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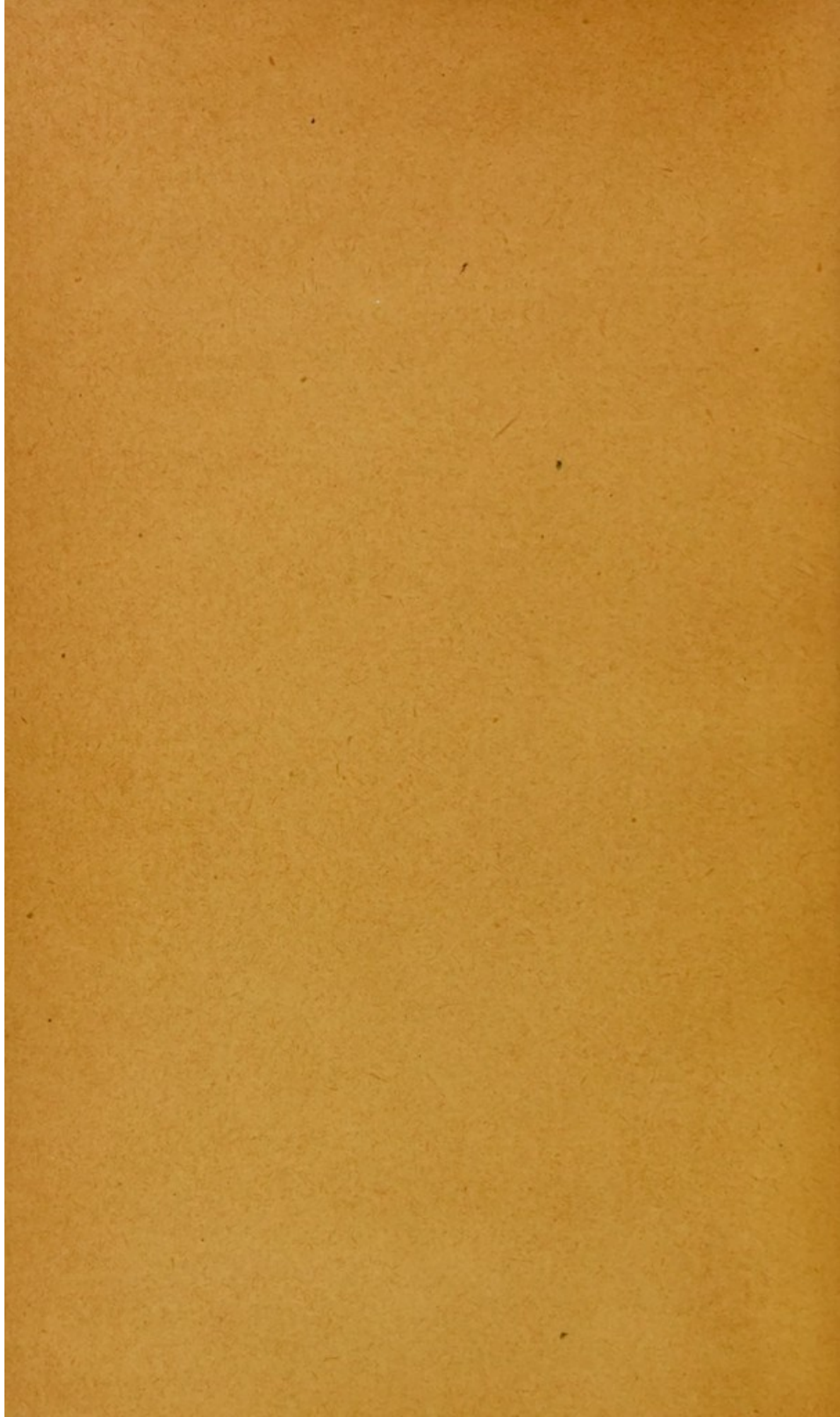
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SMITHSONIAN MISCELLANEOUS COLLECTIONS

VOLUME 60, NUMBER 16

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RACE THAT PEOPLED AMERICA

(WITH THREE PLATES)

BY

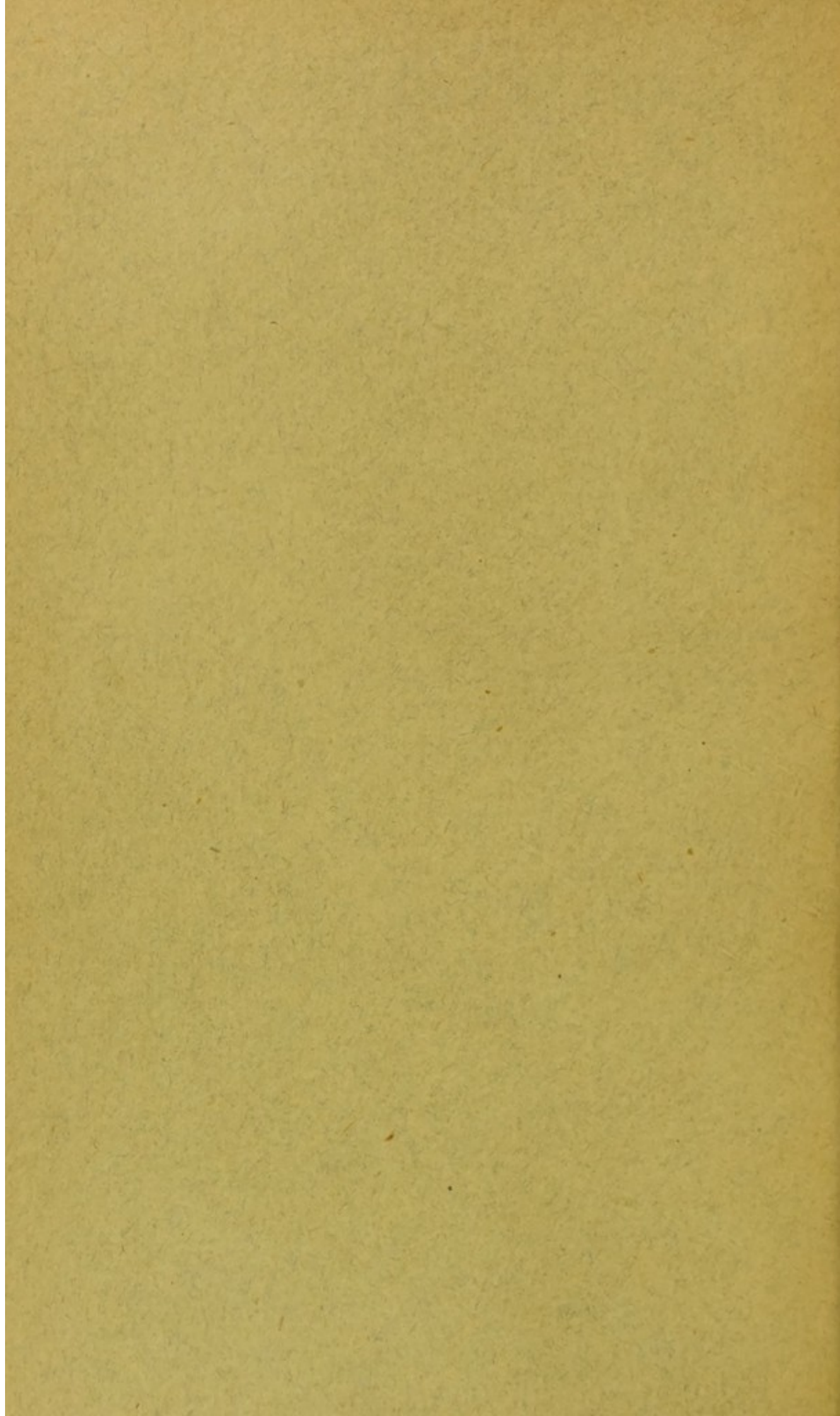
DR. A. HRDLIČKA

Curator of the Division of Physical Anthropology, U. S. National Museum



(PUBLICATION 2159)

CITY OF WASHINGTON
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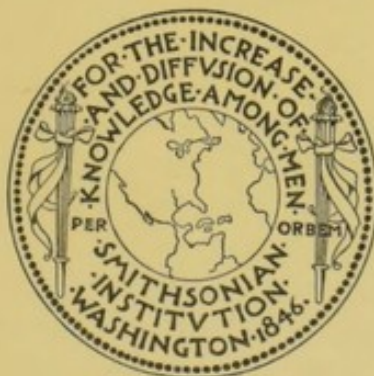
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REMAINS IN EASTERN ASIA OF THE RACE THAT PEOPLED AMERICA

(WITH THREE PLATES)

By DR. A. HRDLIČKA

CURATOR OF THE DIVISION OF PHYSICAL ANTHROPOLOGY, U. S. NATIONAL MUSEUM

During the summer of 1912 the writer visited, partly under the auspices of the Smithsonian Institution and partly in the interest of the Panama-Californian Exposition of San Diego, certain portions of Siberia and Mongolia in search for possible remains of the race that peopled America, and whose home, according to all indications, was in eastern Asia. Upon the return of the writer from his journey in September this brief report was presented at the International Congress of Prehistoric Anthropology and Archeology at Geneva.

The journey extended to certain regions in southern Siberia, both west and east of Lake Baikal, and to Mongolia as far as Urga. It furnished an opportunity for a rapid survey, from the anthropological standpoint, of the field and conditions in those regions, and was made in connection with a prolonged research into the problems of the ethnic nature and origin of the American aborigines carried on by the writer on this continent.

The studies of American anthropologists and archeologists have for a long time been strengthening our opinion that the American native did not originate in America, but is the result of a comparatively recent, post-glacial, immigration into this country; that he is physically and otherwise most closely related to the yellow-brown peoples of eastern Asia and Polynesia; and that in all probability he represents, in the main at least, a gradual overflow from north-eastern Siberia.¹

If our views concerning the origin of the Indian and his comparatively late coming into America be correct, then it seems there ought to exist to this day, in some parts of eastern Asia, archeological remains, and possibly even survivals, of the physical stock from which our aborigines resulted. For it could have been no small people that

¹For a summary of these opinions see "The Problems of the Unity or Plurality and the Probable Place of Origin of the American Aborigines" in *The American Anthropologist*, Vol. 14, No. 1, January-March, 1912.

sent us in the course of several thousand years the various more pronounced sub-types of the American Indian, which according to all indications have developed outside of America. As a matter of fact, we have searched and watched for evidence concerning such remains for many years, and every publication that dealt with archeological exploration in eastern Asia or brought photographs of the natives, has in one way or another strengthened our expectations.

No archeologic work on an adequate scale, however, and no comprehensive anthropologic investigation of the natives of eastern Asia, have as yet been carried out, and in consequence many points on which light was needed remained uncertain.¹ Under these circumstances the writer was very desirous to visit personally at least a few of the more important parts of eastern Asia, to observe what was to be found there, and to determine what should be done in those regions by anthropologists and archeologists interested in the problem of the identity and origin of the American Indian.

An opportunity to undertake something in this direction came at last during the present year; but the means were limited and necessitated a restriction of the trip to the more important and at the same time more accessible territory. The choice was made of certain parts of south-eastern Siberia and of northern Mongolia, including Urga, the capital of outer Mongolia, which encloses two great monasteries and is constantly visited by a large number of the natives from all parts of the country. Besides the field observations a visit was also made to the various Siberian museums within the area covered, for the purpose of seeing their anthropological collections.

It will not be possible to enter here into details of the journey and I shall, therefore, restrict myself to mentioning in brief the main results. Thanks to the Russian men of science and the Russian political as well as military authorities, my journey was everywhere facilitated, I was spared delays, was shown freely the existing collections, and received much valuable information.

I have seen, or been told, of thousands upon thousands of as yet barely touched burial mounds or "kourgans", dating from the present time back to the period when nothing but stone implements were used by man in those regions. These kourgans dot the country about the Yenisei and its affluents, about the Selenga and its tributaries,

¹It is only fair, however, that attention be called here to the Bogoraz and Jochelson work among the natives of Northern Siberia, as a part of the Jessup Expedition, for the American Museum of Natural History, New York City. Regrettably this work did not extend far enough to the south.

along the rivers in northern Mongolia, particularly the Kerulen, and in many other parts regarding which reliable information could be obtained. The little investigation that has been made of these remains is due, in the main, to Adrianov and his colleagues at Minusinsk, and especially to Professor Talko-Hryniewicz of Krakow, who was for many years the government physician at Kiachta. The mounds yield, according to their age, implements of iron, copper, bronze, or stone, occasionally some gold ornaments, and skeletons. The majority of these "kourgans" date doubtless from fairly recent times, corresponding to Ugrian or Turk or "Tatar"¹ elements, and to the modern Mongolian, and the skeletons found in them show mostly brachycephalic skulls, which occasionally resemble quite closely American crania of the same form. The older kourgans, on the other hand, particularly those in which no metal occurs, yield an increasing number of dolichocephalic crania, in which close resemblances with the dolichocephalic skulls of the American Indians are very frequent. To what people these older remains belong is as yet an unanswered question; but there are in certain localities, as for instance on the lower Yenisei, to this day remnants of native populations among whom dolichocephalic individuals are quite common, and these individuals often bear a most remarkable physical resemblance to the American Indian.

Besides mounds, the writer saw and learned of numerous large caverns, particularly in the mountains bordering the Yenisei River, which offer excellent opportunities for archeological investigation. Very little research work has thus far been done in these caverns, but some have yielded, to Jelieniev, stone implements that indicate old burials.

In regard to the living people, the writer had the opportunity of seeing numerous Buriats, representatives of a number of tribes on the Yenisei and Abacan Rivers, many thousands of Mongolians, a number of Tibetans, and many Chinese with a few Manchurians. On one occasion alone, that of an important religious ceremony, he had an opportunity to observe over 7,000 natives assembled from all parts of Mongolia. He has also seen photographs of members of some of the eastern Siberian tribes. Among all these people, but more especially among the Yenisei Ostiaks, the Abacan Katchinci and related groups, the Selenga Buriats, the eastern Mongolians, the Tibetans, the east Siberian Oroczi and the Sachalin Giliaks, there

¹ The term "Tatar" in Siberia is applied to large numbers of natives and covers a number of physically heterogeneous types.


are visible many and unmistakable traces of admixture or persistence of what appears to have been the older population of these regions, pre-Mongolian and especially pre-Chinese,¹ as we know these nations at the present day. Those representing these vestiges belong partly to the brachycephalic and in a smaller extent to the dolichocephalic type, and resemble to the point of identity American Indians of corresponding head form. These men, women and children are brown in color, have black straight hair, dark brown eyes, and facial as well as bodily features which remind one most forcibly of the native Americans. Many of these individuals, especially the women and children, who are individually less modified by the environment than the men, if introduced among the Indians and dressed to correspond, could by no means at the disposal of the anthropologist be distinguished apart. And the similarities extend to the mental make up of the people, as well as to numerous habits and customs which new contacts and religions have not as yet been able to efface.

The writer found much more in this direction than he had hoped for, and the physical resemblances between these numerous outcroppings of the older blood and types of north-eastern Asia and the American Indian, cannot be regarded as accidental, for they are numerous as well as important and cannot be found in parts of the world not peopled by the yellow-brown race; nor can they be taken as an indication of American migration to Asia, for emigration of man follows the laws of least resistance, or greatest advantage, and these conditions surely lay more in the direction from Asia to America than the reverse.

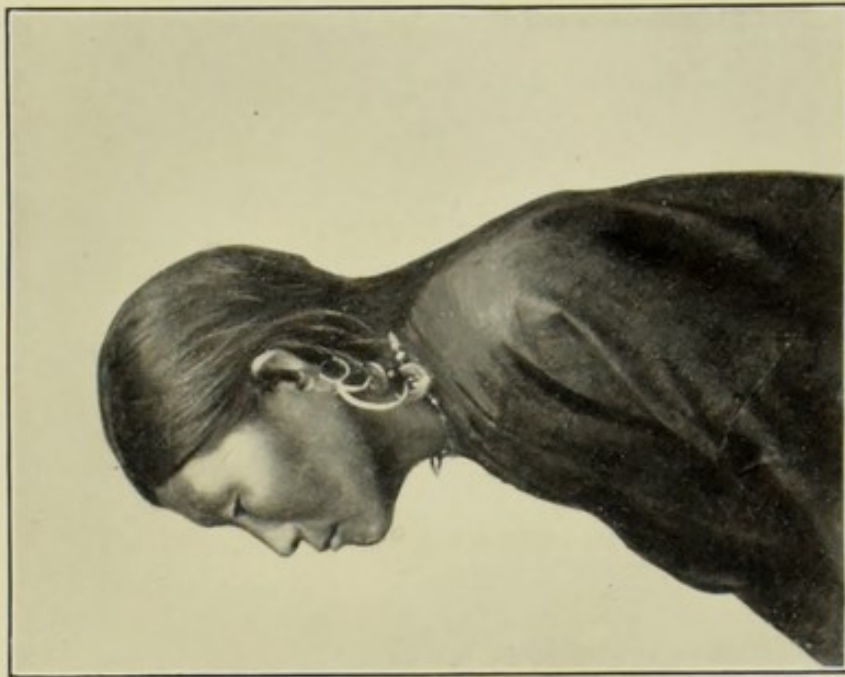
In conclusion, it may be said that from what he learned in eastern Asia, and weighing the evidence with due respect to other possible views, the writer feels justified in advancing the opinion that there exist to-day over large parts of eastern Siberia, and in Mongolia, Tibet, and other regions in that part of the world, numerous remains, which now form constituent parts of more modern tribes or nations, of a more ancient population (related in origin perhaps with the latest paleolithic European), which was physically identical with and in all probability gave rise to the American Indian.

¹The Mongolians of to-day are a mosaic or mixture of various local, southern and particularly western ethnic elements; while the Chinese present in the main a people that has undergone to a very perceptible degree its own differentiation, so as to constitute a veritable great subtype of the yellow-brown people.

The writer is able to merely touch on the great subject thus approached. The task of learning the exact truth remains for the future. In relation to opportunities for further investigation, he has satisfied himself that the field for anthropological and archeological research in eastern Asia is vast, rich, to a large extent still virginal, and probably not excessively complicated. It is surely a field which calls for close attention not only on the part of European students of the Far East, but especially on the part of the American investigator who deals with the problems of the origin and immigration of the American Indian.







