarti was welcomed with even greater favour in the court of Catherine II. Under his directorship, the Italian opera attained unparalleled success and perfection. The empress, who showed great interest in his achievements, wrote the libretto for his opera *Oleg*. Beside being a composer, Sarti was a skilled mathematician and physicist. He invented a device for counting tone vibrations for which he was made honorary member of the St. Petersburg Academy of Science. Among the works he composed for the Russian court is a *Te Deum* composed on the taking of Ochakov by Potemkin. In this composition Sarti used fireworks and

cannon for accent and martial effect. He lost favour with the empress for a short time, and Prince Potemkin came to his aid by establishing a school in a village in Ukraine, and making Sarti director. The empress restored him to favour again, however, and made him head of a new conservatory planned after those of Italy.

Sarti was a prolific composer, and wrote 54 operas. They possess great character and charm, and Mozart wrote variations on an air from one of them. Among other compositions are a requiem, two *Te Deums*, two concertos, six sonatas for the harpsichord and many masses. Several of the masses are frequently performed. Very few of his compositions have been engraved. Most of his works were placed in the library of the conservatory in Paris, and that of Naples.

After the death of the empress of Russia, Sarti made plans to revisit Italy, and stopped on his way in Berlin, where he fell seriously ill and died July 28, 1802.

**SARTO, ANDREA DEL** (1486–1530), one of the most popular Florentine painters of the early 16th century, was born in Florence on July 14, 1486. His father, Agnolo di Francesco, was a tailor (*sarto*), and from this fact the painter derived his name. In 1508 Andrea was enrolled in the guild of the Medici e Speziali. According to G. Vasari, he was trained initially by a goldsmith, was later apprenticed for three years to a painter Gian Barile, and subsequently worked with Piero di Cosimo, traces of whose influence are found in his earliest authenticated works—five frescoes of scenes from the life of St. Philip Benizzi, executed in the entrance court of the Annunziata in Florence in 1509–10. A sixth of the “Adoration of the Magi” dates from 1511 and a



ALINARI  
“MADONNA OF THE HARPIES” BY ANDREA DEL SARTO. IN THE UFFIZI GALLERY, FLORENCE

seventh of the “Birth of the Virgin” from 1514. Whereas the earlier of these frescoes are dry and somewhat academic in style, in the latest the scale of the figures is increased and the execution reveals the boldness and beauty of colouring of Andrea’s mature work. At this time Andrea was closely associated with the painter Franciabigio, as well as with the sculptor Jacopo Sansovino, who exercised a deep influence on his figurative style. His relation to both artists can be traced in a celebrated cycle of grisaille fres-



coes of scenes from the life of St. John the Baptist in the Chiostro dello Scalzo, Florence. The Scalzo frescoes were interrupted in 1518 by a visit to France, where Andrea entered the employment of Francis I. The single relic of his activity in France is a painting of "Charity" dated 1518 in the Louvre, Paris. Returning to Florence in 1519, he resumed work in the Scalzo between 1522 and 1526. To this period belong his most ambitious frescoes, the "Tribute to Caesar" at Poggia a Cajano (1521), the great "Last Supper" at S. Salvi (about 1526) and the "Madonna del Sacco" in the cloister of the Annunziata (dated 1525). This last fresco, with its bold pyramidal design and delicate handling, is perhaps Andrea's finest work.

With a few exceptions, Andrea's most notable panel paintings are in the Uffizi and Pitti galleries in Florence. They include his best-known work, the "Madonna of the Harpies" (1517), the "Dispute about the Trinity" (1517-18), a magnificent "Lamentation over the Dead Christ" (1524) and three large altarpieces of the Assumption. In these he combines the compositional procedure of the Tuscan High Renaissance with a splendour of colour reminiscent of Venetian painting.

Andrea was also a distinguished portrait painter. His best work in this genre is the introspective "Portrait of a Sculptor" in the National gallery, London. A self-portrait is in the Uffizi gallery. As a draftsman, Andrea favoured the medium of red chalk, which he employed with exceptional directness and accomplishment. A large collection of his drawings is in the Uffizi gallery. Endowed with a less original talent than his great contemporaries Raphael and Leonardo da Vinci, and a more equable temperament than his disciples Rosso and Jacopo da Pontormo, Andrea del Sarto remains a central figure in Florentine High Renaissance art, whose work is marked by monumentality, sincerity and sensibility and by its disregard of external effect. The romantic story of his marriage to Lucrezia del Fede (probably 1517) is recounted by Vasari. Andrea del Sarto died of the plague at Florence on Sept. 29, 1530.

See I. Fraenkel, *Andrea del Sarto* (1935); B. Berenson, *The Drawings of the Florentine Painters*, 3 vol. (1938). (J. W. P.-H.)

**SARTS.** The Sarts are an Iranian Turkish tribe, numbering about 2,000,000, who live in Ferghana and Syr Daria territories. They are highly organized, living in permanent villages, with a developed Sufi system of education. They practise a system of agriculture, using irrigation canals, and growing fruit and cotton. They are also accomplished traders. In religion they are Sunnites, many of them belonging to the Sufi order. They have mixed considerably with the Tadjiks, the remnant of the old non-Turkic population, and physically are largely of the Alpine type. In culture they differ widely from most of the tribes speaking cognate languages. (L. H. D. B.)

**SARZANA**, a town and episcopal see of Liguria, Italy, in the province of La Spezia, 9 mi. E. of Spezia. Pop. (1957 est.) 16,846 (commune). The cathedral of white marble in the Gothic style, dating from 1204, was completed in 1471. The old citadel, built by the Pisans in 1263, was re-erected in 1488. Glass bottles and bricks are made there. Sarzana's position at the entrance to the valley of the Magra (anc. Macra), the boundary between Etruria and Liguria in Roman times, gave it military importance in the middle ages. The first mention of it is found in 983.

**SASARAM**, a town in Shahabad district, Bihar, India, on the Eastern railway, 90 mi. W.S.W. of Patna. Pop. (1951) 29,265. It is famous as containing the tomb of the emperor Sher Shah (1540-45). The tomb, the finest example of Pathan architecture in India, with a dome 101 ft. high, stands on an island in the middle of an artificial lake. The town also contains the tomb of Sher Shah's father, another fine specimen of Pathan art; a building called the Kila, or fort, said to have been his palace; and the grave and unfinished tomb of Sher Shah's son, the emperor Salim Shah. Outside is the ruined tomb of Alawal Khan, the reputed architect of Sher Shah's and his father's tomb. A rock edict of Asoka is inscribed on the Chandan Pir Shahid hill, close to the town.

**SASEBO**, a port town in Nagasaki prefecture, Kyushu, Jap. Pop. (1960) 262,484. Provided with a good natural harbour near the mouth of Ōmura bay, Sasebo was a naval base from 1896 un-

til the end of World War II. It was a small village until the restoration (1868), but expanded rapidly after the wars with China and Russia. The town was partially destroyed in World War II, but because of facilities which years of experience had perfected, Sasebo revived as a commercial and fishing port. The harbour facilities are also used by the U.S. armed forces stationed in Japan. (R. B. H.)

**SASKATCHEWAN**, a prairie province of Canada lying between Manitoba to the east and Alberta to the west and containing part of one of the great grain-producing regions of the world. It has an area of 251,700 sq.mi., of which 31,518 sq.mi., mainly in the north, are covered by water.

**Physical Geography.**—*Geology and Physiography.*—Saskatchewan has purely artificial boundaries cutting across the major geologic and geographic zones of west central Canada (see CANADA: *Physical Geography; Geographical Regions*). The northern one-third is a part of the Canadian shield. Pre-Cambrian rock is exposed at the surface or underlies shallow glacial drift and sedimentary sands in a terrain which is rugged but not mountainous. Muskeg (swamps), many lakes and small streams are indicative of two immature drainage systems which carry the brackish water to Hudson bay via the Churchill or to the Arctic ocean via the Athabasca and Mackenzie. The southern two-thirds of the province forms part of the great interior continental plains. In Saskatchewan these comprise two distinct levels or prairie steppes. The westernmost, at about 2,500 ft. above sea level, extends to the Missouri *coteau* (cuesta or scarp), a dominant feature which approximately defines the eastern edge of the remnant Tertiary formations. The Cypress hills and Wood mountains rise to 1,000 ft. above this level and comprise the youngest Tertiary beds. The second prairie steppe, at about 1,500 ft., terminates in the Manitoba escarpment, the eastern edge of Cretaceous formations on the prairies. Various series of hills between the two escarpments, including the Moose and Duck mountains and the Porcupine and Pasqua hills, are outriders of the older Tertiary beds. The province was almost entirely glaciated in Pleistocene times and the present surface soils of the plains originated from glacial depositions.

The Saskatchewan river (*q.v.*) drains a large part of the southern plains. Its two branches, entering the province from Alberta nearly 200 mi. apart, meet east of Prince Albert and flow toward Lake Winnipeg in Manitoba. A southwestern area drains southward to the Missouri river, and the southeastern corner of the province is drained by the Souris and Qu'Appelle rivers to Lake Winnipeg via the Assiniboine and Red rivers of Manitoba. Most southern Saskatchewan rivers flow through deep, U-shaped valleys which were eroded by glacial melt water in unconsolidated sedimentary beds as the last continental ice sheet retreated.

**Climate, Soils and Vegetation.**—Saskatchewan has a continental climate with relatively little marine influence, prevailing westerly winds and wide seasonal and daily ranges of temperature. Average monthly temperatures decrease northward, particularly in winter. The average January temperature in the south is 0° F. while in the extreme northeast it is -20° F. The isotherm of 65° F. in July runs along the southern border and that of 60° F. through the middle of the province. The low annual precipitation is concentrated fortunately in the growing season. Average precipitation varies from 11 in. in the southwest to 18 in. in the northeast part of the agricultural region, with wide local and seasonal fluctuations. Repeated low annual averages of precipitation led to the disastrous prairie drought of the 1930s which was accompanied by dust storms and insect infestations.

As a result of their glacial origin the clay and loam soils of the great plains in Saskatchewan are rich in mineral content. Modification in well-defined zones of vegetative cover, each in turn a characteristic of a particular set of climatic factors, has produced brown soils in the arid southwest, black soils in the prairies (grasslands) proper, degraded black soils in the parklands and gray wooded soils in the northern extremes of the plains area. The grasslands are primary producers of wheat, but the higher levels, particularly the Cypress hills, are wooded and break the monotony of the landscape. Scattered clumps of trembling aspen in the wide



belt of parklands eventually thicken and merge into the mixed wood forest at a northwest-southeast line across the province between Prince Albert and Saskatoon. Northward a further transition takes place to dominantly coniferous species. It is the northern part of this mixed wood belt which contains the best of the province's merchantable timber. Still farther northward a wide expanse of potential pulpwood (chiefly black spruce and jack pine) deteriorates into a zone of little commercial value. There poor soil and low temperatures reduce the quality of the tree cover.

**Wildlife.**—Saskatchewan is rich in wildlife resources. The vast prairies, once the home of great buffalo herds, are still sparsely populated and continue to provide an almost unlimited habitat for deer and antelope, upland birds such as grouse, partridge and pheasant, and waterfowl—ducks, geese, cranes and swans. Deer, elk, moose and bear inhabit the parklands and forests, with caribou in the far north. Of the fur bearers, muskrat, beaver, mink, squirrel, otter and fisher are common. Nearly all Saskatchewan lakes and streams contain fish, many in sufficient abundance to be fished commercially.

**History.**—Saskatchewan takes its name from the Indian name for the great river of the plains, which is in full Sis-Sis-Katchewan-Sepie, the "Big Angry Water" or "Rapid river." The territory, then unexplored, was granted by Charles II in 1670 to the Hudson's Bay company for the exploitation of its fur. The first knowledge of this part of the territory came from an expedition of Henry Kelsey of the company (1690–92). Subsequent exploration was accomplished by the La Vérendrye brothers about 1750, and thereafter by Anthony Henday and Samuel Hearne. In 1774 Hearne established the first white habitation to remain a permanent community, at Cumberland House on the lower Saskatchewan river.

Until their merger in 1821 the Hudson's Bay company and the North-West company were rivals in the fur trade, particularly in the forested regions of the territory. They set up numerous temporary forts and trading posts, often in direct competition at one location. The consolidated Hudson's Bay company established additional permanent posts, such as Carlton House and Ft. Pitt, by the 1840s. All other settlement was confined to the vicinity of these posts.

The transfer of the territory to Canada in 1869 and railway connection from Winnipeg to St. Paul, Minn., in 1878 prompted immigration and homestead settlement. The dispossession of the resident half-breed population without proper recognition of their rights led to two uprisings, in the Red river valley in Manitoba (1869–70) and in Saskatchewan (1885). The North-West Mounted Police were established in 1873. Organized government of the Northwest Territories south of latitude 60° came in 1875, with Ft. Livingstone the first government seat and Ft. Battleford taking over in 1877. In 1882 Regina was made the territorial seat of government. Completion of the Canadian Pacific railway in 1885 aided farm settlement and a surge of immigrants after 1901 led to the creation of the province of Saskatchewan in 1905, with Regina (*q.v.*) selected to be the capital city.

Rapid growth continued until World War I, the population increasing from 91,279 in 1901 to 492,432 in 1911, and municipalities, towns and cities were established. The University of Saskatchewan at Saskatoon was founded in 1907. There was wide diversity among settlers in nationality, culture and religion. Immigration slackened and practically stopped between World Wars I and II, and the desperate depression years of the 1930s saw some emigration from Saskatchewan and some relocation within the province. Settlers from the "dust bowl" moved northward into the forested regions to resume agricultural and other activities there. The return of wetter seasons and improved crops in the 1940s encouraged reconsolidation and diversification of the provincial economy. In 1955, the jubilee year for Saskatchewan, a recognition program was undertaken to mark many historic sites throughout the province.

**Population.**—Saskatchewan's population, 925,181 in 1961, is concentrated in the southern half of the province. Less than 2% live north of the agricultural region. Settlement took place fairly rapidly in the grasslands and parklands, more slowly in the forest fringe. The main rail line of the Canadian National railway

passing through Saskatoon and the park belt, where the risk of drought is less than on the prairies proper, enabled this zone to reach and retain the greatest nonurban density of population in the province. A gradual shift of urban-rural ratios continued after World War II, from 6% urban in 1901 to 21% in 1941 to 37% in 1956, in centres of 1,000 population and over. About 42% of Saskatchewan people were of British origin, 6% French, 16% German, 8% Scandinavian and 9% Ukrainian, with a scattering of over 16 other national groups. About 23,300 Indians lived in Saskatchewan under federal care. The largest religious groups were United Church of Canada (30%) and Roman Catholic (24%), followed by Anglicans (11%) and Lutherans (11%). Over 24 other creeds were represented.

*Saskatchewan: Places of 5,000 or More Population\**

Place	Population				
	1961	1956	1951	1941	1921
Total province . . .	925,181	880,665	831,728	895,992	757,510
Estevan . . .	7,728	5,264	3,935	2,774	2,290
Lloydminster . . .	5,667	5,077	3,938	1,624	755
Melville . . .	5,191	4,948	4,458	4,011	2,808
Moose Jaw . . .	33,206	29,603	24,355	20,753	19,285
North Battleford . . .	11,230	8,924	7,473	4,745	2,923
Prince Albert . . .	24,168	20,366	17,149	12,508	7,352
Regina . . .	112,141	89,755	71,319	52,245	34,332
Saskatoon . . .	95,526	72,858	53,268	43,027	25,739
Swift Current . . .	12,186	10,612	7,458	5,594	3,518
Weyburn . . .	9,101	7,684	7,148	6,179	3,193
Yorkton . . .	9,995	8,256	7,074	5,577	5,151

\*Populations are reported as constituted at date of each census.