A GILIAK WOMAN FROM SACHALIN

(Photograph from the Antropologiczny Instytut, Krakow; donated to the U. S. National Museum by Prof. J. Talko-Hryniewicz)





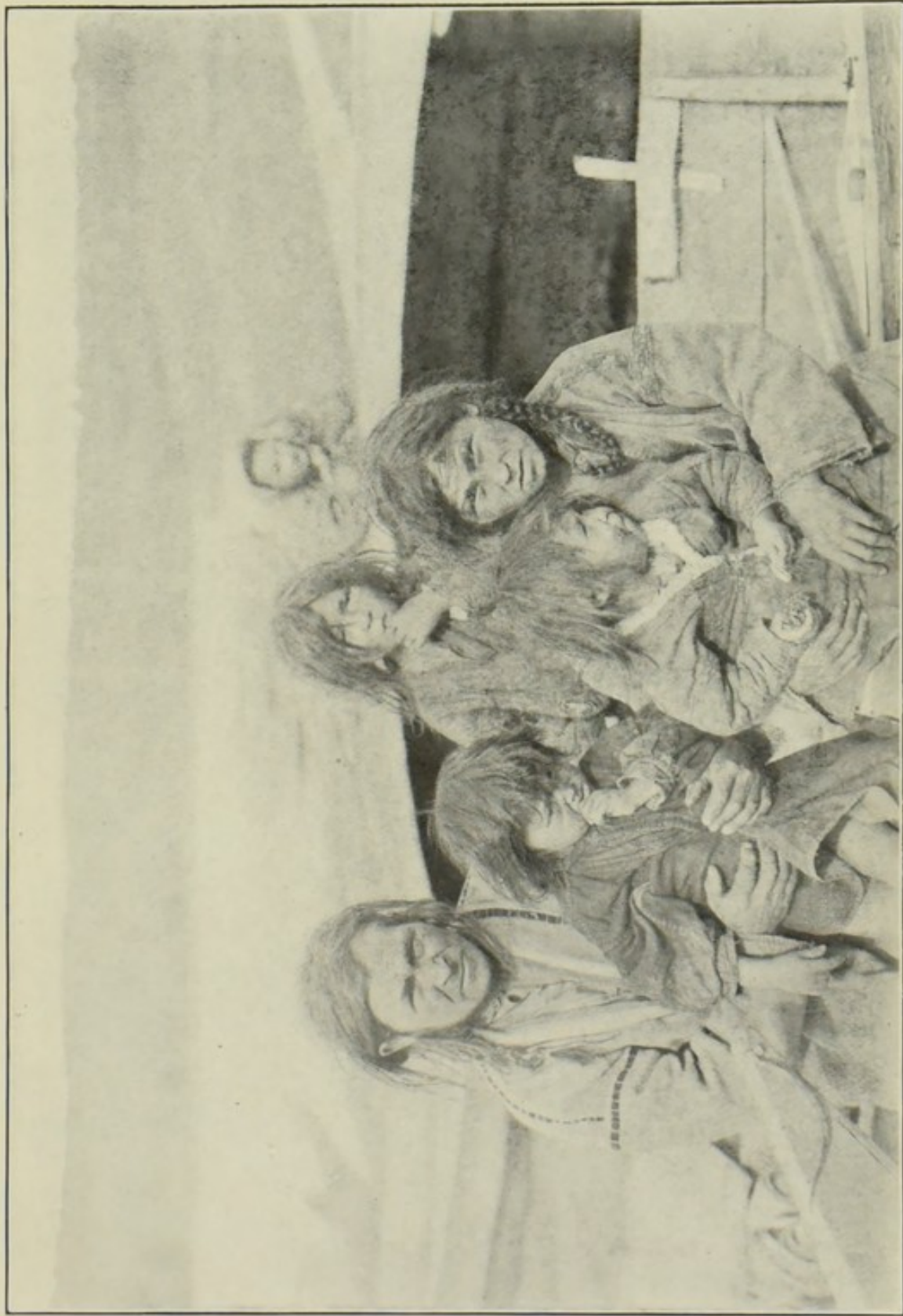
OROCZI, ON THE STREAM KONI, EASTERN SIBERIA



OROCZI, ON THE RIVER IMAN, EASTERN SIBERIA

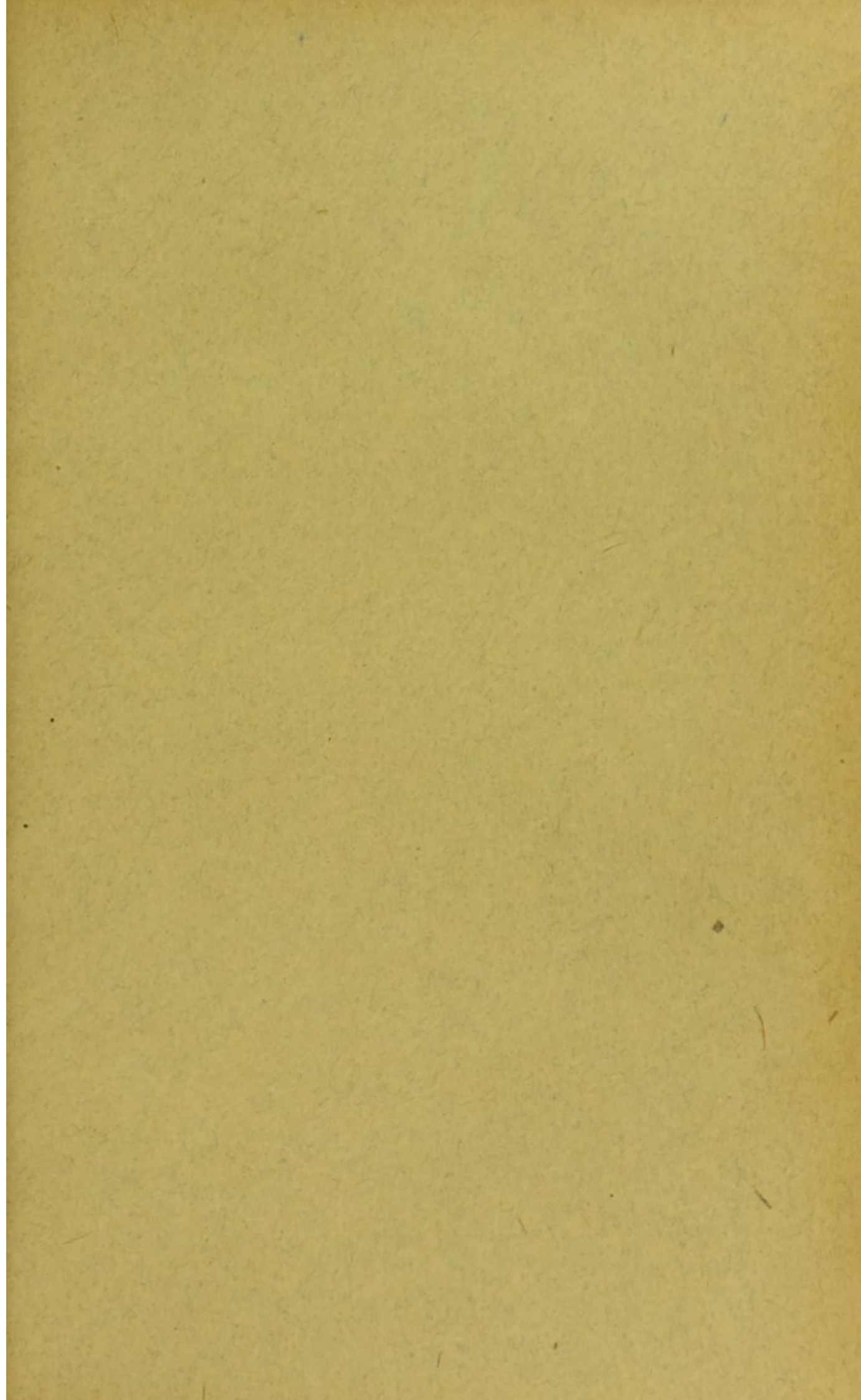
(Both photographs from the Antropologieny Instytut, Krakow; donated to the U. S. National Museum by Prof. J. Talko-Hryniewicz)





A FAMILY OF YENISEI OSTIAKS

(Photograph obtained by the U. S. National Museum through exchange, from the Ethnographical and Anthropological Museum of Peter the Great, St. Petersburg)







Napoléon, reformed its educational system, conciliated many of the old nobles, and instituted the Legion of Honour.

During the years 1802 and 1803, however, Napoleon made preparations for a fresh development in foreign policy. He proposed to found one colonial empire in the New World, and another in India. He determined to rearrange the map of Germany and to destroy Britain's commerce. Early in June 1802 he became president of the Italian republics, and in September and October he annexed Piedmont, Parma, and Piacenza. In February 1803 he reconstituted Switzerland, and sent secret agents to stir up rebellion in Ireland. Further, he persisted in demanding the British evacuation of Malta. On May 18, 1803, war between France and England broke out, and Hanover was occupied by French troops.

The discovery of a plot headed by Georges Cadoudal strengthened Napoleon's position, and on May 18, 1804, he became emperor of the French. Then he made elaborate preparations at Boulogne for conveying troops across the Channel and capturing London. In 1805 he incorporated the Ligurian republic with France, and forced Naples to make a treaty. But the defeat of Villeneuve by Calder off Cape Finisterre in July destroyed all chance of a successful invasion of England, and in September he invaded Germany. The fall of Ulm (October 20) opened the way to Vienna; and though Nelson's victory at Trafalgar, on October 21, destroyed the Spanish and French fleets, Napoleon defeated the Austrians and Russians on December 2 at Austerlitz, and on December 26 forced the Emperor Francis II. to make the treaty of Presburg. Austria being humbled and deprived of much territory, an opportunity was given Napoleon of forming in July 1806 the confederation of the Rhine. Bavaria, Baden, Würtemberg, Hesse-Darmstadt, and other states placed themselves under Napoleon's protection. The Holy Roman Empire ceased to exist, and on Aug. 6, 1806, the Emperor Francis II. formally renounced his title of German Emperor.

Prussia, however, declared war on Oct. 1, 1806; on the 14th of the same month her army was totally defeated at Jena; on the 25th the French occupied Berlin. England and Russia were alone left unsubdued. Against the former Napoleon issued the famous Berlin decree of Nov. 21, 1806, and at the same time prepared to attack the Russians. In February 1807 he fought the battle of Eylau, and on June 15 he won a

decisive victory at Friedland. In July the Czar Alexander and Napoleon agreed to the treaties of Tilsit, which enabled them to dominate Europe. In October 1807, France and Spain agreed to conquer Portugal, and in November Junot entered Lisbon. No sooner had Napoleon made Joseph Bonaparte king of Spain (June 1808) than the Spanish people rose, and an English expedition landed in Portugal (August), and Wellington won the battle of Vimeiro. The Peninsular war proved one of the principal causes of the fall of Napoleon. War with Austria again broke out in April 1809; but after the battles of Aspern and Wagram, the Emperor Francis was forced to sign the humiliating treaty of Vienna (Schönbrunn) October 1809.

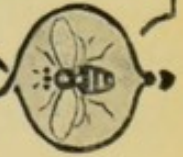
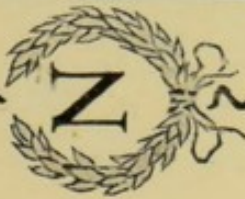
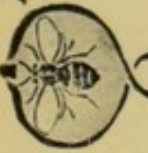
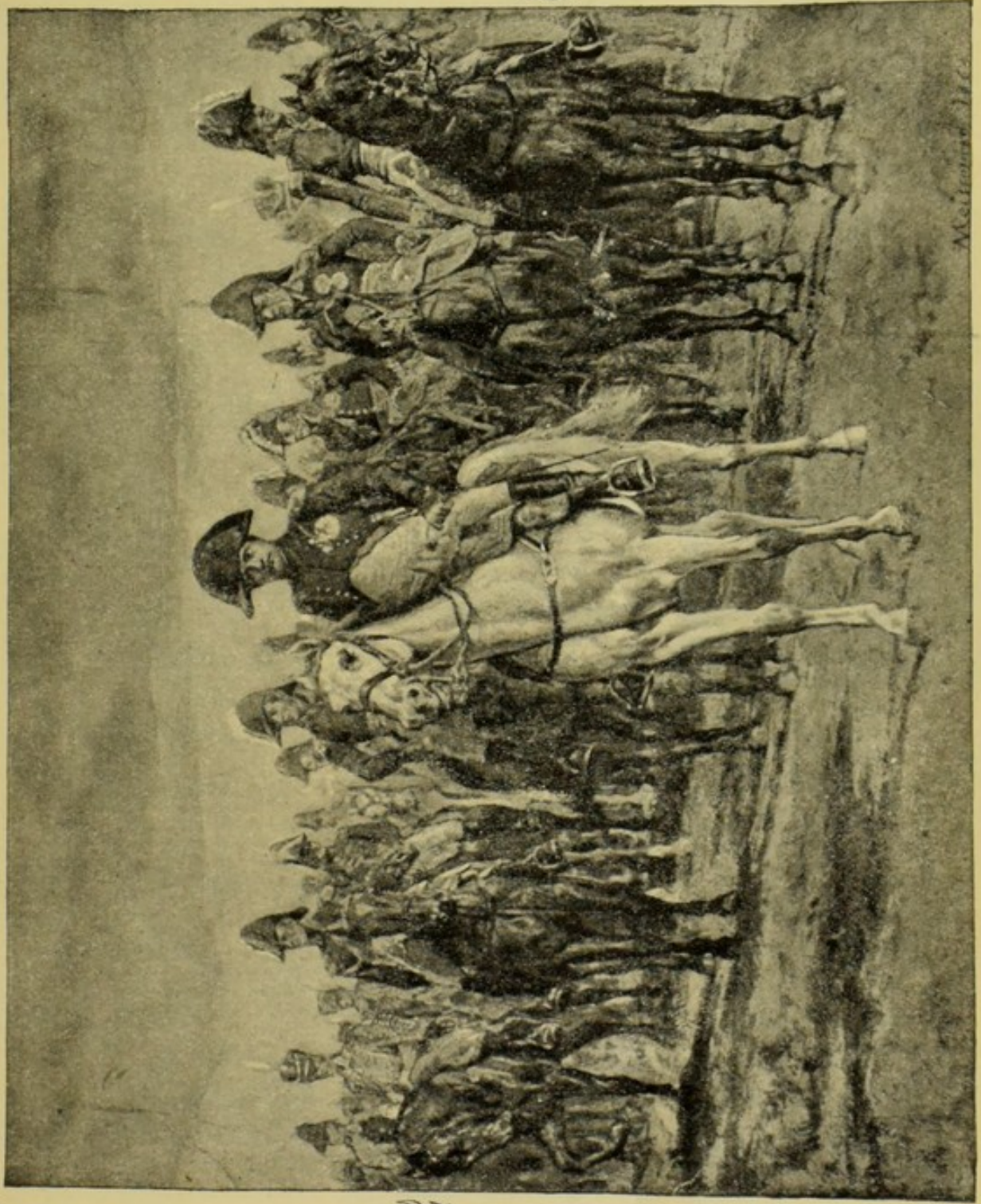
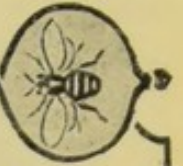
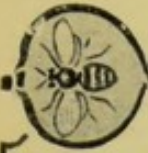
In seeking to strengthen his position, Napoleon was led to divorce Joséphine, and in 1810 to marry Marie Louise of Austria. At the same time he made almost superhuman efforts to ruin England by means of his Continental System. But on Dec. 31, 1810, the Czar intimated that he intended to modify his adhesion to the Continental System, and Napoleon resolved to invade Russia. His disastrous campaign to Moscow in 1812, undertaken while he had the Spanish war on his hands, encouraged Europe to rise, and in 1813 the war of liberation began. Russia and Prussia joined forces, and though Napoleon won the battles of Lützen (May 2, 1813) and Bautzen (May 20), the adhesion of Austria to the ranks of his enemies was followed by the total defeat of the French at Leipzig (Oct. 16-19, 1813). After showing consummate but unavailing skill in the campaign in France during the spring of 1814, Napoleon was forced to abdicate in April, and Louis XVIII. entered Paris. After a short sojourn in Elba, Napoleon escaped and landed in France on March 2, 1815, and his reign of a hundred days began. The battle of Waterloo (June 18) completed the downfall of his hopes, and he ended his days on the island of St. Helena.

That Napoleon often showed himself in his earlier days kind, generous, and affectionate is undoubted; that he was patient during his last captivity is equally true. His temperament was Italian, his passionate feelings Corsican, but he was by nature neither bloodthirsty nor cruel. The Code Napoléon witnesses to the boldness and clearness of his statesmanship; while, as Marbot tells us, the soldier who understands Napoleon's strategy has nothing more to learn. He waged war on a scale never be-

fore witnessed, and neither France nor any other country has produced a greater military genius. His body was conveyed to France in 1840, and laid in the Invalides in Paris. See Fournier's *Napoléon I.* (1886-9), *Correspondance de Napoléon I.* (32 vols., 1858-70), Rose's *Life of Napoleon I.* (1902), Sloane's *Life of Napoleon Buonaparte* (1896-7), Rosebery's *Napoleon: the Last Phase* (1900), Lanfrey's *The History of Napoleon the First* (Eng. trans. 1871-9), Seeley's *A Short Life of Napoleon* (1886), Lévy's *Napoléon Intime* (1893), Masson's *Napoléon chez lui* (Eng. trans. 1894) and *Napoléon et sa Famille* (1897-1900), and Browning's *Napoleon: the First Phase* (1905).

Napoleon II. (1811-32), the son of Napoleon I. and Marie Louise, sometimes known as the Duke of Reichstadt is the hero of E. Rosstand's play, *L'Aiglon* (1899). See Wertheimer's *The Duke of Reichstadt* (1905).

Napoleon III. (1808-73), emperor of the French, was the son of Louis Bonaparte, brother of Napoleon I., and of Hortense Beauharnais, daughter of Joséphine. He was born in Paris. On the death, in 1832, of the Duke of Reichstadt, son of Napoleon I., he became the head and hope of the Napoleonic party. An attempt (1836) at Strassburg to head a movement against the government failed, and he was shipped to America. On his return to Europe he settled in London. The publication of the *Memorials of St. Helena* by Las Casas caused a Napoleonic reaction, and in 1840 Louis Napoleon made at Boulogne a second premature attempt to gain the French throne. Imprisonment in the fortress of Ham followed, but in 1846 he escaped to England. The revolution of 1848 brought him back to Paris, for which city he was elected deputy in the Constituent Assembly of June. In December he was elected president of the democratic republic; but he soon quarrelled with the Chambers, and on Dec. 1, 1851, carried out a *coup d'état*, overthrowing the constitution. On Dec. 2, 1852, the empire was proclaimed, with Napoleon III. as emperor. Napoleon supported England and Turkey in the Crimean war. A fresh opportunity of embarking on a spirited foreign policy was afforded by the nationalist movement in Italy, and, allied with the Sardinians, the French troops in 1859 took a leading part in winning the victories of Montebello, Magenta, and Solferino. But the cession of Savoy and Nice to France, after the treaty of Villafranca (July 9, 1859), showed that Napoleon's motives were purely selfish.