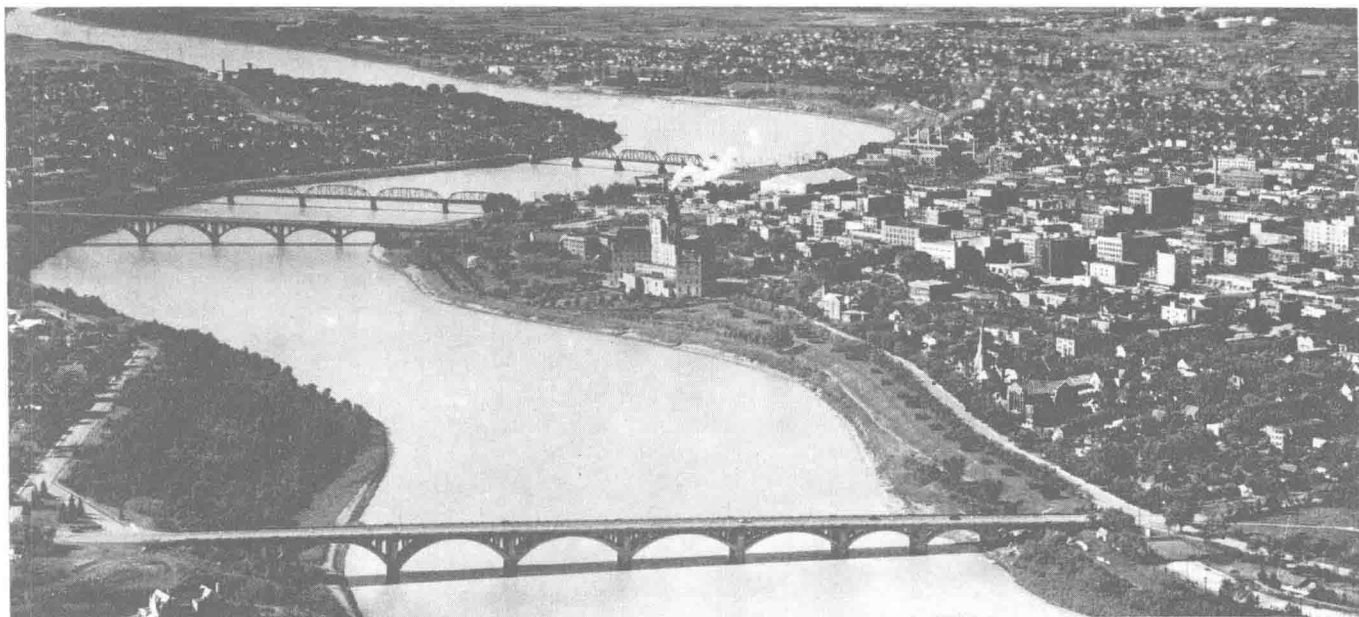
**Government and Public Finance.**—The lieutenant governor, appointed by the federal government, is the titular head in the province; he acts on the advice of the executive council, headed by the premier and comprised of selected members of the provincial legislature. The statutory number of members of the legislature is 55; they are elected for five years unless the assembly is dissolved sooner. There is a nonpolitical civil service. The province is represented at Ottawa by six senators (after 1915) and by members of the house of commons according to population; the 1952 Representation act gave Saskatchewan 17 members.

Through Saskatchewan's first 25 years as a province, the Liberal party remained in control, to be replaced for one five-year term through the worst of the drought and depression years by a Conservative administration. The Liberal party then returned, but the growing unrest and organization of farmer groups and their dissatisfaction with the control over the prairie economy exerted by eastern interests contributed to the election in 1944 of a social democratic party entitled the Co-operative Commonwealth federation (C.C.F.), headed provincially by the premier, T. C. Douglas. By 1960 there was elective municipal government in 11 cities, 106 towns, 372 incorporated villages and 296 rural municipalities. There are no counties.

Public revenue in Saskatchewan as in other provinces is drawn from retail sales and income taxes, licences, royalties and crown corporation profits; under a dominion-provincial tax rental agreement the dominion compensates Saskatchewan for income and corporation taxes, formerly levied by the province. Provincial revenue increased from under \$12,000,000 in 1921 to over \$140,000,000 in the second half of the 20th century. After the economic crisis of the 1930s, stringent provincial controls were imposed on municipal borrowing.

**Education.**—Throughout Canada the control of education is vested in the provinces. Elementary education in Saskatchewan is public, undenominational, compulsory and free of charge. Private denominational schools are permitted if they conform to the general standard. Both classes of schools are supported by public funds. Enrollment in public day schools totals about 200,000, in private schools about 3,000. Other provincial institutions include a correspondence school, a school for the deaf, two teacher training colleges and a technical institute. Provincial loans and scholarships are available to university, teachers college or nursing school students. The University of Saskatchewan at Saskatoon, with an affiliated college in Regina, offers a wide variety of advanced academic training and extension services, particularly in agriculture.

**Health and Welfare.**—Universal compulsory prepaid medi-



### SCENES OF SASKATCHEWAN

*Above:* South branch of the Saskatchewan river seen at Saskatoon, second largest city of the province. The river joins its north branch at a point about 100 mi. north of Saskatoon and continues east into Manitoba where it drains into Lake Winnipeg

*Left:* Combines harvesting wheat on a farm near Swift Current, southwest Saskatchewan. Agriculture is the principal industry of the province which produces annually more than 50% of all the wheat raised in Canada

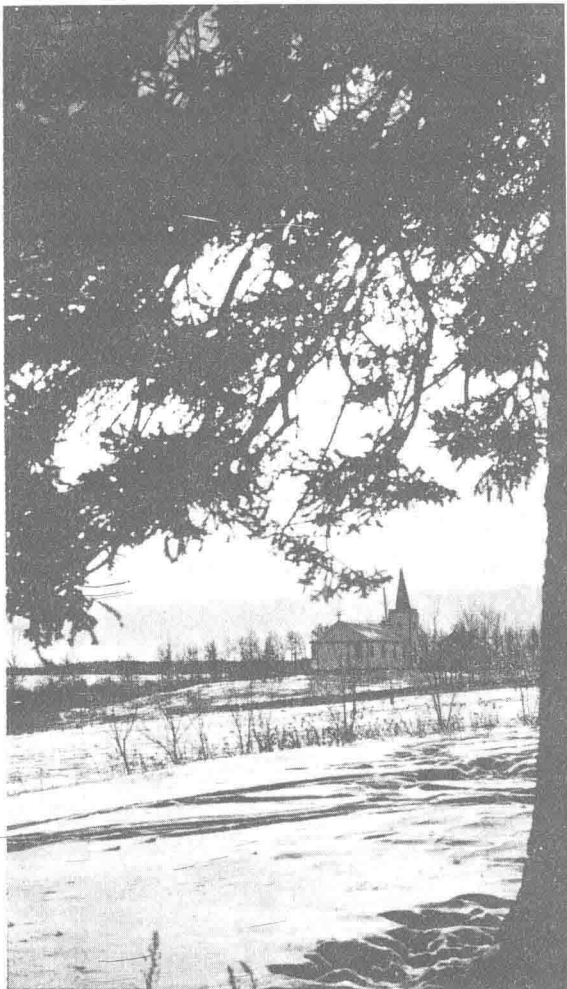
*Below:* Cattle roundup on a 54,000 ac. ranch near Abbey, on the edge of the Great Sand hills of southwest Saskatchewan. About 30% of the gross income of Saskatchewan farmers comes from cattle and other livestock



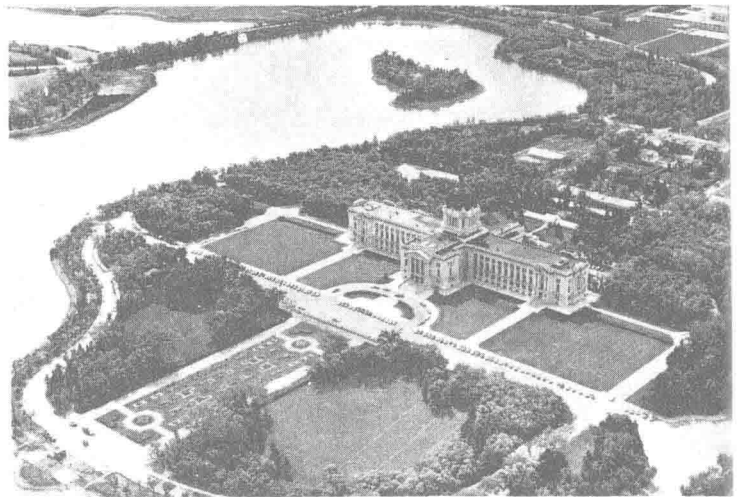
# SASKATCHEWAN



Mobile sawmill operating in a forest in the Porcupine hills, east central Saskatchewan. Forest products of the province are valued at about \$9,000,000 a year



Anglican church at La Ronge, one of the few settled places in Saskatchewan north of the 55° parallel. The town is a fur trading centre for Cree Indian trappers



Legislative building and grounds, Regina, capital and largest city of Saskatchewan. The building, which houses the provincial parliament, was constructed between 1908 and 1912. Virtually all of the landscaping of the grounds, as well as of the city generally, is artificial. The area was a barren plain when Regina, first known as Pile O' Bones, was founded



Potash mine and shipping centre near Saskatoon. The industry was developed after World War II. The Saskatchewan reserves were believed to be the world's largest



cal insurance established under the Medical Care Insurance act of 1961 went into effect July 1, 1962. It was strenuously opposed by the College of Physicians and Surgeons and the majority of Saskatchewan's 900 doctors withdrew ordinary medical services for about three weeks until a series of agreements was reached. The act was amended to provide safeguards for professional freedom and opportunity both for doctors to practise outside the plan and for voluntary insurance schemes to continue to operate; the principles of universal coverage and administration through a public agency responsible to the government were preserved. The government-sponsored hospital services plan covers more than 95% of the total population. Welfare programs include old-age security supplementary allowances, blind persons' allowances, old-age assistance, mothers' allowances and social aid.