From 1860 to 1870 Napoleon steadily lost ground. Instead of developing a constitutional monarchy, he continued his despotic régime. To strengthen his position, he embarked in the Mexican venture in 1864. He adopted a menacing attitude toward Prussia when news came that a Hohenzollern prince had been selected as the future king of Spain. Owing partly to Bismarck's determination, war broke out in August 1870. The French were defeated at all points, and after the battle of Sedan, on September 1, Napoleon surrendered himself to the



Napoleon III.

Prussians. A republic was declared in Paris, and the Empress Eugénie, whom he had married in 1853, and his son fled to England, where they were joined by the emperor in 1871. He died at Chislehurst in Kent. See Victor Hugo's *Histoire d'un Crime* (1877); Delord's *Histoire du Second Empire* (1868-75); Blanchard Jerrold's *Life of Napoleon III.* (1874-82); Forbes's *The Life of Napoleon III. at the Height of his Power* (Eng. trans. 1901).

Napoleon, EUGÈNE LOUIS JEAN JOSEPH (1856-79), better known as the Prince Imperial, the only son of Napoleon III. and the Empress Eugénie, was born at Paris. He was present with his father at Saarbrück on Aug. 3, 1870, but saw no more of the war. With the empress he escaped to England, and entered the Royal Academy at Woolwich. On the outbreak of the Zulu war he volunteered his services, and on June 1, 1879, was killed by a party of Zulus. See Barlee's *Life of the Prince Imperial* (1880), and Martinet's *Le Prince Impérial* (1895).

Napoleon, PRINCE. See BONAPARTES, THE.

Napoleon, VICTOR JÉRÔME FREDERIC (1862). See BONAPARTES, THE.

Naquet, JOSEPH ALFRED (1834), French scientist and politician, born at Carpentras (Vaucluse); was appointed professor of physics at Palermo in 1863; in 1867-8 he suffered imprisonment on a charge of conspiracy against the emperor; and after the revolution of 1870 was appointed secretary to the Committee of Defence. From 1876 he strove to introduce a law of divorce into France, and succeeded with the Loi Naquet (1884). As deputy for Vaucluse (elected 1879) he passed over from the party of Gambetta to that of Boulanger. He published *Principes de Chimie* (1865) and *Le Divorce* (1877).

Nara, tn., Hondo, Japan, 25 m. by rail E. of Osaka, was from 709 the first fixed capital of Japan. It has beautiful temples, a Shinto dating from 767, and a Buddhist from 752, also a huge bell, weighing 37 tons (cast in 732), and a gigantic image of Buddha. Fans and toys are manufactured. Pop. (1898) 30,539.

Narainganj, munic. tn., Dacca dist., Bengal, India, 10 m. S.E. of Dacca. An entrepôt for jute. Pop. (1901) 24,472.

Narandera, munic. tn., N.S.W., Australia, on Murrumbidgee, Cooper co., 347 m. S.W. of Sydney. The town contains saw-mills, flour mill, chilled meat factory, bicycle factory, breweries, and soap works. Pop. of bor. (1901) 2,252; of dist. 9,194.

Narasinha, in Hindu mythology the fourth incarnation of Vishnu, being a form partly of a man, partly of a lion.

Naravelia, a genus of tropical climbing plants belonging to the order Ranunculaceæ. They bear panicles of flowers, often of great beauty, and require a light peaty soil and stove temperature.

Narbada, or NERBUDDA, sacred riv. of India, rising in the Central Provinces (Rewah state), and flowing S.W. between the Vindhya and Satpura Mts.; after a course of 750 m. it empties into the Gulf of Cambay below Broach, to which (50 m.) it is ascended by sea-going vessels. The upper course is much broken by rapids. Drainage area, 39,000 sq. m.

Narbonne, tn., France, dep. Aude, 8 m. from Mediterranean and 94 m. by rail E.S.E. of Toulouse. It commands the only easily accessible entrance from S.W. France into Spain. Its heather-honey is famous; the town also makes brandy and prepares wine. First a Phœnician settlement, Narbo Martius became (118 B.C.) a Roman colony, then the capital of Gallia Nar-

bonensis. By deepening and dredging a branch of the river Aude, the Romans made Narbonne a flourishing seaport, and it was the chief Mediterranean harbour of the Visigoths in the 5th century. The expulsion of its industrious Jews by Philippe le Bel in the 14th century ended its career of prosperity. The 13th-century cathedral and town-house (now a museum) are the principal buildings. Pop. (1901) 28,852.



Narcissi.

1, Daffodil; 2, N. tazetta; 3, N. poeticus.

Narcissus, a genus of hardy bulbous plants belonging to the order Amaryllidaceæ. They have linear or strap-shaped leaves and usually beautiful flowers, either white or yellow, the perianth tubular below and its segments spreading above, the mouth of the perianth-tube being surmounted by a corona. The genus has been divided into three large groups: (1.) The Magni-Coronati group, made up of those smaller groups which have long crowns or trumpets. These are the true daffodils, and embrace the trumpet daffodils and the hoop-petticoat daffodils. (2.) The Medio-Coronati group, made up of those which have crowns or cups of

medium size. These are called chalice-flowers or star narcissi. (3.) The Parvi-Coronati group, composed of those which have short crowns of a flat, saucer-like shape. These are the true narcissi. The poeticus and Burbidgei varieties, with almost all the star narcissi and a few of the stronger daffodils, produce their best results in good, fairly strong, moist loam; the more delicate varieties in a medium soil, inclining to light—sandy, gravelly, or stony. The white trumpet daffodils, with some of the more uncertain kinds of self-yellow daffodils, also the varieties maximus and minor, do best in maiden turfy loam, and soon become diseased in soil that has much humus in it. The white daffodils also do well in soil that has some peat. The best time for planting is late in July or early in August—that is to say, long before most people think of planting their bulbs. The bulbs require lifting and replanting every one to three years. As to growing narcissi under glass, never force them; daffodils detest heat. Plant in August or September in not larger than six or seven inch pots, setting the bulbs rather deep and almost touching one another, and plunge in coal ashes. When the shoots are half an inch long, remove to cold frames, close to the glass. Give plenty of water and of air in open weather, and keep them there until well advanced in bud; then bring them into a cold house. After flowering, tie up the foliage loosely to prevent breakage—the leaf is the life—stand the pots closely together out of doors, and water freely until the leaves turn yellow. Plant the bulbs out in June, and they will bloom the next spring.

Narcissus, in ancient Greek mythology, a beautiful youth, who, however, was insensible to the passion of love. To punish him for his lack of feeling he was made to fall in love with his own likeness, and gradually wasted away until he was metamorphosed into the flower called by his name.

Narcissus Fly (*Merodon clavipes*), a two-winged fly whose larva attacks the bulbs of daffodils, introduced into N. Europe about 1840. It is about a third of an inch in length, much like a humble-bee in form, and more or less black in colour, but often spotted with yellow, red, or white. It emerges from the pupal stage usually in May, and lays its eggs in June or July. The larvæ eat their way into the bulbs, and only leave them by other holes when they are fully grown and ready to bury themselves in the ground, there to undergo the next metamorphosis. Hand-pick-

ing of the bulbs during the first three weeks of August will tend to diminish the pest, and many of the flies may be caught and killed in May and June with a butterfly net, when they settle. The chrysalids should also be removed from the soil just before the plants flower, as at that time they lie near the surface of the ground. Plates of treacle, with the edges smeared with honey, will also trap them.



Narcissus Fly.
1, larva; 2, pupa; 3, imago.

Narcotics, in medicine, those drugs which induce a deep sleep, practically stupefaction, ending in death if the dose be extreme. Opium and its alkaloids, alcohol, chloral, belladonna, and Indian hemp (*Cannabis indica*) are examples. Some, such as alcohol, opium, and *Cannabis indica*, are stimulant in small doses and at first.

Narcotine, $C_{22}H_{23}NO_7$, an alkaloid occurring in opium. It forms shining prisms on crystallization from alcohol, is decomposed by water into meconine and cotarnine, and is a derivative of benzyl-iso-quinoline. It has no narcotic properties, but has been usefully employed in the treatment of ague.

Nardo, tn., prov. Lecce, Italy, 25 m. w. of Otranto. Pop. (1901) 14,208.

Nardoo (*Marsilea macropus*), a pseudo-fern with a creeping rhizome and erect fronds, circinate when young. The spores and spore-cases are pounded and made into bread or porridge by the aborigines of Australia. The plant grows mostly in swampy ground.

Nares, SIR GEORGE STRONG (1831), British vice-admiral, was born in Monmouthshire. He took part in the Franklin search expedition of 1852-4, and commanded the *Challenger* in the earlier part of her scientific expedition of 1873-6. He is the author of *Seamanship* (7th ed. 1897).

Nariad, chief tn., Kaira dist., Bombay, India, 29 m. s.e. of Ahmadabad. Pop. (1901) 31,435.

Narni, tn., prov. Perugia, Italy, 45 m. by rail N. of Rome; has mineral springs, and has been a bishop's see for over fifteen centuries. Its cathedral dates from the 13th century. The Emperor Nerva and Pope John XIII. were natives. Pop. (1901) 12,773.

Naro, tn., prov. Girgenti, Sicily, 12 m. E. of Girgenti; has an old castle and sulphur mines. Pop. (1901) 12,907.

Narses (? 472-568 A.D.), general and statesman of the later Roman empire. With Belisarius he relieved Ariminum; but not long after the two quarrelled and separated, and Narses was recalled. In 551 he was again sent to Italy, and defeated the Gothic king, Totila, in July 552, and retook Rome; and in the next year he destroyed the army of the new Gothic king, Teias, on the Sarnus. Next an invading force of 75,000 Alemanni and Franks, which descended from the Alps, was cut to pieces by Narses, and Italy was once more made a province of the Roman empire. Narses was appointed its governor, and took up his residence at Ravenna. In 563 he suppressed a revolt in Verona and Brescia. When Justin dismissed him, he invited the Lombards to invade Italy, but died of remorse. The dates make it appear that Narses died at the age of ninety-five, after achieving his greatest exploits when he was over seventy years of age. Gibbon doubts this. Narses was a eunuch.

Narsingharh, feudatory state under Bhopal agency, Central India. Area, 623 sq. m. Narsingharh, the capital, is 20 m. N.N.W. of Bhopal. Pop. (1901) 8,778.

Narsinghpur, feudatory state of Orissa, Bengal, India. Area, 199 sq. m.; pop. (1901) 39,613. Narsinghpur, the chief town, lies 20 m. N.W. of Bhopal.

Narsinghpur, chief tn., Narsinghpur dist., Central Provinces, India, 50 m. s.w. of Jabalpur; entrepôt for grain and cotton. Pop. (1901) 11,233. The district, which includes upper half of Nerbada valley, has an area of 1,916 sq. m., and a population (1901) of 313,951.

Narthex, the term applied in Byzantine architecture to the porch in churches of the early Christian and mediæval periods. It was in two sections, one section being without, the other within, the main wall of the church. It was to the narthex alone that penitents were admitted.

Narva, tn. and port, St. Petersburg gov., N.W. Russia, 86 m. s.w. of St. Petersburg city. It old walls give it a mediæval aspect. The 14th-century castle has been converted into arsenal and barracks, and amongst other buildings are the Orthodox cathedral and the 'house of Peter the Great,' now a museum. Cotton is manufactured. The fisheries (salmon and lamprey) are valuable. Pop. (1897) 16,577.

Narvaez, PANFILO DE (c. 1470-1528), Spanish soldier, took part in the conquest of Cuba (1512); failed in an expedition to Mexico to reduce Cortes to obedience

(1520); but in 1526 received a commission to conquer and rule over the territory reaching from Florida to the Rio Grande. After a march of great hardship through hostile territory he failed to find his ships, and was drowned in the Gulf of Mexico.

Narvaez, RAMON MARIA, DUKE OF VALENCIA (1800-68), Spanish statesman and soldier, born at Loja (Andalusia); sided with the Liberal party in 1822. He fought against the Carlists, defeating Gomez in 1836. In 1843 he succeeded in supplanting his rival, Espartero, as head of the government, and was created Duke of Valencia in 1844. His policy was one of reaction, and he crushed with great severity the insurrections of the time. Deprived of his office in 1846, he resumed it in 1856-7; and again held power in 1864-5, and 1866 until his death, O'Donnell being then his chief rival.



Narwhal.

Narwhal (*Monodon monoceros*), one of the toothed dolphins peculiar to the Arctic region. The animals appear to feed on cuttles, small crustaceans, and fish. They occur in small schools. The head is blunt and rounded, the back fin absent, the flippers short and wide. The colour is a dusky and mottled gray above, and white below, while the total length varies from twelve to sixteen feet. The tusk is nearly always developed on the left side, the corresponding tooth of the right side being rudimentary, and concealed within the jaw. The tusk is composed of pure ivory (dentine), and may reach a length of eight feet. In the female both tusks are in the rudimentary condition. Narwhals are hunted both for the sake of their ivory and for the oil, which is of excellent quality.

Narynsk, tn. and fort, Semirychensk prov., Russian Central Asia, 66 m. from Russo-Chinese frontier, on river Naryn or Upper Syr Daria. It commands the easiest route, by Terekli pass, between Russian Central Asia and Kashgar.

Nascent State. Elements exhibit greater chemical activity at the moment of their liberation from compounds than at other times. Thus hydrogen, when set free by the action of zinc on hydrochloric acid in the presence of ferric chloride, reduces it to ferrous chloride, $\text{Zn} + \text{HCl} = \text{ZnCl}_2 + 2\text{H}$, and $\text{FeCl}_3 + \text{H} =$

$\text{FeCl}_2 + \text{HCl}$, although hydrogen gas, bubbled through the solution, is unable to bring about the same change. This is thought to be due to the fact that the hydrogen at the moment of its liberation exists in single atoms, which are thus more capable of entering into reaction than when they have united among themselves to form the double-atom molecules of which hydrogen gas is believed to consist. See **MOLECULE**.

Naseby, par., Northamptonshire, England, 12 m. N.E. of Rugby. Here, on June 14, 1645, the Royalists were defeated by the Parliamentarians under Fairfax and Cromwell.

Nash, JOHN (1752-1835), British architect, was probably born at Cardigan, Wales. Besides designing many country mansions, he made extensive alterations in the London streets. Regent Street, Regent's Park, and much of the district were planned by him; he also converted Buckingham House into Buckingham Palace, originally intending for it the arch now known as the Marble Arch, Hyde Park. The Brighton Pavilion was also his work. His individual designs lacked breadth and originality, but are somewhat redeemed by their grouping.

Nash, RICHARD (1674-1762), known as 'Beau Nash,' was born at Swansea, and became a gambler. Going to Bath in 1705, he built an assembly hall, organized the amusements, put a stop to duelling, and established himself in a position of unquestioned social absolutism, which won for him the name 'King of Bath.' He was noted for the excellence of his manners and taste, as well as for his extravagance. See *Life* by Goldsmith (1762).

Nash, THOMAS (1567-1601), English poet and pamphleteer, was the son of a Lowestoft minister. In 1588 he came to London, shared the riotous life of Robert Greene, and picked up a living with the help of a versatile pen, and the occasional patronage of Lord Southampton and others. He wrote against the Puritans in the Mar-Prelate controversy, and waged a private feud with Gabriel Harvey, the personification of Cambridge pedantry. Ultimately both Nash's and Harvey's books were suppressed by the archbishop of Canterbury. In 1597 Nash was committed to the Fleet, owing to the offence given by his play, now lost, of the *Isle of Dogs*. Chief works: *Anatomic of Absurditie* (1589); *Pierce Penniless, his Supplication* (1592); *Apologie of Pierce Penniless* (1593); *The Unfortunate Traveller, or the Life of Jack Wilton* (1594; ed. E. Gosse, 1892); *Have with you to Saffron Walden* (1596); *Summer's Last Will and Testament* (acted

1592, printed 1600), *Collected Works*, ed. A. B. Grosart (1883-5).

Nashua, city, New Hampshire, U.S.A., co. seat of Hillsboro co., on Merrimack R., 32 m. s. of Concord. It manufactures cotton goods and carpets, and has iron works. Pop. (1900) 23,898.

Nashville, cap. of Tennessee, U.S.A., co. seat of Davidson co., on Cumberland R. It is the seat of Vanderbilt University, the University of Nashville, the Fisk University, the Roger Williams University, and various colleges. South of the town, on Dec. 15 and 16, 1864, the Federals won a victory over the army of Tennessee. Pop. (1900) 80,865.

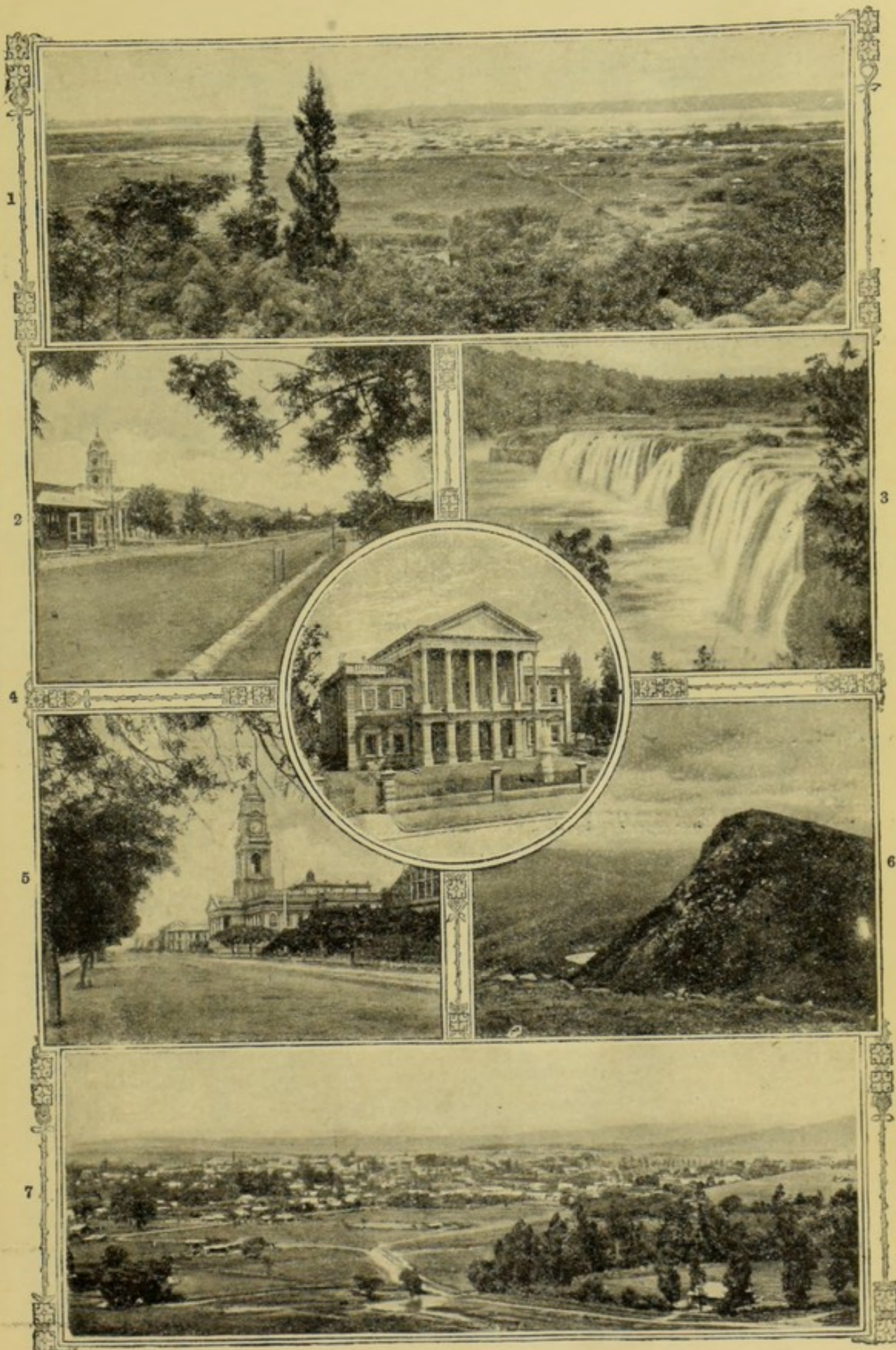
Nasica. See **SCIPIO**.

Nasik (*Nasica* of Ptolemy), cap., Nasik dist., Bombay, India, on r. bk. of Godavari, 89 m. N.W. of Ahmadnagar. Chief manufactures, brass and copper ware. The town is a resort of Hindu pilgrims, almost rivalling Benares. In the vicinity are the Lena Caves, with rude sculptures. Pop. (1901) 21,490. Area of dist. 5,940 sq. m. Pop. (1901) 816,504.

Nasirabad. (1.) Or **MAIMANSINGH**, chief tn., Maimansingh dist., Bengal, India, 74 m. N. of Dacca, on the old channel of the Brahmaputra. Pop. (1901) 14,668. (2.) Chief tn., Khandesh dist., Bombay, India, 120 m. S.W. of Indore; manufactures glass bangles. Pop. (1901) 12,176. (3.) Town and cantonment, Ajmere-Merwara, Rajputana, India, 14 m. S.E. of Ajmere.

Nasmyth, ALEXANDER (1758-1840), Scottish landscape painter, born in Edinburgh; studied under Runciman and Allan Ramsay, with whom he went to London. From 1778 he practised portrait-painting in Edinburgh, but achieved his greatest success in landscapes. Wilkie considered him the founder of the Scottish school of landscape painting. The one authentic portrait of Burns is by him (Edinburgh National Gallery). He invented the 'bow-and-string' type of bridge constructed at Charing Cross and at Birmingham railway stations.

Nasmyth, JAMES (1808-90), Scottish engineer, inventor of the steam-hammer, was born in Edinburgh, the son of Alexander Nasmyth, painter. After acting as assistant to Henry Maudsley in London (1829-31), he founded, in 1834, a business at Manchester, which afterwards grew into the Bridgewater foundry. The steam-hammer, invented in 1839, was not patented until 1842, the design having been already appropriated and patented in France by Schneider, proprietor of the Creuzot iron works. In 1858 he published *Remarks on Tools and Machinery*. See his *Autobiography* (ed. Smiles, 1883).



Views in Natal.

1. Durban, from top of Berea. 2. A Street in Ladysmith. 3. Tugela Falls, near Colenso. 4. House of Parliament, Pietermaritzburg. 5. West Street and Town Hall, Durban. 6. Majuba Hill. 7. Pietermaritzburg, from the east. (Photos by G. W. Wilson.)

Nasmyth, PATRICK (1787-1831), Scottish landscape painter, was born in Edinburgh. He exhibited at the Royal Academy in 1811, and earned for himself the name of the English Hobbema. He painted with his left hand, and painted by preference the footpaths, hedges, commons, pasture-grounds, and dwarf oaks of the outskirts of London. Both father (Alexander) and son are well represented in the Edinburgh National, the Glasgow Municipal, and the Tate (London) galleries.

Nassau. See **BAHAMAS**.

Nassau, formerly an independent duchy of Germany, incorporated with Prussia in 1866. It comprised an area of 1,830 sq. m., and had (1865) 465,636 inhabitants. After the death of Henry the Rich the territory was divided (1255) between his two sons, Walram II. and Otto. The former is the founder of the present family of Nassau, while the descendants of Otto founded the house of Orange-Nassau. Napoleon I. reunited the lands in 1806, and bestowed the title of duke upon Frederick William. See further under **ORANGE**.

Nast, THOMAS (1840-1902), illustrator and caricaturist, was born at Landau, Bavaria. After executing sketches when with Garibaldi's force in Italy (1860-1), he produced vigorous cartoons on the civil war in America, then pictorial assaults on Tammany. He also illustrated books, and in 1873 began a successful career as a lecturer, illustrating his topic by rapid sketches, and later by oil paintings.

Nasturtium, a genus of hardy cruciferous plants, generally bearing yellow or white flowers. The most familiar species is the water-cress (*N. officinale*). See also **TROPEOLUM** (Indian cress).

Natal, a British first-class cruiser of 13,550 tons, launched in October 1905. The name was chosen because the colony of Natal now contributes towards the naval expenses of the mother country.

Natal, so called from its discovery on Christmas Day (*die Natali*), 1497, a British colony on S.E. coast of Africa. On the W. the Kwathlamba or Drakenberg Mts. separate it from Basutoland and the Orange River Colony. The Dutch attempted unsuccessfully to colonize Natal early in the 18th century, and were followed by the British in 1823. The English colony was, however, broken up in 1828 by Dingaan, king of the Amazulus. In 1835 Dingaan granted a concession of land, and a British colony was formed at Durban. The Boers first entered Natal from Cape Colony in 1835, and after defeating the Zulus attempted to es-

tablish a republic; but this was resisted by the British, and ultimately, in 1843, the country was annexed to Cape Colony. Natal was made an independent colony in 1856. In 1879 came the war with Cetshwayo, king of the Zulus, who was defeated and captured; and in 1897 Zululand was annexed to Natal. In 1881 the Transvaal Boers invaded the colony, and defeated the British at Majuba Hill. In the war of 1899-1902 Natal was the scene of the most obstinate and sanguinary fighting. (See **SOUTH AFRICAN WAR**.) After the war, Utrecht, Vryheid, and part of Wakkerstroom were taken from the Transvaal and added to Natal. Zululand and Amatongaland now constitute a province of Natal. Total area of Natal, about 44,000 sq. m. As contrasted with the Cape Colony, especially the W. and interior regions, Natal is a well-watered land. On the W. lies the great mountain barrier of the Drakenberg, throwing out lateral ranges such as the Biggarsberg, and crossed at such places as Schiet Nek, De Beers Pass, and Van Reenens Pass. The highest peaks are Champagne Castle (10,357 ft.), Mont aux Sources (10,000 ft.), Giant's Castle (9,657 ft.). As these mountains lie parallel with the coast and at no very great distance from it, the river courses descend quickly; and if a thunderstorm breaks upon the Biggarsberg or the Drakenberg, its results are soon seen in such deep beds as those of the Klip, Buffalo, and Tugela. As a consequence there are no peaceful and navigable river reaches, no natural ports deserving the name. At Port Natal the 'bar' has been an obstacle to ships, and has only been deepened by constant dredging and by utilizing the scour of the tide. The surface of Natal is broken and varied. In the coast region, reaching from 25 to 30 m. inland, tropical agriculture prevails—e.g. the sugar-cane, coffee, tea, and cotton. In the middle district, along cooler levels, the British styles of farming and grazing prevail. A third district is along the plateaus of the interior, with sheep runs. The production of wheat is limited to the Upper Tugela districts and the country round Dundee and Estcourt. In 1904 the white or European population was 97,109; Indians, 41,142; natives, 1,011,645. Kaffir corn and the sweet potato are the chief native articles of diet.

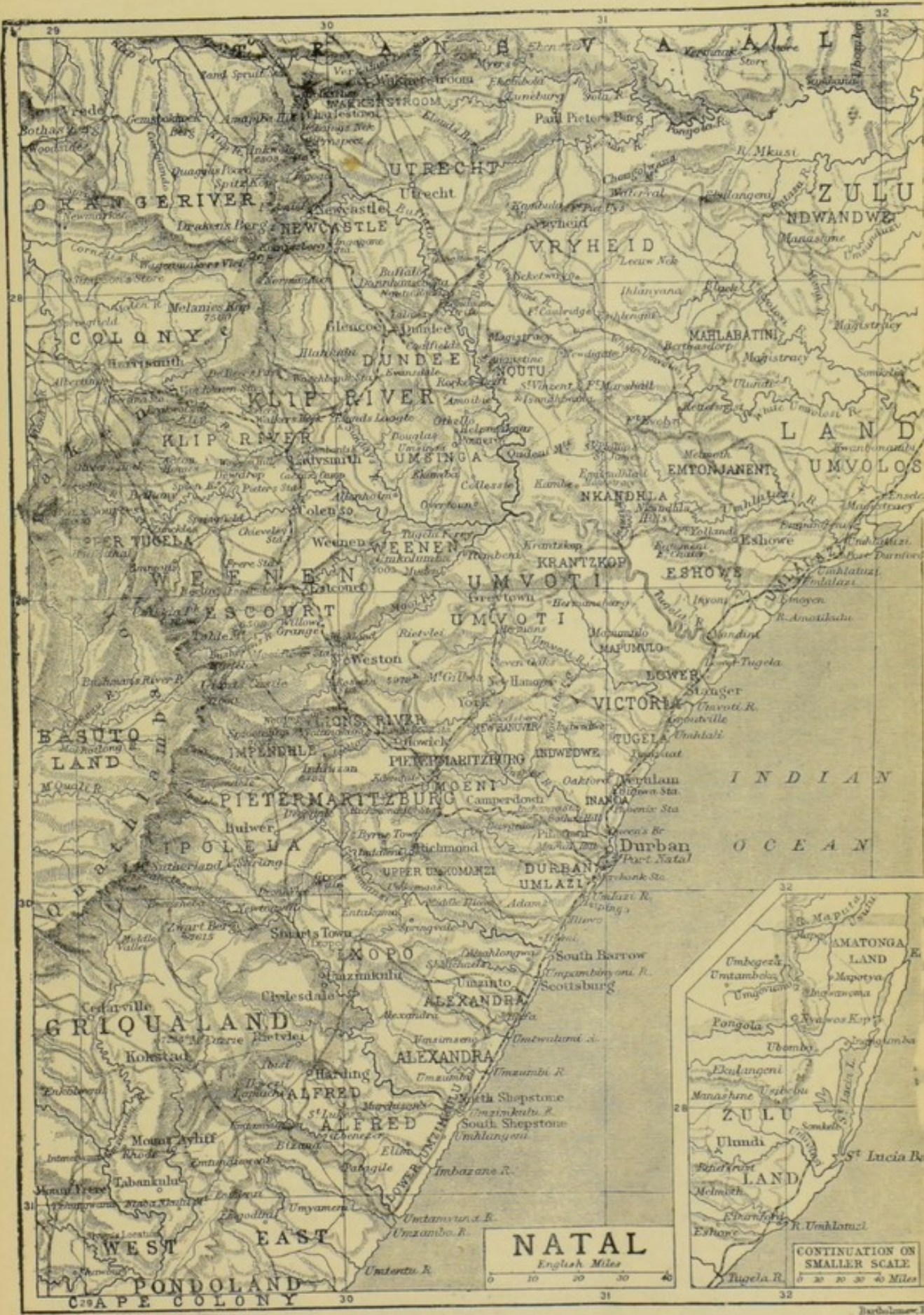
The main industries of Natal are agricultural and pastoral. Sugar, maize, wheat, and oats are largely grown. Horse-breeding is carried on in the upper districts. The coal fields near Newcastle and Dundee are a very

valuable asset, and part of Natal's naval contribution consists of Natal coal at the port. By far the greatest portion of Natal trade is with the United Kingdom. In 1904 the sea exports (Angora hair, hides and skins, sugar, coal, wool, and gold) were valued at £2,273,522, and the imports (clothing, leather, grain, iron and steel goods, machinery, railway material, wines and spirits, cottons and woollens) at £10,673,943. Britain received goods to the value of £530,138 (chiefly wool, hides, bark, coffee), and supplied goods to the value of £7,698,892 (chiefly articles mentioned under general imports). For 1903-4 the revenue (railways, customs, excise, stamps, and licences, including native hut tax, post-office and telegraphs, chiefly) was £4,020,266; the expenditure (railways, public works, etc.) was £6,558,168. The public debt amounted to £15,949,153.

In 1903 there were 710 m. of railway in the colony, most of the lines being worked by government. Along the coast of Natal there is a railway running to Verulam (19 m.), and to the Tugela (70 m.). Another coast line runs S. from Durban to Isipongo (11 m.), and to Park Rynie (41 m.). There is also a branch from the main line to Richmond and Greytown, the latter place near the Umvoti coal fields, 65 m. from Pietermaritzburg. The Natal roads maintained by the government and not under the local boards are well kept, and extend over a mileage of 3,204. The roads in the various magisterial divisions of Zululand extend over 1,229 m. In 1902 there were in Natal 1,598 m. of telegraph.

Since 1893 Natal has been under a responsible government, at the head of which is the governor, appointed by the crown. There are a Legislative Council of twelve members, elected under a high property qualification, and sitting for ten years; and a Legislative Assembly of thirty-nine members, also elected under a property qualification, and sitting for four years. The suffrage is the natural right of all men over twenty-one years of age possessing immovable property of the value of £50, or who rent any such property of the yearly value of £10, or whose income is equal to £8 a month. Before acquiring the suffrage a three years' residence is necessary. Natives are debarred from the franchise except under certain qualifications.

There are eight counties in Natal—viz. Durban, Alexandra, Alfred (including Lower Umzimkulu), Pietermaritzburg, Victoria, Umvoti, Weenen, and Klip River. In addition to these must



be reckoned the province of Zululand and Amatongaland, Utrecht, Vryheid, and part of Wakkerstroom.

Natal law is based on English law, and differs somewhat from the system in vogue at the Cape, which is based on the Roman-Dutch law. The supreme court of Natal sits at Pietermaritzburg. In 1899 the jurisdiction of the supreme court was extended over Zululand and Amatongaland.

Natal has adopted universal conscription, all colonists between the ages of sixteen and sixty being liable to be called out on active or defensive service. The military obligation resembles that of the old Boer commando rather than the conscription which prevails on the Continent. The Christian population is represented (1) by the Church of England, with a bishopric at Pietermaritzburg; (2) by the Roman Catholics, of whom the Trappists are particularly active at Marianhill, near Pietermaritzburg; and (3) by the Wesleyans, a numerous and powerful denomination. There are also Baptists, Presbyterians, and Independents. The educational system provides for the education not only of Europeans, but also of Indians and natives. See *History of Natal*, by W. Holden (1855); *The Colony of Natal*, by R. J. Mann (1859); *Emigration to Natal*, by R. J. Mann (1868); *Notes on Natal*, by Peace (1893); *Annals of Natal*, by John Bird (1888); *Natal, the Land and its Story*, by Robert Russell (1891); *Guide to South Africa*, ed. by Samler Brown and Gordon Brown (1900-1).

Natal, cap. of prov. Rio Grande do Norte, Brazil, 2 m. from mouth of Rio Grande, with cotton mills. Pop. 60,000.

Natalie (1859), queen of Serbia, the daughter of a Russian officer. She married in 1875 King Milan of Serbia, and became the mother of Alexander, king of Serbia, who was assassinated in June 1903. The king and queen were divorced in 1888. After the assassination of her son she was forbidden to re-enter Serbia.

Natchez. (1.) City, Mississippi, U.S.A., co. seat of Adams co., on the Mississippi, 280 m. above New Orleans, has a trade in cotton. It was shelled in 1862 and 1863 during the civil war. Pop. (1900) 12,210. (2.) A North American nation, whose original territory extended along the Gulf of Mexico between Mobile and the Mississippi. They were nearly exterminated by the French in 1730. The Natchez language has been long extinct.

Natick, tn., Middlesex co., Massachusetts, U.S.A., near Charles R., 17 m. w. of Boston, manufactures boots, shoes, and base-balls. Pop. (1900) 9,488.

National Anthems. The British *God save the King* is assigned to John Bull (1563-1628) and to Henry Carey (1692-1743), but probably was evolved earlier from some old folk song. It first became popular in 1745 as a protest against the Jacobites. The air was adopted by the Danes (1790), by the Prussians as *Heil dir im Siegerkranz* (1796), by the Americans (1832) as *My Country! 'tis of thee*; and is also sung by the Swiss. Other national anthems are the French *Marseillaise*, by Rouget de Lisle (1792); Austrian, *God save our gracious Emperor*, by Zedlitz and Haydn (1797); Hungarian, *Bless our Land with Gladness*, by Erkel (1810-93), and the Rákóczy march; Greek, *Sons of Greece, Arise!* (18th century); Russian, *God, the All-terrible*, by Lvov (1830); Polish, *Poland is not lost for ever*, and *Dombrowski's March* (1811-12); Italian, *Garibaldi's Hymn* (1859); Dutch, *Oh ye within whose burning veins* (1830); Belgian, *La Brabançonne* (1830). The United States contributes *Hail, Columbia* (1798); Canada, *The Maple Leaf for ever*, by Muir (1871); New Zealand, *God girt her about with the Surges*, by Reeves; and Japan, *May our Lord [Mikado] for ever reign*.

National Artillery Association, formed in 1861 for the promotion of artillery. The government allows a capitation grant for every member complying with certain conditions, and also ammunition for practice. The annual meeting takes place at Shoeburyness in September, when a camp is formed of volunteer artillery.

National Association for Employment of Reserve Soldiers. See EMPLOYMENT OF DISCHARGED SOLDIERS.