**Production.**—Until well after World War II, Saskatchewan's economy was primarily agricultural. During the war years the output of nonfarm industry represented just 20% of the value of total commodity production. The growth of the petroleum, mining, manufacturing and construction industries was rapid in the postwar years and by 1958 nonagricultural industries accounted for 65% of gross commodity production.

**Agriculture.**—Agriculture accounted for 66% of the net value of all production over the ten-year period to 1958 but for less than 50% in the 1960s. Grain crops lead production; the average wheat crop for this period was 277,000,000 bu. or 57% of Canada's total. Long-term average yields for wheat, oats and barley are 15, 29 and 22 bu. per acre, respectively. Other major field crops are flax, rye and forage. Livestock production expanded during the 1950s and 1960s to add stability to the agricultural economy. The value of all livestock on Saskatchewan farms was estimated at \$300,000,000. Gross farm income from this source was about 30% of total farm income.

The climate limits production of many orchard and specialty crops, but research, experimentation and assistance programs of provincial and federal departments of agriculture and the provincial university have assisted greatly in improving this and the entire agricultural situation. In the 1950s the average size of Saskatchewan's 103,000 farms was 607 ac. and the average total investment per farm was \$20,615. Investment in farm mechanization is exceptionally high.

Minimum economic farm-unit size varies from several sections per family (a section being 640 ac.) in the arid southwest to between one-half and one section in regions with good soil and moisture conditions. Nearly 38% of Saskatchewan's farms are fully owned by operators. Over 40,000,000 ac. are under cultivation and very little suitable arable land remains uncultivated. Irrigation projects, such as that on the South Saskatchewan river, are planned to provide water for land already in agricultural use. The last free homestead land was taken up in 1930.

**Forestry.**—The accessible commercial forest zone in Saskatchewan covers 38,000 sq.mi. Despite heavy exploitation early in the 20th century and during World Wars I and II, inventories carried out in the 1950s indicated a very large increment in both saw timber and pulpwood species, totaling 232,000,000 cu.ft. per year, with large volumes ready for cutting. The remote location in relation to major markets retarded postwar development of forest industries, particularly pulp and paper, and the annual market value of production in the 1960s averaged less than \$10,000,000, with white spruce the most used species, followed by jack pine and black spruce. After World War II the provincial government implemented conservation and development policies in forest management, organized a parachute forest-fire suppression service and launched an extensive program of forest access road construction.

**Fish and Fur.**—The most important commercially fished lakes are in the north. They include Athabasca, Reindeer, Wollaston, La Ronge and six others which all support fish-processing and freezing plants serving many lesser lakes as well. These allow better utilization, particularly in summer operations, and a more stable industry. Air transport of produce is necessary in some instances. Major commercial fish species are whitefish, lake trout and pickerel. The provincial catch averages over 10,000,000 lb.

annually, with an average market value of \$1,600,000. The expanding northern mink-rearing industry consumes 5,600,000 lb.

The wild fur industry remains important to a small section of the province's people as a supplementary source of income, with an annual market value of more than \$2,000,000. A provincial government marketing service established after World War II did much to stabilize the industry.

**Minerals.**—The metals and petroleum industries made great progress after World War II. The value of output grew from only \$2,000,000 in 1931 to \$36,000,000 in 1949 and to more than \$200,000,000 by the 1960s. Base-metal operations started early in the 1930s at Flin Flon on the province's eastern boundary and contributed over \$30,000,000 of the total mineral output. From a slow start based on the heavy crude oils of the Lloydminster area, the petroleum industry expanded rapidly through the 1950s to produce more than 55,000,000 bbl. valued at over \$100,000,000 by the 1960s. The uranium industry started production in 1954 and by 1958 reached a milling capacity of 4,500 tons of ore daily, with seven mines operating, all in the Uranium-Beaverlodge area. Production was reduced with the drop in demand after 1959 for uranium for military purposes. Other leading minerals are zinc, coal, sodium sulfate, gold and salt. Late in 1958 Canada's first potash mine started production near Saskatoon at a rated annual capacity of 600,000 tons and the first potash from the Esterhazy field was produced in 1962.

Exploration in the south for petroleum was still very active. Vast areas of the Pre-Cambrian north had not been intensively explored in spite of an apparent high potential. A northern development road-construction program was undertaken to facilitate prospecting and exploration. Reserves in the south of industrial minerals, potash and lignite coal appear to be relatively unlimited.

**Power.**—The major developed source of electric power in Saskatchewan in the early 1960s was the surface lignite coal deposits of the Souris valley, which provide relatively cheap fuel for thermal generation. Most of Saskatchewan (urban and rural) receives electricity services under a provincial government plan implemented by the Saskatchewan Power corporation. This agency, which controls the province's hydroelectric potentials, undertook studies in 1958 and 1959 of two sites on the Saskatchewan river system with an estimated combined potential of 500,000 h.p.

The hydroelectric potentials of the northern rivers, chiefly the Churchill and the Fond du Lac, had not been completely determined. One Churchill river site of 100,000 h.p. was developed in the early 1930s to serve the Flin Flon mining operations. Total electric energy generated in Saskatchewan amounts to 1,500,000,000 kw.hr. annually.

**Manufacturing.**—Resources development in Saskatchewan stimulated a growth of secondary industries, and manufacturing made steady advances after World War II. Manufacturing production climbed from \$215,000,000 in 1949 to \$341,000,000 in 1959. In the 1960s the province had about 1,200 manufacturing operations employing an estimated 14,000 persons.

Postwar development brought the province new industries producing cement, wire and cable, paper products, steel pipe, clay products, building board, transformers, mobile trailer homes and a variety of operations which serve the oil and gas industries. Total capacity of the nine oil refineries in the province was 71,000 bbl. per day, with the two largest in Regina. The province's first steel mill went into production in 1960.

**Recreation.**—Prior to World War II little attention was paid to the province's recreation resources. After the war, however, major development took place, prompted by local and tourist demands resulting from easier transportation and greater leisure and prosperity. Resident and nonresident angling and hunting licence sales increased from 61,000 to 215,000 in a ten-year period. Many new businesses were established, particularly in the north, to serve the sportsmen's needs. Provincial resources authorities intensified research and improved management techniques in an effort to ensure sustained yields.

The lake and forest scenery of the northern Pre-Cambrian land-

scape and the many lakes still inaccessible to sportsmen other than by float aircraft in the 1960s appeared to ensure broad expansion in the province's tourist industry as northern access improved.

Use of the northerly Prince Albert National park increased greatly for summer family recreation in the 1950s and 1960s. A comparable increase was evident in the use of the developed provincial parks in the Cypress hills, at Moose mountain in the southwest and Duck mountain near Kamsack.

**Communications.**—The southern populated area is well netted with railways. Main trans-Canada lines serve Regina and Saskatoon east and west, as well as Moose Jaw, Swift Current, North Battleford and Yorkton, with good connections to Minneapolis and Chicago. Although northern Saskatchewan is trackless, the province had over 8,700 of Canada's almost 60,000 mi. of track in the 1960s. In 1960 improved municipal road mileage totaled 95,000, provincial highway mileage about 6,500 with graveled surface and about 1,500 with hard-top surface. The Trans-Canada highway passing through Regina, Moose Jaw and Swift Current was completed in Saskatchewan in 1957.

Trans-Canada Air Lines services Regina and Saskatoon regularly east and west. Regular north-south and intercity aircraft routes cover most of the province, including the extreme north. Saskatchewan Government Telephones corporation services all cities and towns and much of rural Saskatchewan. Government-operated two-way radio services all northern points from Prince Albert.

Saskatchewan has no seaports and the rivers are generally not navigable. Lake Athabasca, however, allows lake transport from the railhead in northern Alberta to penetrate to the centre line of northern Saskatchewan.

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(C. S. Br.)

**SASKATCHEWAN RIVER** (RAPID RIVER), a river system of Alberta and Saskatchewan provinces, Can. Two large streams, the North and South Saskatchewan, which have their headwaters in the Rocky mountains in Alberta, cross the Saskatchewan boundary 200 mi. apart, unite east of Prince Albert and continue flowing eastward to empty into Lake Winnipeg. Through much of their courses both streams are well contained in deep immature valleys gouged out by escaping glacial melt water. Major tributaries are the Battle, joining the north branch, the Bow, Belly and Red Deer, joining the south branch, and the Carrot and Sturgeon Weir joining the main Saskatchewan. The length of the united Saskatchewan is 369 mi. and the total length to the head of the Bow is 1,205 mi. The Saskatchewan is believed to have been first explored by Henry Kelsey in 1690.