National Council of Evangelical Free Churches, a body formed in 1896 to facilitate intercourse among the various denominations represented, etc. These are the Congregational, Baptist, Presbyterian, Methodist of all sections, the Society of Friends, the Free Episcopal Church of England, and several unattached missions. The tenth annual council was held at Manchester in 1905. The organs of the movement are the *Free Church Chronicle*, the *Free Churchman* (both monthly), and the *Free Church Year Book*.

National Cyclists' Union, an association of British cycle clubs formed in 1878—(1) to secure a fair and equitable administration of justice as regards the rights of cyclists on public roads; (2) to watch the course of any legislative proposals affecting the interests of the cycling public; (3) to consider the existing re-

lations between cyclists and the railway companies, and to secure a modification of the tariff; (4) to examine the question of cycle-racing in general, and to frame definitions and recommend rules on the subject, and to arrange for annual race meetings, at which the amateur championship shall be decided.

National Debt. The system of public indebtedness has been the creation of the last two hundred years. Britain led the way in the establishment of a national debt. After the revolution of 1688 the needs of the new government compelled it to apply for aid to the moneyed class; and as the older plan of temporary borrowing on the king's 'personal credit, by pledging his jewels or the persons of his friends' (Stubbs), was obviously inadmissible, the funding system, based on parliamentary sanction, was the instrument employed. The credit of the nation, or 'public,' replaced that of the king. Each great war has since then added to the amount of the national debt.

As to the form of borrowing, the varied methods of annuities, tontines, and floating debt were gradually set aside for that in which stock is issued without any date being fixed for repayment, but is always redeemable at the pleasure of the state. Closely connected is the merging of small loans charged on specific public funds into a general or consolidated stock (hence the name 'consols'), having its guarantee in the whole public revenue. Special reasons may account for guaranteeing lenders against repayment for a term of years (as in the existing British 'consols'), or for arranging for periodical redemption of portions of debt. British experience, supported by that of other countries, is, on the whole, in favour of the single 'perpetual' debt. Those loans have been most successful and least burdensome which were issued as nearly as possible at their *par*, or face, value. One of the worst faults in the loans of the 18th century, and particularly those of Pitt, was the issue of 3 per cent. stock at a price much under its nominal value. Little was gained in respect of lower interest, while the future capital repayable was in some cases more than doubled, and the important agency of conversion made ineffective. A loan may be issued through a syndicate, or be open to public subscription at a fixed rate. The last appears to be the best in the state's interest and the fairest to lenders.

A much graver question—indeed the most fundamental of

all—in respect to a national debt is the expediency of incurring it, and its allowable extent. On no economic subject has there been a sharper division of opinion. In its earlier development the national debt was regarded as ruinous by Hume and Adam Smith; in the 19th century, Chalmers and J. S. Mill argued that borrowing was unnecessary, and involved double sacrifice for opposition. A great mass of practical authority has upheld the loan system as unavoidable and at times highly expedient. Put shortly, the contention of Hume and Smith was that the unchecked growth of public debt amounted to a mortgage which would ultimately outrun the national wealth. If debt steadily increases, it must in the end become too heavy for the nation; an argument strictly true, unless we assume a parallel growth in the national income and wealth. The force of Mill's objection lay in his assertion that the total expenditure came in any case out of the annual produce. By borrowing, its weight was placed on the labourers (through the diminution of the capital that employed them); by taxation, it was distributed through the community. In fact, this view was not at any time well founded; but with the formation of the modern international loan market it has lost any force that it might have possessed.

The true objection to extensive borrowing is the strain that it places on the financial system of the future. A loan is anticipated revenue; its proper function is to give a more even distribution of the cost of the state in reference to time. It is, therefore, limited in extent by the consideration that each period has its own charges to bear. Hence the following rules as to the use of borrowing may be deduced:—(1) Ordinary expenditure or small additional charges should be met out of revenue; (2) heavy extraordinary expenditure not likely to recur is best met by a loan for a short term; (3) an increase of expenditure which will probably continue for some time is best defrayed by increasing taxation, with the assistance of loans for the earlier years; (4) industrial revenue-yielding outlay should be met by borrowing. It must, however, be remembered that the purely financial conditions are often subordinated to political and party considerations. Borrowing may ward off the discontent that would follow heavy taxation, or the productiveness of the tax system may have reached its limits, though the needs of the state are increasing. The duty of the financial

administration is to secure the best terms for the state by lightening the pressure of debt, and at the same time to observe full faith with the public creditors. To borrow at the lowest rate of interest, and (unless substantial advantage is gained by guaranteeing against repayment for a time) to preserve freedom of redemption, are rules following from this principle. As soon as the market price of stock exceeds *par*, the opportunity for its 'conversion' into a new stock at lower interest is open—an expedient often employed in Britain from its first use, in 1716, down to the great Goschen conversion of 1888, by which £558,000,000 of 3 per cent. stock was lowered to 2½ per cent., with a further reduction to 2¼ per cent. in 1903.

No matter how well administered, a public debt, so long as it exists, involves the charge of interest and management. (For the funded debt this amounted to nearly fifteen and a half millions for the year 1900.) Accordingly the question arises, When the need for borrowing has ceased, should repayment of debt be undertaken? Common sense and financial principle agree in giving an affirmative answer. One strong reason for trying to reduce the burden is that scope may be secured for further borrowing should the emergency recur. If debt is never redeemed, the resources of the state will be more and more limited as each period of war or other extraordinary demand comes. But acceptance of the general rule, that debt should be redeemed, does not help much in dealing with the more concrete questions of the method and amount of repayment at any given time. One definite proposition may indeed be laid down: 'The excess of revenue above expenditure is the only "means" by which public debts can be discharged' (Hamilton). Any contrivance, no matter how ingenious, which ignores or evades this prerequisite condition, may be at once condemned as illusory. Such was the defect in the once famous sinking-fund plan of Price adopted by Pitt in 1786. It was based on the plan of setting aside to accumulate at compound interest a sum which would ultimately extinguish the debt. What might have been in some cases a convenient method was exalted into a magical device that really encouraged further borrowing and increased management expenses. This delusion is responsible for much of the debt incurred between 1793 and 1815, and it only disappeared under the criticism of Hamilton and Ricardo. When the necessity of a real surplus for the payment

of debt is recognized, the most direct way is to apply the annual excess of revenue over expenditure, as is done in the existing 'old sinking fund.' Thus a definite sum—as the £5,000,000 proposed to be set apart in 1819—may be annually devoted to this end, and the revenue kept up to that point. Another plan, much favoured by Gladstone, is to turn a part of the debt into terminable annuities, in which the annual charge is partly payment of capital, and when a batch of annuities falls in to repeat the process. Finally, a fixed amount may be set apart for the debt charge considerably exceeding the interest and management expenses; the balance will go for debt redemption, and as time goes on this part of the fund will increase through the reduction of interest from redemption. Such was the new sinking fund of Sir Stafford Northcote (1875). Each of the foregoing methods may prove serviceable in special cases; for Britain, the terminable annuities and new sinking fund have been most effective.

The real pressure involved in the existence of a debt has also been much discussed. The best measure is clearly the ratio of the debt charge to the annual income of the country. This is preferable to the comparison of debt principal with national wealth, as it includes all the earnings of the community.

Estimates of the total national debts of the world can only be approximations. The European debts in 1870 were about £3,000,000,000; in 1885 they were £4,600,000,000; in 1900, owing to reductions in the interval, the debts of the European states and United States of America only exceeded £4,000,000,000. A careful estimate placed the world's debt in 1890 at £6,500,000,000; £7,500,000,000 would not be excessive for 1900. In amount, the French debt is by far the highest; it nearly touches £1,250,000,000. The United States funded debt was only £180,000,000 in 1904, together with a floating debt of nearly £80,000,000. The growth of the British debt is shown in the following table:—

Year.	Amount.
1697. Peace of Ryswick.....	£21,500,000
1713. Treaty of Utrecht.....	53,680,000
1748. Close of war of Austrian Succession.....	78,300,000
1763. Close of Seven Years' war..	136,000,000
1783. Close of American war of Independence.....	238,000,000
1802. Peace of Amiens.....	537,500,000
1815. End of Napoleonic wars...	876,000,000
1856. Close of Crimean war.....	808,100,000
1890.....	635,040,000
1905.....	796,736,000

Bibliography.—Sinclair's *History of the Public Revenue*, vol. iii., gives the history of the ear-

lier British debt. Special works are: B. Hamilton's *An Inquiry Concerning . . . the National Debt of Great Britain* (1813), Ricardo's *Essay on the Sinking Fund* (1820), H. C. Adams's *Public Debts* (1888), and E. A. Ross's *Sinking Funds* (1892). A standard German work is Nebel's *Der öffentliche Kredit* (2nd ed. 1829). Full details of the growth of the British debt are given in a parliamentary return of 1869. On the Goschen conversion, see E. W. Hamilton's *Conversion and Redemption* (1889).

National Defences. ADMIS-
SION TO. No pass to enter defence works is issued, unless under very exceptional circumstances, to any one not a British subject, and even then it does not admit to such places as position-finding cells, submarine mining buildings, torpedo buildings, magazines, or storehouses. An officer of the army or navy when in uniform is entitled to enter all defence works without a pass, except the special buildings already mentioned.

National Galleries. The London National Gallery was begun (1824) by the acquisition of the Angerstein pictures, which included seven Hogarths (*Marriage à la Mode*), Wilkie's *Village Festival*, three Claudes, and Titian's *Venus and Adonis*. To these were added the following collections: Beaumont (1826); Wilkie, *Blind Fiddler*; Carr (1831), *David in the Cave of Adullam*; Claude; Olney (1837); Farnborough (1838); Vernon (1847); Turner (1855); Bell (1859); *Dignity and Impudence*, by Landseer; Peel (1871); Wynn Ellis (1876). In 1838 the gallery contained 150 pictures; in 1893, 1,400; and now more than 1,650, of which about 1,100 are in Trafalgar Square, the rest at the Tate Gallery, London, and elsewhere. The sum expended on 610 purchases amounts to £603,853, averaging £995. In 1884 Raphael's *Madonna degli Ansidesi* was bought from the Marlborough Collection for £70,000—the largest sum ever given for a picture; Van Dyck's *Charles I.* for £17,500. 'The most precious Veronese in the world,' *The Family of Darius*, cost £13,650. In 1890 £50,000 was given for three portraits by Moroni, Velasquez, and Holbein. The present building, erected (1832-8) at an original cost of £96,000, was enlarged in 1860, 1876, and 1887.

SCOTTISH NATIONAL GALLERY, built (1850-8) from Playfair's design (Ionic), cost £40,000, and contains Mrs. Graham (Gainsborough), and fine specimens of Van Dyck, Raeburn, Greuze, Watteau, and Etty.

THE DUBLIN GALLERY is small but choice.

Of foreign galleries, those of Florence (Pitti and Uffizi Palaces) are the largest; the Louvre (*Salon Carré*) the most accessible; Dresden has the most famous picture—Raphael's *Sistine Madonna*; Madrid is famed for Velasquez; Berlin, St. Petersburg, Munich, Rome and other Italian cities, have splendid collections.

See *National Gallery*, by Poynter (3 vols. 1900-1), reproducing every picture in the National and Tate Galleries; *National Gallery*, by Monkhouse (1895); *Handbook* by Cook (1902); and Addison's *Art of the National Gallery* (1905).

National Guard, an armed force of citizens for local defence, under the control of the municipality to which they belong, and in force in Italy, Greece, and especially France, where the historical National Guard was enrolled on the day before the taking of the Bastille at the time of the revolution. On June 12, 1790, the National Assembly decreed that it was necessary to be a member of the National Guard in order to enjoy the rights of citizenship. In 1791 the National Guard was first organized by law. The guards were dissolved in 1827, but revived in 1830, and abolished in 1872.

National Liberal Federation, a union of Liberal associations founded at Birmingham on May 31, 1877. The objects of the federation are: (1) to assist in the organization throughout the country of Liberal associations based on popular representation; (2) to publish literature, to promote meetings and provide speakers and lecturers, to help in securing parliamentary candidates, and otherwise to assist Liberal associations in their work; and (3) to ascertain and give expression to the opinions of the Liberal party, and generally to promote the adoption of Liberal principles in the government of the country. The whole of the constituencies in England and Wales, with, in 1904, the exception of six, are affiliated to the federation. The metropolitan constituencies are organized under the London Liberal Federation, those of the 'home counties' under the Home Counties Liberal Federation.

National Physical Laboratory, THE, was opened in 1902, with the object of assisting industries. Its principal operations consist in determining standards—i.e. of length, mass, electrical resistance, temperature, and so forth; in testing and comparing measuring instruments with the standards, and in testing materials that may be required for commercial or scientific purposes; and in making researches on processes. The laboratory for physical and

engineering test and research is situated at Bushy House, Teddington, Middlesex; and the observatory department, where the meteorological, magnetic, and seismological observations, and the testing of barometers, meteorological instruments, and watches, are carried out, is at Richmond, Surrey.

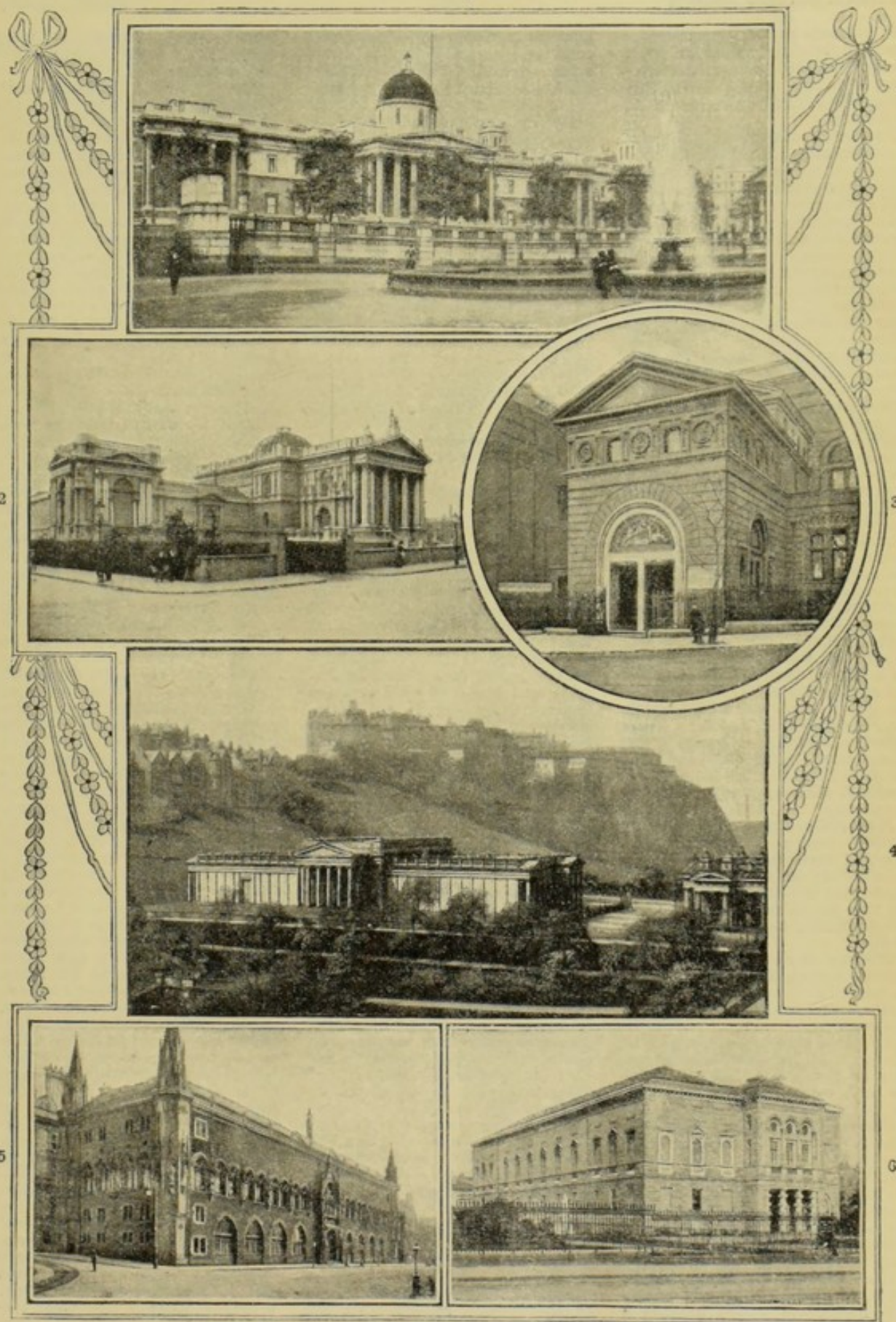
National Portrait Galleries. The one at London was founded in 1856, and is now housed in a building given by W. H. Alexander, designed by Christian, and erected (1890-6) to the north-east of the National Gallery. It consists of over 1,400 works. The upper rooms, arranged chronologically from Richard II. (1366-40), contain portraits of the different dynasties, and include Henry IV., Chaucer, Edward III., the Chandos, Shakespeare, Cromwell, and the Pretenders. The lower rooms contain groups of statesmen, divines, and others, and a picture of the Reform Parliament (1832) with 370 portraits. Van Dyck, Reynolds, Gainsborough, Romney, Raeburn, Lawrence, G. F. Watts, and other masters, are represented.

SCOTTISH NATIONAL PORTRAIT GALLERY, Edinburgh, built at a cost of £60,000, is a Gothic building in 14th-century style. It contains many portraits of the royal Stuarts, and of Wishart, Argyle, Claverhouse, Burns, Scott, Carlyle, Chalmers, and many other notable Scotsmen, painted by leading Scottish artists from Jameson to Raeburn, and from Raeburn to Reid.

National Reform Union, an association formed in 1864 for the purpose of promoting political reform, and reorganized at a conference held at Manchester in 1875. Its objects are the dissemination of political knowledge by lectures and literature, the promotion of Liberal organization, and the agitation of any burning question. It has over four hundred affiliated branches, in all parts of the country.

National Review, THE, was founded in 1883 to supply the demand for an exclusively Conservative review. It was edited until 1893 by Alfred Austin, poet-laureate, and W. J. Courthope, professor of poetry at Oxford. After 1893 Mr. Courthope remained sole editor until 1898, when he retired in favour of Mr. L. J. Maxse.

National Rifle Association was formed in 1860, its object being the encouragement of volunteer rifle corps and the promotion of rifle shooting throughout the King's dominions. Annual meetings were held on Wimbledon Common from 1860 to 1889; after that on Bisley Common, near Woking. The fixture



The National Galleries of Great Britain and Ireland.

1. The National Gallery, London. 2. National Gallery of British Art (Tate Gallery), London. 3. Entrance, National Portrait Gallery, London. (Photos by Barnard.) 4. National Gallery, Edinburgh. (Photo by Frith.) 5. National Portrait Gallery, Edinburgh. (Photo by Patrick.) 6. National Gallery and Portrait Gallery, Dublin. (Photo by Lawrence.)

now attracts not only volunteers from England, Scotland, Ireland, and Wales, but marksmen, either singly or in teams, from the Channel Islands, the colonies, and India.

National Service League, an association founded in 1902 for the purpose of securing general recognition of the necessity and advantage of universal military training throughout the British Isles, so that the country may be secured against attack by a strong citizen army, and, at the same time, the youths of England, now mostly town-dwellers, may have the advantage of the physical exercise in the open air inseparable from such training. The president is Field-Marshal Lord Roberts.

National Sporting Club was started towards the close of the 19th century for the purpose of promoting social intercourse amongst gentlemen interested in sporting, theatrical, and musical matters. The club premises are in King Street, Covent Garden, and here it is that many of the more important glove contests between professionals and amateurs take place.

National Telephone Company. See TELEPHONY.

Nativity, a name given to the season of Christmas, especially as a church festival. The nativity of the Virgin Mary is observed by the Roman Catholic Church on September 8, and was instituted c. 690 A.D.; that of John the Baptist (instituted c. 488 A.D.) falls on June 22. As used in astrology, nativity is equivalent to horoscope.

Natrolite, $\text{Na}_2\text{AlSi}_3\text{O}_{10}2\text{H}_2\text{O}$, a zeolite, white or pinkish, and usually transparent (sp. gr. 2.2, h. 5½). It is one of the commonest secondary products after minerals of the nepheline group, and is found filling cavities in igneous rocks.

Natron or **SODA LAKES**, in the Libyan desert, Egypt, some 60 m. W.N.W. of Cairo; named after the sodium carbonate collected from the waters.

Natural History originally included all the concrete sciences, and is now sometimes employed to include zoology, botany, and geology, as in the case of the 'Museum of Natural History.' Most frequently it is equivalent to zoology; but, on the other hand, not a few naturalists use it to include the study of the living organism in its relation to its environment as opposed to systematic zoology or comparative anatomy.

Naturalism. (1.) In theology it is the opposite of supernaturalism. All narratives which include a miraculous element are regarded by a naturalistic critic as more or

less unhistorical; or, where events commonly regarded as miraculous are allowed to be historical, they are held by him to be susceptible of a naturalistic explanation. Naturalism in this sense is simply the refusal of historical science to admit any causes not known in the ordinary course of history.

(2.) In philosophy, naturalism is opposed to idealism, and signifies the principle of explaining all experience in terms of natural and, as far as possible, physical science, or the system of thought that results from the application of this principle. Hence it comes to be practically identical with the milder versions of materialism which have figured in modern philosophy. See J. Ward's *Naturalism and Agnosticism* (1899), and Sorley's *Ethics of Naturalism* (1904).

Naturalization. See ALIEN.
Natural Philosophy. See PHYSICS.

Natural Selection. See DARWINISM.

Natural Theology, the science which, apart from any special revelation, treats of the evidence for the existence of God; for men believed in God long before the Christian revelation, and beyond the confines of Judaism. Natural theology employed three great lines of proof: (1) the ontological argument, formulated by Anselm and restated by Descartes (hence often called the Cartesian)—viz. that as men possess the idea of an absolutely perfect being, then, since existence is implied in perfection, there must exist such a perfect being, i.e. God; (2) the cosmological argument, or (Leibniz) *argumentum a contingentia mundi*—viz. that since something exists contingently or dependently, there must also exist something absolutely, i.e. God; (3) the physico-theological or teleological argument—viz. that as there is design in the world, there must exist a wise and intelligent cause of the same. Natural theology was represented in Britain by Paley, and in Germany by Wolff. The arguments were trenchantly dealt with by Kant, who in his *Critique of Pure Reason* showed their invalidity or insufficiency; while in Britain, Hamilton, Mansel, and Spencer have arrived at similar conclusions. On the other hand, there have been founded the *Bridgewater Treatises*, the Burnett Prize Essays, and the Gifford Lectures for the purpose of maintaining and confirming the conclusions of natural theology. See Flint's *Theism* (ed. 1889).

Nature, the recognized organ of the British scientific world, was founded in 1869. Its first and present editor is (Sir) Nor-

man Lockyer. Among the early contributors were Darwin, Huxley, and Tyndall.

Nature Study, from the individual point of view, is 'the habit of observing and thinking for one's self, and at one's best, without books or helps, in presence of the facts, and in the open air' (Professor Patrick Geddes). This definition has to be supplemented by another—'A process by which simple natural objects and events acquire meaning' (Professor C. Lloyd Morgan). The movement which has brought nature study into prominence is a revolt against—(1) a tendency towards bookishness, and (2) a tendency towards premature specialization and undue detail in studying science. Not only does nature study deal with things at first hand, but it deals with them from the human standpoint. In nature study the practical, the æsthetic, the moral, are quite as much regarded as the scientific aspect. The movement first came to clear consciousness in Froebel, whose vague idealism read meanings into the facts of nature that science does not endorse. The ultimate purpose of nature study is to make the pupil at home in his surroundings, to make the world in all its aspects intelligible to him.

The matters actually dealt with include the observation of living creatures and plants in their natural habitat, as well as the collecting and rearing of such specimens as lend themselves to this treatment. School gardens form a prominent feature in many countries. In France there are 28,000 of these gardens; and in Britain the custom of attaching a number of plots to elementary schools is rapidly growing. In Canada the plots are used as a sort of earthen blackboard, where specimens of different grains are grown, the children being permitted to pluck up one plant every day to observe its roots. The number of specimens of each plant is, of course, so arranged that, while one is pulled up each day, there will be enough left to allow of the last specimens being perfectly developed plants. A record of the changes is kept in a graphic form, for an essential part of nature study is the power to express what has been observed. 'Nature diaries' are written by the pupils collectively, each contributing his share. These diaries are often connected with what are known as 'seasonal studies,' in which the same objects—e.g. selected plants or animals—are observed persistently throughout all the seasons of the year. Weather records are very frequently kept, even in the youngest classes, the mode of record being

usually by symbolical drawings. The school excursion forms an important part in all genuine nature study. At the earlier stages the pupils observe anything and everything, and are allowed to ask questions about any matter that attracts their attention. As progress is made the excursions become systematized, and finally lead to what are somewhat ambitiously described as 'regional surveys' of the district within easy reach of the school. These surveys include the geology as well as the fauna and flora, and do not exclude even the antiquities and industries. An important feature at the final stage is the preparation of a map of the district. As the records kept in school pass from the form of pictorial representation to the abstract form of curves plotted out from the results supplied by daily observation, so the general description of the country in the regional survey ends in the abstract map.

Nature Worship, or **NATURISM**, is the worship of one or more of the powers of nature. This general cult has manifested itself in a variety of forms. The anthropomorphic tendency which seems innate in the human mind in its dealings with the unknown has led to the frequent personification of the more obvious natural forces. Of these the most obvious is the sun, the author of light and heat, which has been personified and deified under many names. Nor is the sky god necessarily the sun, for the thunder and the rain have been separately deified as Jupiter Tonans and Jupiter Pluvius. The moon and the 'hosts of heaven' (a figure of speech which itself denotes personification) have also had their devotees. The worship of fire, allied to sun worship, represents the deification of another natural force. On the other hand, the intense cold of the north led the early Scandinavians to include in their mythology the powerful 'frost giants.' Rivers, springs, trees, mountains, and animals have all been worshipped. And the reproductive energy in the animal and the vegetable world has been symbolized and revered in more ways than one. For fuller information, see MYTHOLOGY, SUN WORSHIP, SERPENT WORSHIP, TREE WORSHIP, and PHALLUS AND PHALLIC WORSHIP.

Naucratis, Greek settlement in ancient Egypt, founded by Milesians about 640 B.C. It stood on the west or Canopic mouth of the Nile, not far from Sais. Thither all Greek traders resorted, for after the reign of Amasis (569 B.C.) they were allowed to do business nowhere else in Egypt.

Naugatuck, bor., New Haven co., Connecticut, U.S.A., 15 m. N.W. of New Haven. It manufactures rubber goods. Pop. (1900) 10,541.

Nauheim, or **BAD-NAUHEIM**, wat.-pl. in grand-duchy of Hesse-Darmstadt, Germany, 24 m. by rail N.N.E. of Frankfurt-on-Main. Pop. (1900) 4,501.

Naumachia, in ancient Rome a spectacular sea-fight. These contests sometimes took place in the circus or amphitheatre, which was flooded for the purpose, but more often in special buildings. The combatants were usually captives or condemned criminals, who fought, as in gladiatorial contests, to the death, unless the vanquished obtained mercy from the emperor. The two sides were given the names of famous maritime nations, such as Tyrians and Egyptians, Athenians and Syracusans, or the like. Titus gave a *naumachia* in which 3,000 men were engaged.

Naumburg, tn., Prussia, prov. Saxony, on Saale, 30 m. by rail W.S.W. of Leipzig; has a Romanesque-Gothic cathedral (early 13th century), with pictures by Lucas Cranach the Elder. Lepsius, the Egyptologist, was a native. Leather, woollen goods, and combs are manufactured. Pop. (1900) 23,192.

Naupactus, ancient Greek city on Corinthian Gulf, in territory of the Ozolian Locrians. It had a good harbour. The Messenians, expelled from their country in 459 B.C. by the Spartans, settled at Naupactus. Philip of Macedon captured it from the Achæans in 338 B.C. Its modern name is Lepanto.

Nauplia, fort, seapt., cap. of Argolis, Greece, on the Argolic Gulf, 25 m. by rail S. of Corinth. Mycenaean remains have been found. It belonged to an ancient league of cities, which supported the worship of Poseidon at Calauria; it was only in later times that it became the port of Argos. In the middle ages it was a possession of the Venetians. From 1824 to 1834 it was the capital of Greece. In 1831 Capo d'Istria, the statesman, was assassinated here. Pop. (1889) 10,879.

Nauplius, the unsegmented larval form which occurs in all the lower Crustacea. See CRUSTACEA.

Nausea, the sensation of loathing which precedes vomiting, was originally applied to sea-sickness only. It may be produced by disagreeable impressions upon any of the senses. Some drugs cause nausea and vomiting, either by irritation of the stomach or of the vomiting nerve-centre in the brain. Nausea may be present in the early stages of pregnancy, and is often the first

symptom observed. It frequently precedes fainting. Treatment depends upon the cause. In many cases quiet in a recumbent position, with fresh air and a small stimulant—e.g. sal volatile or spirits—will suffice.

Nausicaa, in ancient Greek story, the daughter of Alcinous, king of the Phaeacians. When Odysseus was wrecked on the coast of Phaeacia, he found her playing ball on the shore, and from her learned how to approach her father. In her maidenly modesty, dignity, and simplicity, she is one of the noblest characters in all Greek literature.

Nauteh Girls, native dancing girls in India. Dressed in skirts of scarlet and gold, with saris of bright hues, tight gilt trousers, and anklets of silver and gold bells, the girls dance for hours to the strains of amatory music, character pictures being introduced by the performers. Many of these nauteh girls can read and write, and are the cleverest and most accomplished of their sex.

Nautical Almanac, THE, a volume of tables and calculations for the use of navigators and astronomers, first issued for 1767, and since published annually several years in advance. It was originally produced under the superintendence of the Royal Astronomical Society, but since 1834 has fallen under the care of the Admiralty. Similar foreign publications are the *Connaissance des Temps* (1679), the *American Ephemeris* (1855), and the *Berliner Jahrbücher* (1776).

Nautilus, a genus of cuttle-fish. Some three species now live in the Pacific Ocean, Indian Ocean, and other warm Eastern seas, but there are many fossil forms which date back to the Silurian period. The living species all possess four pairs of gills (Tetrabranchiata), and in this, as well as in the presence of an external chambered shell and many other structural peculiarities, they differ from the other living cuttles, which possess two pairs of gills only (Dibranchiata), never have an external chambered shell, and are more highly specialized in many respects than nautilus. Nautilus is thus a persistence through long ages, apparently unaltered, of an animal of primitive type, whose allies have become dominant and specialized. The best-known species is *N. pompilius*. It seems to live at the bottom in considerable depths, and feeds on small crabs and molluscs, which are masticated by means of the strong jaws. The shell is spirally coiled, and consists of a series of chambers, in the last and largest of which the

animal lives, while the others contain gas only. Externally the shell is brownish in colour, marked by dark bands; but a beautiful pearly appearance (whence the popular name of pearly nautilus) may be got by dissolving the outer layers of the shell away by acid, so as to expose the inner layer, consisting of mother-of-pearl. In the young nautilus the shell is shaped like a little horn. As the animal grows larger it moves forward in the shell, which increases in size round the orifice, and forms a partition in its posterior region, which cuts off the apex of the shell, and is called a septum. These septa divide the shell into a number of chambers, which communicate with one another, and are connected to the body of the animal by a tube known as the siphuncle. In place of having the eight or ten sucker-bearing arms so characteristic of other cuttles, nautilus has a large number of lobes round the mouth which carry little tentacles but



Nautilus.

no suckers. There is an incomplete siphon or funnel—that is to say, the two lobes forming the siphon are not completely fused together as in other cuttles, but only opposed to one another. There is no ink-bag, and the eye is simple and without a lens. Further, in the presence of two pairs of gills, two pairs of auricles in the heart, two pairs of nephridia, and so forth, nautilus is supposed to show some indications of an origin from a segmented ancestor. (See MOLLUSCA.) The name paper nautilus is given to the argonaut, also called the paper sailor.

Navajoes, North American aborigines, next to the Apaches the most renowned and numerous branch of the South Athabascans. Those which survive are only in part gathered into the Navajo reservation, Arizona and New Mexico, and numbered altogether 20,000 in 1900.

Naval Architecture. See SHIPBUILDING.

Naval College, ROYAL. See GREENWICH, ROYAL NAVAL COLLEGE.

Naval Discipline Acts. The Naval Discipline Act, 1866 (29 and 30 Vict. c. 109), as amended by the Act of 1884 (47 and 48 Vict. c. 39), defines the offences punishable under naval law, prescribes the punishments, and regulates the constitution, procedure, and jurisdiction of naval courts-martial. See COURT-MARTIAL.

Naval Education. At the age of twelve a boy intended for a commission in the navy, on receiving a nomination, being of sound health and otherwise suitable, undergoes a qualifying examination. Having passed this satisfactorily, the candidate is a naval cadet, and goes to the Royal Naval College at Osborne for two years, and then to Dartmouth College for another two years. He then becomes a midshipman, and passes the next three years at sea. After examination he is promoted to the rank of acting sub-lieutenant, and spends about a year ashore studying at Greenwich and Portsmouth. On qualifying by examination again, he becomes a sub-lieutenant, and is drafted into one of the three branches of the service—the executive, the engineers, or the marines.

Naval Expenditure. Cromwell devoted a larger proportion of the national income to this object than any ruler before or since. At the time of the revolution the naval expenditure was £1,087,205 for the two and a half years ending Oct. 12, 1688. In 1756, when the Seven Years' war began, the number of men was 52,809, and the expenditure £3,349,021. By the time the war was over the expenditure had increased to £5,128,977. After peace had been restored, in 1764, the expenditure dropped to £2,094,800, and the number of men to 20,603. From 1773, when the war with the American colonies broke out, for ten years—during the last s.: of which there was also trouble with France, Spain, and Holland—the expenditure rose with the dangers which Great Britain was called upon to face. The following table will show how matters then stood:—

Year.	Men.	Money.
1773 . . .	21,688 . . .	£1,885,573
1776 . . .	31,084 . . .	3,227,056
1781 . . .	99,362 . . .	8,936,277

With quieter times, in 1784 the numbers were 28,878, and the expenditure was £3,153,869; and for the next seven years the expenditure only twice exceeded three millions. With the year 1793 began almost uninterrupted

warfare for twenty-three years. The following table for this period will speak for itself:—

Year.	Men.	Money.
1793 . . .	59,042 . . .	£3,971,915
1797 . . .	120,046 . . .	13,033,673
1803 . . .	67,148 . . .	10,211,379
1809 . . .	144,387 . . .	19,578,467
1814 . . .	126,414 . . .	23,504,070

For the next quarter of a century after 1816 the expenditure ranged between seven and a half millions and five millions.

With the outbreak of war with Russia the expenditure more than doubled.

Year.	Men.	Money.
1853-4 . . .	45,885 . . .	£7,197,804
1855-6 . . .	67,791 . . .	19,590,833

After the war with Russia the expenditure fell below ten millions, and for the next twenty years remained about the same. The number of men during that period was usually between 60,000 and 70,000.

With the year 1881 statesmen began to give more systematic attention to naval expenditure. The Franco-German war and the Russo-Turkish war had accentuated the importance of keeping pace with continental navies. The tendency is represented by the following table:—

Year.	Men.	Money.
1881-2 . . .	58,800 . . .	£10,870,922
1885-6 . . .	56,950 . . .	16,193,701
1890-1 . . .	63,598 . . .	17,163,083
1895-6 . . .	79,862 . . .	19,637,238
1899-1900 . . .	110,640 . . .	26,594,500
1903-4 . . .	127,100 . . .	34,457,000
1904-5 . . .	131,100 . . .	36,889,500
1905-6 . . .	129,000 . . .	33,389,500

Naval Literature may for convenience be classified as follows: (1) History and antiquities; (2) biography; (3) diaries, journals, logs, and recollections of a personal character; (4) pamphlets; (5) poetry and fiction; (6) miscellaneous publications, especially those dealing with naval administration and social life in the navy.