In the fur-trade days the river system served as an important transportation route and numerous forts and trading posts, such as Cumberland House, Carlton House, Ft. Pitt and Ft. Battleford, were located along its banks during the 18th and 19th centuries. It was later plied by steam-driven river boats in the early days of settlement, and in the forested area in Saskatchewan it served for log and lumber transport. It is now navigated only in its lower reaches.

Hydroelectric development on the river began in the late 1950s; see SASKATCHEWAN: *Power*.

(C. S. Br.)

**SASKATOON**, a city in the province of Saskatchewan, Can., was founded in 1883 as the proposed capital of a temperance colony and named after a local edible berry (Cree *Missaskatoonina*). Pop. (1961) 95,526. It is situated on the banks of the South Saskatchewan river 150 mi. N.W. of Regina, almost at the centre of the settled area of the province. Both major Canadian railway systems serve the city and major provincial highways converge on it. It is served by Trans-Canada Air Lines and has regular air service with other Saskatchewan cities and the far north.

It has daily and periodical newspaper services and television and radio stations; one radio station is French speaking to serve French communities to the north.

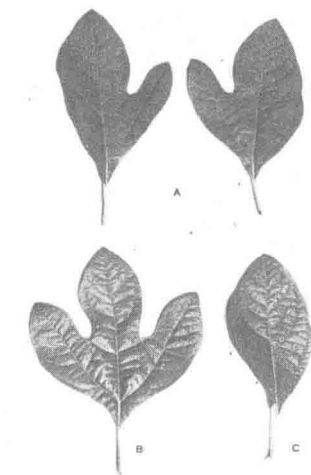
Its central position gives Saskatoon wide freight-control and distribution advantages in the province's famous wheat lands. It enjoyed rapid physical expansion and economic development after World War II. It is a major centre for grain storage and flour milling and also for livestock marketing and meat packing. It contains an oil refinery and iron foundries and serves a major potash-mining and refining industry in its vicinity.

It is the seat of the University of Saskatchewan and several affiliated colleges, a university hospital, a school of medicine, a teacher's college and school for the deaf, a National Research council laboratory and the Saskatchewan Research council headquarters.

The university school of agriculture and experimental farm have made varied and major contributions to agriculture and rural life throughout the province.

(C. S. Br.)

**SASSAFRAS** (*Sassafras albidum*), a North American tree of the laurel family (Lauraceae), called also ague tree, with aromatic bark and foliage. It is native to sandy soils from Maine to Ontario and Iowa and south to Florida and Texas. While usually a small tree, it sometimes attains a height of 80 ft. or more. It has furrowed bark, bright green twigs and entire, mitten-shaped or three-lobed leaves, the three forms often on the same twig. The yellow flowers, borne in small clusters, are followed by dark blue berries.



JOHN H. GERARD  
SASSAFRAS (*S. ALBIDUM*) LEAVES.  
THE THREE FORMS, (A) MITTEN-  
SHAPED, (B) THREE-LOBED AND (C)  
ENTIRE, ARE OFTEN ON THE SAME  
TWIG

The root, especially its bark, is used in household medicine and in root beer; it yields oil of sassafras, used in perfumery. See OREGON MYRTLE; SPICEBUSH.

**SASSANID** (SASSANIAN DYNASTY or SASANIAN), the ruling dynasty of the neo-Persian empire founded by Ardashir I in A.D. 226 and destroyed by the Arabs in 637. The dynasty is named after Sāsān, an ancestor of Ardashir I. See PERSIA.

**SASSARI**, a town and archiepiscopal see of Sardinia, Italy, capital of the province of Sassari, in the northwest corner of the island, 12½ mi. S.E. of Porto Torres by rail, on the north coast, 762 ft. above sea level. Pop. (1957 est.) 81,325 (commune). The town is modern, with spacious streets and squares. S. Maria di Betlemme has a good façade and Romanesque portal of the end of the 13th century. The museum in the university has an interesting collection of antiquities from all parts of the island, belonging to the prehistoric, Phoenician and Roman periods. Eleven miles to the east is the Trinità di Saccargia (12th century) with a lofty campanile, one of the finest Pisan churches in the island.

The name, in the form Thatari, first occurs in the 12th century A.D. when a church of S. Nicola is mentioned.

The town was in existence in 1217, when a body of Corsicans, driven from their island by the cruelties of a visconti of Pisa, took refuge there and gave their name to a part of it. In 1288, four years after the defeat of Meloria, Pisa ceded Sassari to Genoa; but Sassari enjoyed internal autonomy, and in 1316 published its statutes (still extant). In 1323 Sassari submitted to the Aragonese king. It was sacked by the French in 1527.

**SASSETTA** (STEFANO DI GIOVANNI) (1392?-1450), was the greatest Siennese painter of the middle 15th century. The date and place of his birth are not known, but it is believed that he was born in Cortona and that his parents moved to Siena. During the time he was an apprentice, great works of art were being executed in Siena by famous artists whose influence is traced in some of

Sassetta's works.

His earliest dated work is an altarpiece designed for a chapel maintained by the Arte della Lana in Siena. Before this was completed he was engaged in the Opera del Duomo, and this connection brought him many important commissions.

Sassetta's paintings represent the religious trend of the time. He possessed a unique faculty of developing legend. His paintings show vitality, a facile quality of design and delicate pure colour. Some of his many works survive as fragments, as the chapels in which they had been painted were destroyed by earthquake. One of his best-known works is the "Journey of the Magi," in the Metropolitan Museum of Art, New York city. "The Meeting of St. Anthony and St. Paul," in the National Gallery of Art, Washington, D.C., "The Marriage of St. Francis and Poverty," in the Musée Condé, at Chantilly, and "St. Francis and the Wolf of Gubbio," in the National gallery, London, are among his other well-known paintings.

Sassetta's last work, left unfinished, was to have been a fresco of the coronation of the Virgin, painted over the Porta Romana. He died in Siena in 1450.

\* **SASTRI, V. S. SRINIVASA** (1869–1946), Indian statesman, was born of poor Brahmin parents at Valangiman, near Kumbakonam, Madras, on Sept. 22, 1869. He started life as a schoolmaster, but, deeply impressed by the rules of the Servants of India society, he was admitted to membership early in 1907 and succeeded to the presidency in 1915. Elected to the viceregal legislative council in 1916, he soon came to the front as the greatest Indian orator of his day. He gave discriminating support to the Montagu-Chelmsford reforms and was elected a member of the new council of state when the reforms took effect. In 1921 he served on the Indian Railway committee; represented India at the Imperial conference in London, at the League of Nations assembly at Geneva, and at the Washington conference on the reduction of naval armaments. The same year he was called to the privy council, being the third Indian to receive this distinction, and was made a freeman of the City of London. In 1922 he was deputed to Australia, New Zealand and Canada to confer with the respective governments as to the best methods of practical interpretation of the resolution of the 1921 Imperial conference on the rights of citizenship of lawfully domiciled Indians, and he achieved definite results.

In 1927 Sastri accepted appointment as first agent-general to the government of India in South Africa, with the hearty approval of Gandhi. During the first session of the round-table conference in London (Nov. 12, 1930–Jan. 19, 1931) he was an active member. In 1937 he was appointed by the government of India to inquire on Indian labour conditions in Malay. Sastri died on April 17, 1946, in the Madras presidency.

(F. H. BR.; X.)

**SATAN** is the English transliteration of a Hebrew word for "adversary" in the Old Testament. With the definite article the Hebrew word denotes "the adversary" par excellence, mainly in the Book of Job where the adversary comes to the heavenly court with the "sons of God" (Job i, 6). His task is to roam (the Hebrew word here has a play on sounds with the word "satan") through the earth (like a contemporaneous Persian official) seeking out acts or persons to be reported adversely (to the king); his function thus is the opposite of that of the "eyes of the Lord," which roam through the earth strengthening all that is good (II Chron. xvi, 9). Satan is cynical about disinterested human goodness and is permitted to test it under God's authority and control and within the limits God sets. (As G. Papini points out, the relations in Job between God and Satan are far closer than is usually imagined; Satan, too, belongs to the spiritual and supernatural world.) (See JOB.)

In the New Testament the Greek transliteration *Satanas* is used and this usually appears as "Satan" in English translations. He is spoken of as the prince of evil spirits, the inveterate enemy of God and of Christ, with his throne among men (Rev. ii, 13) and takes the guise of an angel of light (II Cor. xi, 14). He can enter a man and act through him (John xiii, 27), almost as the Spirit of God in Old Testament thought could clothe itself in Gideon

and rush on Samson; hence a man can be called Satan because of his acts or attitude (Matt. xvi, 23). By his subordinate demons Satan can take possession of men's bodies, afflicting them (II Cor. xii, 7) or making them diseased (Matt. xii, 26; Luke xi, 18). To him sinners are delivered for the destruction of the flesh that the spirit may be saved (I Cor. v, 5). After the preaching of the 70 disciples, during which devils were subjected to them, Jesus saw Satan fall like lightning from heaven (Luke x, 18). According to the visions in the Book of Revelation, when the risen Christ returns from heaven to reign on earth, Satan will be bound with a great chain for a thousand years, then be released, but almost immediately face final defeat and be cast into eternal punishment (Rev. xx, 2, 7–10). He is identified with the ancient serpent (Rev. xii, 9, xx, 2; cf. Gen. iii). His name, Beelzebub, used in the Gospels mainly in reference to demoniac possession, comes from the name of the god of Ekron, Baalzebub (II Kings i). (See BEELZEBUL.) He is also identified with the devil (*diabolos*), and this term occurs more frequently in the New Testament than "Satan." In the Koran the proper name "Satan" is used.

In Hebrew thought in the Old Testament there is no suggestion of any dualism, whether temporal, spatial or ethical. God himself forms light and creates darkness, makes weal and creates woe (Isa. xlv, 7). The evil spirit that terrifies men and leads them to murderous action is from the Lord (I Sam. xvi, 14). Hostile heathen powers could be spoken of as fighting against God and his people Israel, but they were the "rod of his anger" (Isa. x, 5), although there is an interesting interchange of God and Satan between two Old Testament writers (II Sam. xxiv, 1; I Chron. xxi, 1). There was thought to be a constant fight between light and darkness, chaos and law, life and death. Myths of which fragments survive in the Old Testament spoke of God's fight against the dragon of chaos, called Rahab or Leviathan (e.g., Job ix, 13; Isa. xxvii, 1) and this fight, which took place at creation, continues constantly. Any philosophy of evil culled from the Bible must find room for evil within the concept of God and within his purpose: his sun and rain, poured out on the good and the evil, make both weeds and wheat grow.

In later Judaism, under Persian influence, a form of dualism developed, finding expression in cosmic speculation and in the idea of successive millenniums; traces can be seen in the Book of Daniel and in Revelation. Two ages or aeons of world history were spoken of as "this age" and "the age to come." In the former, the cosmic power of evil prevails, known variously in apocalyptic writings as Satan, Beliar, Mastema or Azazel, and identified with death and the evil impulse in man; this evil power will be overthrown by the messianic kingdom foretold in the Old Testament, and God will reign on a re-created earth, in paradise or in heaven. The devil and all his hosts were thought of as fallen angels who, like the heathen powers hostile to God, had lapsed through pride and envy into sin and abused their power as God's deputies. But Jewish thought did not depict the fallen angels as the strong energetic element in life, in contrast to the anemic, reasonable forces of good, as Blake accuses Milton of doing.

Persian dualism conceived of the conflict of good and evil as existent from the beginning, outside man, who could take sides and assist one or the other (see DUALISM). Later Jewish dualism thought man himself and all nature and creation were affected by sin and the fall of man, and needed a new creation to remove the taint of evil. This was to be achieved not, as in the Old Testament, by a new heart and spirit in man (Jer. xxxi, 33 ff.; Ezek. xviii, 31) but by a dramatic divine intervention to overthrow Satan, whether in human form as the Anti-Christ (*q.v.*) or the beast or false prophet, or as a supernatural being.

Biblical ideas, mediated through the speculation of postbiblical Judaism, were transmitted to the theology of early Christian writers, in which the figure of Satan played a large part in the discussion of the nature of evil, the meaning of salvation and the purpose and efficacy of the atoning work of Christ. Early and medieval church writers discussed at length problems raised by belief in the existence of a spiritual being such as Satan in a universe created and sustained by an all-powerful, all-wise and all-loving God. Under the influence of the 18th-century revolt against



belief in the supernatural, liberal Christian theology tends to treat the biblical language about Satan as "picture thinking" not to be taken literally—as a mythological attempt to express the reality and extent of evil in the universe, existing outside and apart from man but profoundly influencing the human sphere. See also **DEVIL**.

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**SATARA**, the headquarters city of Satara North district, Bombay state, India, and of the former British-Indian district of Satara. The town, 10 mi. from Satara Road station on the Southern railway, is named after the "seventeen" walls, towers and gates which the fort was supposed to have had. It is 2,320 ft. above sea level, near the confluence of the rivers Kistna and Vena, 56 mi. S. of Poona. Pop. (1951) 38,521.

On the overthrow of the Yadava dynasty in 1312 Satara passed to the Mohammedan power, which was consolidated in the reign of the Bahmani kings. On their decline toward the end of the 15th century the Bijapur kings asserted themselves, and under them the Marathas rose and laid the foundation of an independent kingdom with Satara as its capital. The Maratha peshwas, who removed the capital to Poona won the ascendancy in the 18th century, but after the war of 1817 the British restored the rajah, and assigned to him the principality of Satara, with an area much larger than the subsequent district. His successor dying without male heirs in 1848, the state was resumed by the British. The district thus formed was divided after India became independent in 1947. The Satara Jagirs were a group of five states—Akalkot Bhor, Jath, Aundh, Phaltan—tributary to Satara; the last two were controlled by the Bombay governor till 1933 through the Satara Agency.

**SATARA NORTH DISTRICT** comprises the old Satara district, less three subdivisions, with the addition (March 8, 1948) of Phaltan state and parts of five other states. Area 4,041 sq. mi.; pop. (1961) 1,427,020. Headquarters: Satara. The Sahyadri, or main range of the Western Ghats, runs down the west side. The north is drained by the Bhima river system. The hill forests provide much timber and firewood. In some parts the average annual rainfall is over 200 in. The black loamy clay soil grows millet, pulses, oil seeds and sugar cane. Cotton cloth, blankets and brassware are manufactured.

**SATARA SOUTH DISTRICT** comprises four subdivisions of the old Satara district, with parts of six former principalities, added on March 8, 1948. Area 3,297 sq. mi.; pop. (1961) 1,229,640. Headquarters: Sangli ([1951] 50,287), the seat of two colleges of Poona university. The other main town is Miraj ([1951] 40,224). Soil, forest and crops are similar to those of Satara North, but rainfall is scanty and irrigation is from the Kistna river system. The Mahadeo range runs down the eastern border.

**SATELLITE**, in astronomy, a small opaque body revolving around a planet, as the moon around the earth (see **PLANET** and the articles on individual planets).

In the theory of cubic curves, Arthur Cayley defined the satellite of a given line to be the line joining the three points in which tangents at the intersections of the given (primary) line and curve again meet the curve.

**SATIE, ERIK LESLIE** (1866–1925), French composer, was born at Honfleur on May 17, 1866 (his mother being an Englishwoman), and studied at the Paris conservatoire. His early works proclaimed a persistent determination to be original, and were followed by a series of equally eccentric pianoforte pieces. He exercised influence, nonetheless, upon many of his younger French contemporaries of the "advanced" school, who hailed him as a prophet. But the public at large saw in him something of the *farceur*, and his interesting attempts to be daring did not seem to be accompanied by any commensurate genuine talent.

**SATIN**, a term strictly denoting a true silk texture developed with a perfectly even, smooth and glossy or lustrous surface on which either warp or weft threads preponderate and thus entirely obscure the other series of threads. The principle

of fabric structure observed in the construction of satin fabrics is that known as the "satin" weave, which constitutes one of the simplest elementary weaves in which the intersections of the warp and weft threads are so evenly and perfectly distributed that there are no pronounced textural features discernible in the fabric, as the threads, either of warp or of weft only, are displayed on the surface with the least possible amount of deflection by their interlacement with the threads of the other system.

A true silk satin fabric may be produced either with a warp surface or a weft surface of pure silk, with the reverse side of cotton or other textile material. In either case, the silk must be of the best quality and perfectly even.

The term "satin," however, is now applied as a general description for many fabrics constructed on the principle of the satin weaves. For example, cotton fabrics constructed on the satin-weave basis are described as "satin" or "sateen" according to whether they are developed with a warp surface or a weft surface. It is also applied indiscriminately to many other fabrics having a smooth and lustrous finish. (H. N.)