(1.) Of histories that are wholly naval, some deal with (a) the navy from the historic standpoint, and others (b) with history from the naval standpoint. To the former class belong Sir N. H. Nicolas's *History of the Royal Navy* (1847), which brings the story down to 1422; John Campbell's *Lives of the British Admirals*, continued by Berkenhout, H. R. Yorke, and W. Stevenson (8 vols. 1812-17); W. James's *Naval History of Great Britain* from 1793 to 1820, continued by Chamier to 1827 (6 vols. 1837); E. P. Brenton's *Naval History of Great Britain, 1783-1822* (3 vols. 1823); Isaac

Schomberg's *Naval Chronology*, to 1802 (5 vols. 1802); Thomas Lediard's *Naval History of England* (2 vols. 1735); Josiah Burchett's *Complete History of the most Remarkable Transactions at Sea* (1720); Laird Clowes's *The Royal Navy* (7 vols. 1897-1903), the only large work covering the whole period of British naval history; and E. Chevalier's *Histoire de la Marine Française* (4 vols. 1877-99); J. C. de Jonghe's *Nederlandsche Zee-wesen* (6 vols. 1833-48); A. V. Vecchi's *Storia Generale della Marina Militare* (2 vols. 1892); Loir's *La Marine Française* (1893); Tesdorpf's *Geschichte der K. Deutschen Kriegs-Marine* (1889); Scharf's *History of the Confederate States Navy* (1894); Chabaud-Arnault's *Histoire des Flottes Militaires* (1889); H. W. Wilson's *Ironclads in Action* (2 vols. 1896); E. S. Maclay's *History of the United States Navy* (3 vols. 1898-1901); T. Roosevelt's *Naval War of 1812* (4th ed. 1889); and D. D. Porter's *Naval History of the Civil War* (1887). Shorter and more popular works are H. Williams's *Britain's Naval Power* (1894), and E. Wilmot's *Our Navy for a Thousand Years* (1904). Among works (b) dealing with history from the naval standpoint the chief are A. T. Mahan's *Influence of Sea Power upon History* (1890), *Influence of Sea Power upon the French Revolution and Empire* (2 vols. 1892), and *Sea Power in its Relation to the War of 1812* (2 vols. 1905); P. H. Colomb's *Naval Warfare* (1899); J. K. Laughton's *Studies in Naval History* (1887); and Froude's *English Seamen in the Sixteenth Century* (1893).

(2.) Of naval biographies some of the most important are A. T. Mahan's *Nelson* (1899); Southey's *Nelson* (1813; new ed. 1904); Laughton's *Nelson* (1895); Beresford's and Wilson's *Nelson* (1898); W. Besant's *Cook* (1890); J. Corbett's *Drake* (1890) and *Monk* (1889); Fortescue's *Dundonald* (1895); D. Hannay's *Blake* (1886) and *Rodney* (1891); Barrow's *Anson* (1839), *Drake* (1861), *Howe* (1838), and *Sidney Smith* (1848); Edwards's *Raleigh* (1868); G. Penn's *Penn* (1833); E. P. Brenton's *St. Vincent* (1838) and *Brenton* (1842); Raikes's *Brenton* (1846); Jones's *Frobisher* (1878); Brighton's *Broke* (1866); Bouchier's *Codrington* (1873); Collingwood's *Collingwood* (1828); Russell's *Collingwood* (1891); Deane's *Deane* (1870); H. Dixon's *Blake* (1852); Dundonald's *Autobiography of a Seaman* (1890); Corbett's *Drake and the Tudor Navy* (1898); Murray's *Durham* (1846); Burrows's *Hawke* (ed. 1904); Osler's *Exmouth* (1841); Chatterton's *Gambier* (1861);

Headley's *Farragut* (1867); Mahan's *Farragut* (1892); *Memoirs of Paul Jones* (1830); Keppel's *Keppel* (1841); Mundy's *Rodney* (1830); Napier's *Napier* (1862); Hunt's *Palliser* (1844); Phillimore's *Parker* (1870); Parry's *Parry* (1860); Pettigrew's *Nelson* (1849); Brighton's *Provo Wallis* (1892); Ross's *Saumarez* (1838); Smyth's *Philip Beaver* (1829); C. R. Markham's *Robert Fairfax* (1885) and *John Davis* (1889); A. Markham's *Franklin* (1891); Sharp's *Symonds* (1858); Tucker's *St. Vincent* (1844); Grinnell-Milne's *De Ruijter* (1896); Allardyce's *Keith* (1882); Armstrong's *A Tar of the Last War—being Sir Charles Richardson—*(1855); Semmes's *My Adventures Afloat* (1869); Sir H. Keppel's *A Sailor's Life under Four Sovereigns* (1899); Sullivan's *Sullivan* (1896); Otway's *Lord C. Paget* (1896); Egerton's *Hornby* (1896); and Fitzgerald's *Tryon* (1897). Among biographical collections are O'Byrne's *Naval Biographical Dictionary* (1861); Marshall's *Royal Naval Biography* (1823-37); Ralfe's *Naval Biography* (1828); Van den Bosch's *Leben der See-Helden* (1681), from the Dutch by Krämer; and Charnock's *Biographia Navalis* (6 vols. 1794-8).

(3.) In this class no work possesses greater interest or value than Samuel Pepys's *Diary* from January 1660 to May 1669. Valuable as intimate records are Henry Teonge's *Diary*, from 1675 to 1679 (1825); T. Pocock's *Memoirs relating to Lord Torrington*, from 1683 to 1705 (1889); Taubman's *Diary of a Chaplain* (1710); *Memoirs of De Forbin* (Eng. ed. 1734); Dampier's *Voyages* (ed. 1779); Cook's *Voyages* (ed. by Wharton, 1833); Sloane-Stanley's *Reminiscences of a Midshipman's Life from 1850-1856* (1893); H. Robinson's *Sea-drift* (1858); Woodes Rogers's *A Cruising Voyage round the World* (1718); Narborough's *Voyage to the South Sea* (1669); Osborn's *Stray Leaves from an Arctic Journal* (1852); *Thirty-six Years of a Seafaring Life*, by 'an Old Quartermaster' (1839); J. Scott's *Recollections of a Naval Life* (1834); *At School and at Sea*, by 'Martello Tower' (1899); J. H. Boteler's *Recollections of my Sea Life* (1883); J. Byron's *Journal of a Voyage round the World* (1767); Monson's *Naval Tracts* (1902); Derville's *Cruising in Many Waters* (1833); A. C. Evans's *Cruise of H.M.S. Calliope* (1891); Basil Hall's *Fragments of Voyages and Travels* (1831-40); M'Leod's *Voyage of H.M.S. Alceste* (1818); Menzies's *The Captain's Yarns* (1886); Hobart Pasha's *Sketches from my Life* (1886); *Service Afloat* (1833); Spry's *Cruise of*

the Challenger (1876); Darwin's *Journal of H.M.S. Beagle in 1831-6* (ed. 1890) and *Voyage of the Beagle* (1852).

(4.) Few pamphlets possess a distinctively literary character.

(5.) The masters of English naval fiction are T. Smollett, in *Roderick Random* (1748); Michael Scott, in *Tom Cringle's Log* (1836) and *The Cruise of the Midge* (1836); J. Fenimore Cooper, in *Pilot* (1823), *Red Rover* (1826), *The Two Admirals* (1842); F. Marryat, in *Frank Mildmay* (1829), *Peter Simple* (1834), and *Mr. Midshipman Easy* (1836); James Hannay, in *Singleton Fontenoy* (1850); F. Chamier, in *Ben Brace* (1835) and *Life of a Sailor* (1832); J. Moore, in *The Post Captain* (1808); and 'Q.' in *The Blue Pavilions* (1903). R. H. Dana, jun., in *Two Years Before the Mast* (1840), and George Cupples in *The Green Hand* (1900), as well as W. Clark Russell, have written admirable sea stories which are not distinctively naval. And here may also be mentioned *The Cruise of the Cachalot* (1898) and other books by F. T. Bullen.

Naval poetry is for the most part brief, chiefly in the form of songs, though W. Falconer's *Shipwreck* (1762) and Newbolt's *Admirals All* (1896) are exceptions. Of naval song-writers the most notable are Charles Dibdin and Thomas Campbell.

(6.) Miscellaneous naval literature includes Glascock's *Naval Sketch Book* (1826), Robinson's *The British Fleet* (1898), Thompson's *Sailors' Letters* (1767), and the scandalous *British Navy in the Present Year of Grace* (1885). To this class also belong such works, written partly as fiction and partly as propagandist pamphlets, as *The Great Naval War of 1887*, *The Battle of Port Said*, *The Adventures of a Whitehead Torpedo*, Laird Clowes's *Captain of the Mary Rose* (1892), and Jane's *Blake of the Rattlesnake* (1895).

Naval Manœuvres, an annual system of practice in time of peace, carried out by the navies of all the great powers, but specially by the British navy. Manœuvres are intended primarily for exercise, instruction, and experiment, and do not altogether represent the conditions of actual warfare, but are nevertheless of great value. They consist of sham battles, such as naval attacks on Portsmouth, Liverpool, and other ports, searching for the enemy's fleet at sea and attacking it, etc. The manœuvres usually take place in St. George's Channel, the Irish Sea, or in the open Atlantic; in 1903 a battle took place off the Azores. In 1899 wireless telegraphy for the first

time played a part in this mimic warfare. Similar manoeuvres are carried out by squadrons of torpedo-boat destroyers.

Naval Reserve, ROYAL, is composed of officers and men of the mercantile marine. The service, which was established in 1862, is voluntary, and the officers and men are given an annual retaining fee. The number of officers (1905) is 1,844. The period of drill for general training and gunnery instruction is twenty-eight days every year, reduced to seven days only when the officer is efficient. The royal naval reserve may be called out for service in the case of national emergency. Reserve officers are allowed to apply for twelve months' training with the fleet,

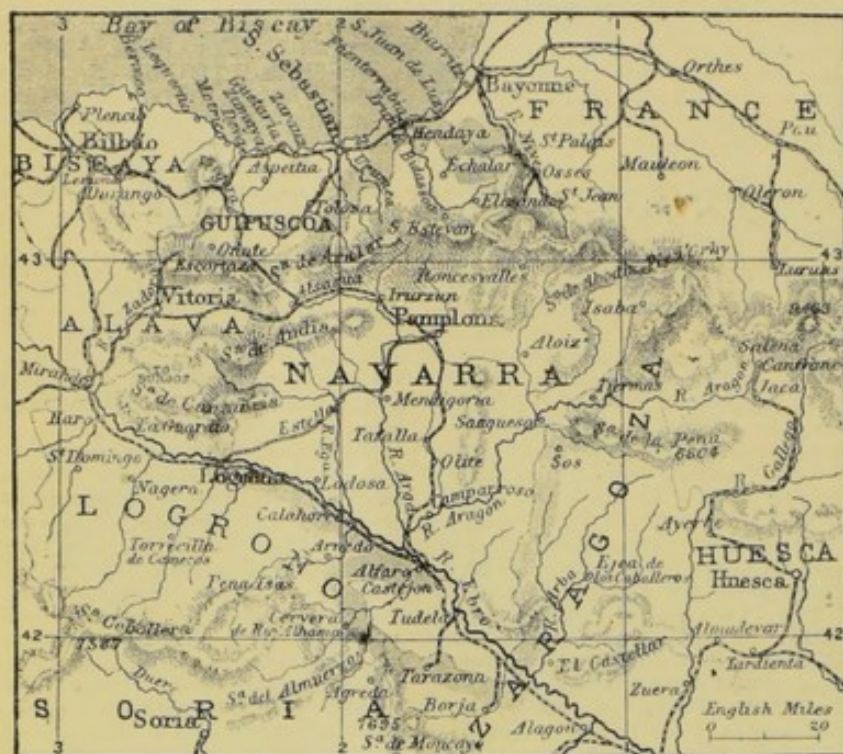
Navarre (Sp. *Navarra*), ancient kingdom of the Iberian peninsula. The territory, with the exception of one province, lay on the southern slope of the Pyrenees, extending down to the Ebro. The province on the N. afterwards became Basse-Navarre. The Spanish division is still kept distinct for administrative purposes, and measures 80 m. from N. to S., and 60 m. from E. to W., with Pamplona as its capital. Agriculture flourishes, timber and cattle are raised, and textile and fictile industries utilize the abundant water power. The climate is damp and cold in winter, and very changeable at all seasons. Cereals, wine, fruit, and oil are produced. Area, 4,055 sq. m. Pop. (1900) 307,669. The first

Fair, King of France (1284), the kingdom was merged into that of France. On the death of her son, Charles IV., without male issue (1328), Navarre passed to her daughter, Jeanne II., who married Count d'Evereux, and was succeeded by her eldest son, Charles the Bad, the ally of Edward the Black Prince against Peter the Cruel of Castile, and false alike to friends and foes. The granddaughter of Charles the Bad, Queen Blanche, married John II., who succeeded in 1458 to the kingdom of Aragon, on the death of his brother, Alfonso V. Their son, the Prince of Viana, heir to Aragon and Navarre, was done to death (1461) by his father, in the interest of the children by his second marriage with Joan Henriquez, amongst whom was Ferdinand V., afterwards king of Aragon, and consort of Isabel the Catholic of Castile. The next heiress, Blanche, sister of the Prince of Viana, was also poisoned (1464), and the youngest sister, Eleanor, wife of Gaston de Foix, became queen of Navarre in 1469. In 1512 Ferdinand V. of Aragon (the Catholic) annexed Navarre to the crown of Castile, expelling the queen, Catherine de Foix, and her husband, Jean d'Albret. From the marriage of their granddaughter Jeanne d'Albret with Antoine de Bourbon, Henry IV., titular king of Navarre, was born; and on the extinction of the sovereign house of Valois, by the murder of Henry III. (1589), Henry IV. succeeded to the throne of France. His French province was then merged into France; whilst Spanish Navarre, though retaining its autonomy, ceased after 1512 to have a national history apart from the rest of Spain.

Navarrete, MARTIN FERNANDEZ DE (1765-1844), Spanish scholar, born at Abalos (Rioja prov.); discovered in the Spanish archives at Simancas vast stores of new material for history, especially in connection with the discovery of America, and from 1814 till his death edited them. They are still being published, under the title of *Documentos Ineditos*. Navarrete also wrote a good *Life of Cervantes* (1879). See *Mendoza y Navarrete* (1845).

Navarro, MME. See **ANDERSON, MARY**.

Nave, in architecture, the central part of a church, so called from a supposed resemblance to a ship. It was formerly the custom, as now in many Roman Catholic churches, to separate the chancel from the nave by a screen. Durham Cathedral presents an example, rare in England, of a high altar placed in the nave.



Navarre.

and are afterwards eligible for employment in the navy in lieu of lieutenants on the established list.

Navan, tn., Co. Meath, Ireland, at junction of Blackwater and Boyne, 7 m. N.N.E. of Trim. It has a woollen and a bacon factory. Pop. (1901) 3,839.

Navarino, or PYLOS, seapt., Messenia, S.W. Greece. The ruins of the ancient town are farther to the north. The island of Sphagia gives excellent shelter to the harbour. Ibrahim Pasha captured the town in 1825. In the bay, on Oct. 20, 1827, the British, French, and Russian fleets destroyed the Turkish and Egyptian fleets, and thus secured the independence of Greece. Pop. 3,000.

A known ruler of Navarre was a Christian chief named Sancho Iñiguez in 905, whose grandson, Sancho III., the Great (970-1035), became the most powerful Christian monarch in Spain, being also, in right of his wife, ruler of Castile. After his death Navarre was for two hundred years a prey to dynastic strife. In 1191 Sancho VI. endeavoured to secure his position by marrying his daughter Berengaria to Richard I. of England, and on the death of his son, Sancho VII. (1234), the male line of Iñiguez ended. The Navarrese Cortes chose (1234) as their sovereign Thibault, Count of Champagne, a French nephew of Sancho VII. By the marriage of Jeanne Thibault, heiress of Navarre, to Philip the

Navies. The beginnings of the British navy date back to the time of Alfred the Great, who built a fleet of galleys to repel the Danish invaders. Fleets were collected for various purposes by the early Norman kings, and in 1340 that of Edward III. defeated the French in the battle of Sluys, and the Spanish off Winchelsea ten years later. The *Royal Harry* built by Henry VII., and the establishing of Trinity House and the Navy Office by Henry VIII., may be said to mark the starting-point of the present royal navy. At the death of Henry VIII. the navy consisted of over fifty ships, with a tonnage of 12,000, which had increased at the close of Elizabeth's reign to over 17,000 tons. Under the Stuarts the tonnage of the navy rose to over 100,000, carrying 7,000 guns and 42,000 seamen. At the death of Queen Anne the tonnage amounted to 167,000, which under George II. increased to over 320,000, and under George III. to over half a million tons. Under Queen Victoria revolutionary changes took place in the British navy. Steam began to assert itself, and iron to take the place of wood in the building of ships; while the past few years have seen the advent of yet another type of naval engine of destruction in the submarine and the submarine.

DEVELOPMENT OF MODERN NAVIES.—Although the application of armour to the sides of ships did not become a general practice prior to the advent of shells, and the resultant danger to wooden-sided vessels, nevertheless it is possible to trace the desire for some superior sort of protection far back in history. The famous galley of Trajan (see *History of Navigation*, attributed to John Locke) was covered externally with leaden sheets affixed with copper nails; whilst in 1673 an order was issued from the Admiralty directing that certain ships of the navy should be sheathed with lead. This was the commencement of sheathing as we know it to-day: it was more for protection against the ravages of sea-water than of an enemy.