**SATIN SPAR**, a name given to certain fibrous minerals which exhibit, especially when cut and polished, a soft satiny or silky lustre, and are therefore sometimes used as gem or ornamental stones.

Such fibrous minerals occur usually in the form of veins or bands, having the fibres disposed transversely. The most common kind of satin spar is a white finely fibrous gypsum, used for beads, etc.

Other kinds of satin spar consist of calcium carbonate, in the form of either aragonite or calcite (*qq.v.*).

See also **GYPSUM**.

**SATINWOOD**, a beautiful light-coloured hard wood, having a rich, silky lustre, sometimes finely mottled or grained, the produce of a moderate-sized tree, *Chloroxylon swietenia* (family Meliaceae), native to the subcontinent of India and to Ceylon. A similar wood, known under the same name, is obtained in the West Indies, the tree being probably a species of *Xanthoxylum* (family Rutaceae).

Satinwood was in demand for rich furniture about the end of the 18th century, the fashion then being to ornament panels of it with painted medallions and floral scrolls and borders. It is used for inlaying and small veneers.

**SATIRE**, in its literary aspect, may be defined as the expression in adequate terms of the sense of amusement or disgust excited by the ridiculous or unseemly, provided that humour is a distinctly recognizable element, and that the utterance is invested with literary form. Without humour, satire is invective; without literary form, it is mere clownish jeering. The first exercise of satire no doubt consisted in gibing at personal defects. To dignify satire by rendering it the instrument of morality or the associate of poetry was a development implying considerable advance in the literary art. In the accounts that have come down to us of the writings of Archilochus, the first great master of satire, we seem to trace the elevation of the instrument of private animosity to an element in public life. Simonides of Amorgus and Hipponax were distinguished like Archilochus for the bitterness of their attacks on individuals, with which the former combined a strong ethical feeling and the latter a bright active fancy. The loss of their writings, which would have thrown great light on the politics as well as the manners of Greece, is to be lamented. With Hipponax the direct line of Greek satire is interrupted; but two new forms of literary composition, capable of being the vehicles of satire, almost simultaneously appear. Although the original intention of fable does not seem to have been satirical its adaptability to satiric purposes was soon discovered. A far more important step was the elevation of the rude fun of rustic merry-makings to a literary status by the evolution of the drama from the Bacchic festival. The means had now been found of allying the satiric spirit with exalted poetry, and their union was consummated in the comedies of Aristophanes.

A rude form of satire had existed in Italy from an early date in the shape of the Fescennine verses, the rough and licentious pleasantry of the vintage and harvest. As in Greece, these even-



tually were developed into a rude drama. Verse, "like to the Fescennine verses in point of style and manner," was added to accompany the mimetic action, and these probably improvised compositions were entitled *Saturae*, a term denoting *miscellany*, and derived from the *satura lanx*, "a charger filled with the first-fruits of the year's produce."

The Roman people thus had originated the name of satire, and, in so far as the Fescennine drama consisted of raillery and ridicule, possessed the thing also; but it had not yet assumed a literary form among them. The real inventor of Roman satire is Gaius Lucilius (148-103 B.C.). The fragments of Lucilius preserved are scanty, but the verdict of Horace, Cicero and Quintilian demonstrates that he was a considerable poet. It is needless to dwell on compositions so universally known as the *Satires* of Lucilius's successor Horace, in whose hands this class of composition received a new development, becoming genial, playful and persuasive. The didactic element preponderates still more in the philosophical satires of Persius. Yet another form of satire, the rhetorical, was carried to the utmost limits of excellence by Juvenal, the first example of a great tragic satirist. Nearly at the same time Martial, improving on earlier Roman models now lost, gave that satirical turn to the epigram which it only exceptionally possessed in Greece, but has ever since retained. About the same time another variety of satire came into vogue, destined to become the most important of any. The Milesian tale, a form of entertainment probably of Eastern origin, grew in the hands of Petronius and Apuleius into the satirical romance, immensely widening the satirist's field and exempting him from the restraints of metre. Petronius's "Supper of Trimalchio" is the revelation of a new vein, never fully worked till our days. As the novel arose upon the ruins of the epic, so dialogue sprang up upon the wreck of comedy. In Lucian comedy appears adapted to suit the exigencies of an age in which a living drama had become impossible. With him antique satire expires as a distinct branch of literature.

In the Byzantine empire, indeed, the link of continuity is unbroken, and such raillery of abuses as is possible under a despotism finds vent in pale copies of Lucian. The first really important satire, however, of the middle ages, is a product of western Europe, recurring to the primitive form of fable, upon which, nevertheless, it constitutes a decided advance. *Reynard the Fox* (see *FABLE*), a genuine expression of the shrewd and homely Teutonic mind, is a landmark in literature. It gave the beast-epic a development of which the ancients had not dreamed. About the same time, probably, the popular instinct, perhaps deriving a hint from Rabbinical literature, fashioned Morolf, the prototype of Sancho Panza, the incarnation of sublunar mother-wit contrasted with the starry wisdom of Solomon; and the *Till Eulenspiegel* is a kindred Teutonic creation, but later and less significant. *Piers Ploughman*, the next great work of the class, adapts the apocalyptic machinery of monastic and anchoritic vision to the purposes of satire. The clergy were scourged with their own rod by a poet and a Puritan too earnest to be urbane. The Renaissance, restoring the knowledge of classic models, enlarged the armoury of the satirist. Partly, perhaps, because Erasmus was no poet, the Lucianic dialogue was the form in the ascendant of his age. Erasmus not merely employed it against superstition and ignorance with infinite and irresistible pleasantry, but fired by his example a bolder writer, untrammelled by the dignity of an arbiter in the republic of letters. The ridicule of Ulrich von Hutten's *Epistolae obscurorum virorum* is annihilating, and the art of putting the ridicule into the mouth of the victim, is perhaps the most deadly shaft in the quiver of sarcasm. It was afterwards used with even more pointed wit though with less exuberance of humour by Pascal. Sir Thomas More cannot be accounted a satirist, but his idea of an imaginary commonwealth embodied the germ of much subsequent satire.

In the succeeding period politics take the place of literature and religion, producing in France the *Satyre Ménippée*, elsewhere the satirical romance as represented by the *Argenis* of Barclay, which may be defined as the adaptation of the style of Petronius to State affairs. In Spain, where no freedom of criticism existed, the satiric spirit took refuge in the *novela picaresca*, the prototype of Le

Sage and the ancestor of Fielding; Quevedo revived the mediaeval device of the vision as the vehicle of reproof; and Cervantes's immortal work might be classed as a satire were it not so much more. About the same time we notice the appearance of direct imitation of the Roman satirists in English literature in the writings of Donne, Hall and Marston. The prodigious development of the drama at this time absorbed much talent that would otherwise have been devoted to satire proper. Most of the great dramatists of the 17th century were more or less satirists, Molière perhaps the most consummate that ever existed; but, with an occasional exception like *Les Précieuses ridicules*, the range of their works is too wide to admit of their being regarded as satires. The next great example of unadulterated satire is Butler's *Hudibras*. Dignified political satire, bordering on invective, was carried to perfection in Dryden's *Absalom and Achitophel*. In France Boileau was long held to have attained the *ne plus ultra* of the Horatian style in satire and of the mock-heroic, but Pope was soon to show that further progress was possible in both. The polish, point and concentration of Pope remain unsurpassed, as do the amenity of Addison and the daring yet severely logical imagination of Swift; while the *History of John Bull* places their friend Arbuthnot in the first rank of political satirists.

The 18th century was, indeed, the age of satire. Serious poetry had for the time worn itself out; the most original geniuses of the age are decidedly prosaic, and Pope, though a true poet, is less of a poet than Dryden. In process of time imaginative power revives, but meanwhile Fielding and Smollett have fitted the novel to be the vehicle of satire and much beside, and the literary stage has for a time been almost wholly engrossed by a colossal satirist, a man who has dared the universal application of Shaftesbury's maxim that ridicule is the test of truth. The world had never before seen a satirist on the scale of Voltaire, nor had satire ever played such a part as a factor in impending change. As a master of sarcastic mockery he is unsurpassed; his manner is entirely his own; and he is one of the most intensely national of writers, notwithstanding his vast obligations to English humorists, statesmen and philosophers. English humour also played an important part in the literary regeneration of Germany, where Lessing, imbued with Pope but not mastered by him, showed how powerful an auxiliary satire can be to criticism. Another great German writer, Wieland, owes little to the English, but adapts Lucian and Petronius to the 18th century with playful if somewhat mannered grace. Goethe and Schiller, Scott and Wordsworth, are now at hand, and as imagination gains ground satire declines. Byron, who in the 18th century would have been the greatest of satirists, is hurried by the spirit of his age into passion and description, bequeathing, however, a splendid proof of the possibility of allying satire with sublimity in his *Vision of Judgment*. Two great satiric figures remain—one representative of his nation, the other most difficult to class. In all the characteristics of his genius Thackeray is thoroughly English; his satire is a thoroughly British article, a little solid, a little wanting in finish, but honest, weighty and durable. But Heine hardly belongs to any nation or country, time or place. In him the satiric spirit, long confined to established literary forms, seems to obtain unrestrained freedom.

In no age was the spirit of satire so generally diffused as in the 19th century, but many of its eminent writers, while bordering on the domains of satire, escape the definition of satirist. The term cannot be properly applied to Dickens, the keen observer of the oddities of human life; or to George Eliot, the critic of its emptiness when not inspired by a worthy purpose; or to Balzac, the painter of French society; or to Trollope, the mirror of the middle classes of England. If *Sartor Resartus* could be regarded as a satire, Carlyle would rank among the first of satirists; but the satire, though very obvious, rather accompanies than inspires the composition. The number of minor satirists of merit, on the other hand, is legion. James Russell Lowell's *Biglow Papers* represent perhaps the highest moral level yet attained by satire. Mallock, in his *New Republic*, made the most of personal mimicry, the lowest form of satire; Samuel Butler (*Erewhon*) holds an inverting mirror to the world's face with imperturbable gravity; the humour of Bernard Shaw has always an essential character of

satire—the sharpest social lash. One remarkable feature of the modern age is the union of caricature (*q.v.*) with literature.

(R. G.; X.)

**SATPURA**, a line of hills between the Narbada and Tapti rivers in central India. It is the western element of an upland series known collectively as the Satpura Line and including the Mahadeo hills, Maikal range and Chota Nagpur plateau. Stretching westward from about 85° 5' E. almost to the shores of the Gulf of Cambay this line is usually regarded as the northern limit of the Deccan plateau.

Historically it was important as a barrier to the southern advance of the Aryan invaders and it forms the frontier between Aryan and Dravidian India. The Satpura range proper is approximately 600 mi. long and reaches heights of more than 4,000 ft. It is mainly composed of Deccan lavas and is forested. It is plateaulike in build and bordered by steep scarps both to north and south. The main railway route from Bombay to the middle and lower Ganges crosses its lower section into the Narbada valley and proceeds by way of Jubbulpore to Allahabad. (T. HER.)

**SATRAP**, in ancient history, the name given by the Persians to the governors of the provinces. Cyrus the Great divided his empire into provinces; a definitive organization was given by Darius, who established twenty great satrapies and fixed their tribute. The satrap was the head of the administration of his province; he collected the taxes, controlled the local officials and the subject tribes and cities, and was the supreme judge of the province to whose "chair" every civil and criminal case could be brought. He was responsible for the safety of the roads and had to put down brigands and rebels. He was assisted by a council of Persians, to which also provincials were admitted; and was controlled by a royal secretary and by emissaries of the king. The regular army of his province and the fortresses were independent of him and commanded by royal officers; but he was allowed to have troops in his own service. The great provinces were divided into many smaller districts, the governors of which are also called satraps and hyparchs. The distribution of the great satrapies was changed occasionally, and often two of them were given to the same man. When the empire decayed, the satraps often enjoyed practical independence, especially as it became customary to appoint them also as generals-in-chief of their army district, contrary to the original rule. Hence rebellions of satraps became frequent from the middle of the 5th century; under Artaxerxes II occasionally the greater part of Asia Minor and Syria were in open rebellion. The last great rebellions were put down by Artaxerxes III. The satrapic administration was retained by Alexander and his successors, especially in the Seleucid empire, where the satrap generally is designated as *strategus*; but their provinces were smaller than under the Persians. (ED. M.)

**SATSUMA REBELLION**, an attempt to overthrow the newly established government of Japan led by Saigō Takamori (*q.v.*) in 1877. The rebellion led by Saigō in Satsuma province was the last of a series of warrior revolts against the government of the emperor Meiji.

These revolts were inspired by the dissatisfaction of elements of the warrior class with the reforms of the new government, which in modernizing Japanese society aimed at doing away with feudal privileges. Such reforms put the warrior class, so privileged under the old regime, on the same legal footing as the rest of the population; they abolished the warrior's right to wear swords, his exclusive privilege of bearing arms and his special rights pertaining to dress, food and living quarters. Most serious, perhaps, was the abolishment of the exclusive right to bear arms, and formation of a citizen army.

The Satsuma rebellion was the most determined and serious of the warrior revolts against liquidation as a privileged class. There was bitter and bloody fighting during the campaign, but in the end the better equipped and disciplined forces of the government's people's army prevailed. The warriors' bitterness thereafter took political rather than military forms; and embittered warriors became one of the main elements in the opposition political parties that now sprang up. See also JAPAN: History. (T. C. SH.)

**SATUN** (SETUI), a small Siamese (Thai) *changrad* or dis-

trict bordering Malaya. Area 1,031 sq.mi. Pop. (1956 est.) 60,004. It produces rice and rubber.

**SATURN** (SATURNUS), a Roman god whose cult was so overlaid with Greek features as to obscure his original native character. His name is commonly connected with Latin *satus*, and thus he is a god of sowing or seed. The ancients themselves regarded him as an importation and equated him with the Greek Cronus (*q.v.*), which may well be correct; there is some linguistic evidence (disregarding the connection with *satus*) that he came to Rome through Etruria. Further, he was worshiped in the Greek manner (*i.e.*, with head uncovered and not wrapped in the toga as was the Roman custom).

The remains of his temple at Rome, eight columns of the pronaos, still dominate the west end of the Forum at the foot of the *clivus Capitolinus*. The present remains are of a later rebuilding, but it was the oldest temple whose building is recorded, going back to the beginning of the republic. It served as the treasury (*aerarium Saturni*) of the Roman state. Saturn's cult partner is the obscure goddess Lua, whose name is connected with *lues* (plague or destruction) and to whom captive arms were sometimes burned. But he was also associated with Ops, the cult partner of Consus, through her identification with Rhea, wife of Cronus.

His great festival, the *Saturnalia*, became the most popular of Roman festivals, and its influence is still felt throughout the western world. Originally on Dec. 17, it was extended first to three and eventually to seven days. The date has been connected with the winter sowing season, which in modern Italy varies from October to January. Remarkably like the Greek *Kronia* (see CRONUS), it was the gayest festival of the year. All work and business were suspended. Slaves were given temporary freedom to say and do what they liked, and certain moral restrictions were eased. The streets were infected with a Mardi gras madness; a mock king was chosen (*Saturnalicus princeps*); the seasonal greeting *io Saturnalia* was heard everywhere; presents were freely exchanged, principally wax candles and little clay dolls (*sigillaria*). The cult statue of Saturn himself, traditionally bound at the feet with woolen bands, was untied, presumably to come out and join the fun. The influence of the *Saturnalia* upon the celebrations of Christmas and the New Year has been direct. Concerning the gift candles, the ancients had a quaint story that an old prophecy bade the earliest inhabitants of Latium send heads to Hades and *phota* to Saturn; that they interpreted this as meaning human sacrifices, but that Hercules advised them to use lights (the word *phos* means "light" or "man" according to accentuation) and not human "heads."

Another tradition regarding Saturn, fostered chiefly by the poets, made him an early Italian king, or perhaps Cronus in flight from Zeus, who established in Italy a new height of civilization (*Saturnia regna*) and a Golden Age (*aurea saecula*; cf. Virgil, *Aeneid*, viii, 319 ff.).

Saturday of course was named for Saturn and first appears (*Saturni dies*) in Tibullus I, iii, 18.

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(R. B. LD.)

**SATURN**, the sixth major planet in order of distance from the sun, and the most remote planet that was known before the discovery of Uranus in 1781. Its mean distance from the sun is about 885,900,000 mi. and its periodic time (time required to make a complete revolution about the sun) about 29½ years. Its synodic period, or the interval between oppositions, is 378 days. To the naked eye Saturn, when in opposition, always appears as a star brighter than the first magnitude, but in consequence of the changing phases of its rings it varies greatly in brightness, its light being approximately trebled when the rings are open to their greatest extent. As regards colour, the planet shines with a warm, yellowish light like that of Arcturus.

**Globe.**—In telescopic appearance the globe of Saturn exhibits strong resemblances to Jupiter. It is even more flattened at the poles, its polar and equatorial diameters being respectively about 67,000 and 75,000 mi.; it is less bright near the margin than at