In 1354 Peter of Aragon, struck by the damage occasioned in naval combats by fire, ordered a complete sheathing of leather to be given to some of his ships. The idea was not followed up, however, until 1530, when the famous carrack *Santa-Anna*, a present from the Chevaliers of St. John of Jerusalem to Charles V. for his expedition against Tunis, was said to have been cased in lead. At the battle of Lepanto, in 1571, the Catholic ships were protected by fitting upright beams inside the decks,

leaving a space between them and the hull to be filled in with old sails, ropes, and other material. In 1782, Chevalier d'Arcon designed and had built ten floating batteries protected on one side only with a turtle-back cover six feet thick, and composed of wooden beams reinforced by leather and cork, and bound together by iron bars. Water was to be kept constantly flowing between the various layers of the turtle-back as a protection against fire. On September 13, 1782, Admiral Moreno ranged these ten additions to his force before Gibraltar, and opened fire with their 212 guns. The English replied with red-hot shot, and in spite of the water device five of them blew up and the others ran ashore, burning furiously, only 487 of their crews of 5,260 being saved. In 1814 Fulton came upon the scene with the *Demologos*, the first steam war-vessel to be set afloat. The *Demologos* had a length of 156 ft. and was propelled by a single paddle-wheel working between a double-hull. She blew up as the result of an accident in 1829. From that date the attempts to evolve a successful armoured war-vessel are too numerous to recount. In the action off Sinope (November 30, 1854) the value of shells was first demonstrated. Here, in less than half an hour, six Russian ships, under Admiral Nakhimoff, annihilated a Turkish force of seven frigates, two corvettes, and two steamers. This action definitely decided all nations to adopt armour protection for their ships. France and Great Britain, the two chief naval powers, took the lead; but whilst in France wooden ships already built were cut down and partially armoured, Great Britain commenced at once the construction of iron-hulled armour-clads, and also added protection to many wooden vessels then in commission. France still remained true to wooden hulls, and built her ironclads of this material until the early seventies of last century. The French *Gloire*, historical as the first sea-going ironclad, was launched on November 24, 1859. She was designed by Dupuy de Lôme, displaced 5,618 tons, and steamed 12'85 knots on trial. The *Warrior*, Great Britain's first ship, was designed by Watts, launched on December 29, 1860, displaced 9,210 tons, and steamed 14'35 knots. Both vessels were plated with 4½ inches of iron. At this time began the contest between guns and armour. No sooner were protected ships afloat than guns were built capable of piercing that protection. The result was that armour grew thicker and immensely heavier,

and guns became larger. This led to two modifications in the original design. The first ships had been of the continuous belt and broadside battery type, with a large expanse of side covered with a thin iron sheet, and pierced for a large number of cannon. Soon the armoured surface grew less, and did little more than protect the guns, which, owing to increased weight and size, had perforce to be reduced in number. All these early ironclads were fully rigged, and depended for propulsion as much upon their sails as on their engines. In 1860 Captain Coles brought forward his first design for a turret-ship, antedating Ericsson's *Monitor* by over a year. In 1862, Sir E. J. Reed was appointed chief constructor, and introduced recessed ports, first in the *Pallas*, and then in an improved form in the *Hercules*, and later designed the *Audacious* class, a successful series of central-battery ships, giving for the first time in history a good all-round fire in a high free-board ship; and in the *Sultan* the upper deck battery, further improving the axial fire. About this time France was mounting two or more large guns in barbets, placed first on either beam and eventually lozenge-wise—i.e. one at either end and one on each beam, thus allowing three guns to fire ahead, astern, or on the broadside. In England we took up the barbet tentatively in the *Téméraire*, mounting fore and aft two 25-ton guns on disappearing carriages. In this ship and in the *Alexandra* we reached finality as regards broadside and central-battery vessels, the turret ship then taking its place. In 1862 the *Royal Sovereign*, a wooden three-decker, had been cut down and converted into a four-turreted ship. She was followed by the *Prince Albert*, built of iron; but both lacked sail power, considered essential in those days, and were consequently relegated to coast defence. The *Monarch* was ordered in 1865, the first really sea-going turret-ship to be designed, and simultaneously Messrs. Laird laid down the rival *Captain* from plans by Captain Coles, which in September 1870, under the command of Captain Burgoyne, 'turned turtle' in the Bay of Biscay. At this time three sea-going mastless turret-ships of the *Devastation* type were in hand, and these proved highly successful. They carried, on a displacement of 9,300 tons, two circular turrets of 10 to 14 in. armour, each containing a pair of 35-ton guns. Between the turrets was a light superstructure with a flying deck, on which were mounted lighter weapons, these being the beginning of the present day 'secondary

armament.' Rams were also fitted to ships of all classes, and only now are they being abandoned. The advent of the torpedo necessitated a vessel for its special use, and fast screw launches were introduced by Messrs. Thornycroft and Yarrow, from which have developed the torpedo boats and destroyers of to-day. The nations of Europe were not behindhand in adopting the turret-ship, and whilst Russia acquired the *Petr Veliki* and the United States embarked on a series of low-freeboard monitors (or coast-defence battleships), Italy commenced the construction of the at that time monstrous *Dandolo*, displacing nearly 11,500 tons, and mounting in two turrets placed diagonally athwartships four huge 60-ton Armstrong guns of great power. Her protection was in the nature of an armoured box or citadel made of 21½ inches of iron. The belt beyond the citadel was abandoned, its place being taken by an armoured

torpedo craft. Muzzle-loading guns were finally banished, though they did not disappear from the fleet until quite recent years. The cruiser, both armoured and protected, was evolved separately and distinctly from the line of battleships, being given greater speed at the expense of protection and armament. Masts and sails were discarded, steel armoured masts or mere signalling masts taking their place; quick-firing guns came speedily to the front, and increased in efficiency, both as regards power and trustworthiness. More important still was the determination of our administrators to build our ships in homogeneous groups. A policy of drift as regards new construction had left us in the early 'eighties in a dangerous position at sea, and between 1889-94 we laid down and completed over seventy vessels of various types ordered under what is known as the Naval Defence Act. From that time onwards we have had regular annual pro-

Russia, have all been outdistanced, even by Japan, a nation destined to contest the supremacy of the sea at some future date. The battleship of the future will have to undergo a still further change, if we are to be guided by the lessons of the Russo-Japanese war. The standard battleship of to-day has been of between 12,000 and 15,000 tons displacement, belted with steel of from 9 to 12 inches in thickness, endowed with a trial speed of at least 18 knots, and carrying four guns paired in shielded barbets, from ten to eighteen weapons of smaller calibre as a secondary armament, and about two score of small quick-firers as a defence against torpedo craft. Modern conditions, however, demanded an increase in the secondary armament, and in the eight vessels of the *King Edward VII.* class there are, in addition to the usual 12-in. B.L. and 6-in. Q.F. guns, four of 9.2-in. mounted singly in barbets at the corners of the citadel. In the *Lord Nelson*

Comparison of British and Foreign Navies.

	Great Britain.	France.	Germany.	Italy.	Austria-Hungary.	Russia.	Japan.	United States.
Battleships—1st Class	41	11	15	6	—	4	8	21
Battleships—2nd Class	13	10	9	5	6	3	2	4
Battleships—3rd Class	10	16	13	4	10	3	5	1
Armoured Cruisers	40	25	7	10	3	3	9	15
Protected Cruisers—1st Class . .	21	4	6	2	—	10	—	2
Protected Cruisers—2nd Class . .	46	14	3	6	2	3	12	16
Protected Cruisers—3rd Class . .	19	11	27	12	8	4	8	9
Cruiser Scouts	8	—	—	—	—	1	—	3
Torpedo Gunboats	22	5	6	14	11	9	3	—
Torpedo-Boat Destroyers	143	40	59	17	1	45	44	20
Torpedo Boats	173	320	94	182	76	153	87	32
Submarines	27	59	8	8	1	15	10	18

deck 2 inches thick and situated below the water-line. Great Britain followed with the *Inflexible*, and, increasing the displacement to 11,880, made the armoured citadel 24 inches thick and added an inch to the protective deck. The introduction of 'compound armour' and steel in the place of iron permitted of a reduction in the great thickness of the side armour then in vogue, and the turret presently found a serious rival in the armoured barbet, a type of gun-platform first adopted in France. The advent of Sir William White to the Admiralty saw the initiation of many shipbuilding reforms, and in the *Admiral* class we may trace the beginning of our modern navy. Here, on a displacement of about 10,000 tons, we obtained a battery of four heavy breech-loading guns mounted *en barbet* fore and aft; and between them, in an unarmoured battery, a definite secondary armament, necessitated by the rapid evolution of

grammes based on our necessities as judged by foreign shipbuilding. Displacements began to rise, and with them speeds, and for battleships nothing less than 17½ knots was accepted, with three knots more in cruisers. In 1890 Germany came forward to join the race for sea-power, France and Russia at that time holding the second and third places. The Sino-Japanese war in 1894 drew attention to a further competitor, our allies the Japanese; and in 1898 America, by destroying the Spanish fleet, and thus proving the value of sea-power, placed herself under the necessity of competing as well. On all sides the development of a definite 'type' was attempted, and owing to the ever increasing size, and hence cost, of battleships, the wealthier powers came quickly to the front, until we find Germany and America running neck and neck for second place, France a meagre third, and the rest nowhere. Spain, Italy, Holland, and now

son class, of 16,500 tons displacement, the 6-in. Q.F. disappears, the secondary armament consisting of ten 9.2-in. B.L. in addition to the ordinary anti-torpedo boat weapons. In the *Dreadnought*, the latest word in naval construction, the speed has been raised to 21 knots, mainly owing to the introduction of steam-turbines. This remarkable vessel has a displacement of about 19,000 tons, and carries little between the 12-in. B.L. and the small quick-firers. The evolution has been quite as strange and more rapid as regards cruisers. The protected type has been practically abandoned, all the energy of naval constructors being concentrated on the development of the armoured cruiser. These, from a displacement of 4,000 to 6,000 tons, now vie with battleships in displacement; and the speed called for in our newest type, the *Invincibles*, is no less than 25 knots. Here also the 6-in. gun has disappeared, an inter-

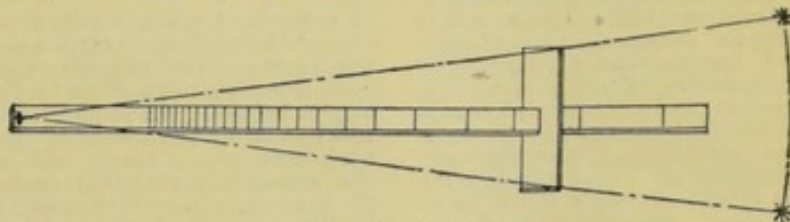
mediate weapon of 7.5-in. bore having been produced, though probably only to be superseded by the 9.2-in. B.L.—a gun combining immense power with great handiness. A displacement of 18,000 to 20,000 tons seems now to have been generally accepted by all nations rich enough to enter the lists, and for armoured cruisers 15,000 to 17,000 tons alone suffices. Recent years have seen great progress in submarine navigation, and most navies possess a flotilla of submersible boats; whilst a new type, called 'scouts,' has been evolved—small, unprotected, weakly-armed cruisers of great speed. Destroyers, which formerly were of 250 tons displacement and 26 knots speed, now touch 1,000 tons in our latest sea-going type, and must maintain a velocity of 36 knots. At the present time Great Britain has a good lead in every class of ship over any other nation or combination of nations, but America and Germany are making a bold bid to outdistance her.

The preceding table gives the classification and relative strengths of the chief naval powers. It includes the vessels under construction at June 1905, and is mainly compiled from Clowes's *Naval Pocket-Book*. See also Jane's *All the World's Fighting Ships Illustrated* (published annually).

Navigation, the science of finding the position of a ship at sea, and of conducting her from one point to another. The Phœnicians, Syrians, Carthaginians, Greeks, and Romans, conducted their voyages solely by observation of the heavens, and by keeping as much as possible to the coast; and it was not until the voyages made by direction of Prince Henry of Portugal, after 1418, that navigation seems to have been systematically conducted, and the instruments and sea-charts then constructed form the basis of the maritime science of the present day. An early invention that marked progress was the cross-staff, first described by Werner in 1514. It was used for the determination of longitude, by observation of the distance between the moon and some star; and out of it grew the fore-staff and the back-staff. In 1530 Gemma Frisius of Louvain devised the idea of using small clocks in conjunction with instrumental observation, and the nautical quadrant in some form was thenceforth part of every ship's furniture. John Davis's quadrant (the back-staff) seems to have been generally preferred for many years. In the early 16th century there also came into use at sea the astrolabe, for taking the altitude

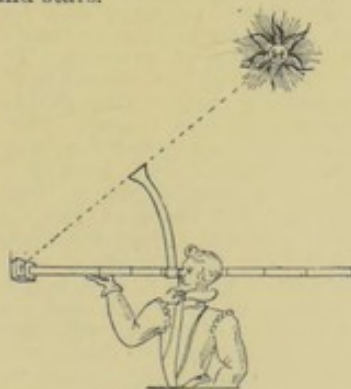
of the sun and stars. This instrument was made very heavy, so that it hung perpendicularly and steadily. The middle of the 16th century saw the invention of the log-line. Voyages were, however, conducted rather by guesswork and experience, and especially so previous to the discovery of methods of finding the longitude. Mercator's system of plane charts furthered progress; and Edward Wright, a fellow of Caius College, Cambridge, discovered the true method of dividing the meridian, and drew up a table for

nomical matters, a calendar, a method of determining the age of the moon and the tides, a description of the sea-compass and its variations, a table of the sun's declination for four years, the measurements of time and how to determine them, and finally an explanation of the errors in the old sea-charts. Among English writers, the earliest of note was Dr. William Cunningham, who brought out *Cosmography and Navigation* in 1559, and demonstrated the use of the quadrant. In 1577 William Bourne brought



The Cross-staff.

the use of navigators, by which latitude could be determined. He also devised a system of what were called sea-rings, from which compass variation, altitude of the sun, and time of day could be determined in any place where the latitude was known. About 1614 arithmetical as opposed to instrumental calculation was introduced, and about 1620 trigonometry and logarithmic tables were applied to the science of navigation. The latter improvement was due to Edmund Gunter, who also introduced an instrument, called the crossbow, for determining the altitude of the sun and stars.



The Back-staff.

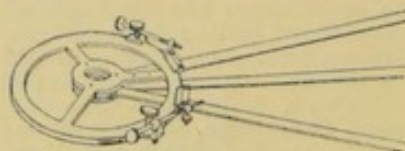
Among the most famous early works on navigation are those of Pedro Nunez, a Portuguese mathematician, who wrote *De Arte et Ratione Navigandi* about 1567. In 1563 Pedro de Medina published at Valladolid a work on navigation, which, with another published in 1556 by Martin Cortes, became an accepted authority among seafaring nations. Cortes's work comprised a number of astro-

nomical matters, a calendar, a method of determining the age of the moon and the tides, a description of the sea-compass and its variations, a table of the sun's declination for four years, the measurements of time and how to determine them, and finally an explanation of the errors in the old sea-charts. Among English writers, the earliest of note was Dr. William Cunningham, who brought out *Cosmography and Navigation* in 1559, and demonstrated the use of the quadrant. In 1577 William Bourne brought out a supplement to Cortes's Spanish work. In 1581 Robert Norman issued a treatise on the dipping needle—a discovery which he had previously made. William Borough, who afterwards became Queen Elizabeth's comptroller of the navy, published a work in 1599 on compass variation. Mention has already been made of John Davis and Mercator. In 1754, J. Robertson, published *Elements of Navigation*, which was long a standard work. In 1761, Dr. Nevil Maskelyne, astronomer-royal, devised a method of finding the longitude at sea by lunar observation. In 1763 he published his *British Mariner's Guide*, which was far in advance of anything else of the period. At the same time a nautical ephemeris of lunar observation was drawn up under the auspices of the then Board of Longitude. Out of this grew the *Nautical Almanac*, which was first issued in 1767. In France, George Fournier published his *Hydrographie* in 1633. A more elaborate work by Pierre Bouguer, jun., founded on an earlier work by P. J. Bouguer, was published in 1753, and called *Nouveau Traité de Navigation*. It describes a variation compass which is said to be the invention of the author. In 1738, however, in the *Philosophical Transactions* of that year, Captain Middleton had described a similar one; and improvements had been made by John Smeaton by the year 1750. Another famous work, published by Blondel St. Aubin (1673), was the *Trésor de la Navigation*. It included a description of an instrument for making calculations at sea, which was a sort of skeleton of Wright's Universal Map. Ten years later, Dassier, in his *Pilote Expert*, showed French

navigators the use of Gunter's scales; and in 1693 a work called *Le Neptune Français*, consisting of sea-charts on Wright's principle, was brought out. See further GREAT CIRCLE SAILING and COMPASS. In addition to works already mentioned, see Bowditch's *Practical Navigator* (new ed. 1889); Norie's *Epitome of Navigation* (1803; 21st ed. 1878); Forman's *Epitome of Navigation* (1821; many eds.); Raper's *Practice of Navigation* (1840; many eds.); Evers's *Navigation and Great Circle Sailing* (1868); Jeans's *Navigation and Nautical Astronomy* (1858; many eds.); Rosser's *Nautical, Logarithmic, and Astronomical Tables* (1878); Ledieu's *Nouvelles Méthodes de Navigation* (1877); Martin's *Treatise on Navigation and Nautical Astronomy* (1888); Littlehales's *Development of Great Circle Sailing* (1889); Lecky's *Wrinkles in Practical Navigation* (14th ed. 1903).

Navigation, PRACTICAL. COASTAL NAVIGATION.—When sailing along a coast, a ship's position is found by reference to points of land, lighthouses, beacons, or any prominent marks indicated on the chart. If only one point is available, an approximate position may be found by taking a bearing—i.e. noting the direction by compass in which the point lies from the ship—and estimating the distance from it. A more exact position is found as follows:—A bearing of the point is taken, and the ship kept on her course for some distance, and then another bearing is taken. These bearings are then drawn on the chart, a parallel rule is placed across them in the direction of the ship's course, and moved to or from the point until the distance between the lines on the chart is found to coincide with that sailed by the ship in the interval. All bearings taken from the compass must be converted into magnetic bearings, by allowing for the deviation, before drawing them on a magnetic chart. If the chart is a 'true' one, the variation must also be allowed for: the amount of variation is marked on the chart. A particular case of the foregoing, known as the 'four-point bearing,' is used for finding the distance off a point when it is abeam—i.e. when its bearing is at right angles to the direction of the ship's head. A bearing of the point is taken when it is four points (45°) on the bow, and again when it is abeam: the distance sailed in the interval is the distance from the point when abeam. The distance sailed is found from the log. See LOG. When two points are in sight, compass bearings of them are taken simultaneously, and, after

being corrected, are drawn on the chart: their point of intersection is the position. If three suitable points are in sight, the position may be found by measuring the angles between them. An instrument, called the 'station pointer,' is then brought into use.



Station Pointer.

It consists of a circle with three arms radiating from its centre, and these arms are set at angles with each other corresponding to the angles between the objects. By placing it on the chart so that each arm passes across one of the observed points, the centre of the circle fixes the position of the ship. In foggy weather, when it is not possible to take bearings of points, the navigator has to feel his way along with the lead or sounding machine. The position found in this way is only a rough approximation, and it is necessary to get a series of soundings in order to utilize them to the best advantage.

OCEAN NAVIGATION.—Away from land a ship's reckoning is carried on by two methods concurrently—viz. by dead reckoning (D.R.), and by observations of celestial bodies. The D.R. is valuable when, as in thick weather, observations of the sun or stars are not possible for several days. For position by D.R. the navigator relies on his compass and log, and refers to the chart for the set and rate of current. The courses steered are entered in the log-book, together with the distance run on each course. These courses are corrected for variation, deviation, and leeway (if any), the result being 'true' courses. All books of nautical tables contain a traverse table, which gives the number of miles made good to the N. or S. (called difference of latitude), and also the number of miles made good to the E. or W. (called departure), corresponding to any course and distance. The true courses are entered in a traverse form, the corresponding 'D. lat.' and 'Dep.' being taken from the traverse table and entered in separate columns to obtain the total D. lat. and Dep. made good. All distances are in nautical miles, which are practically equal to minutes of latitude. Therefore, by applying the D. lat. to the lat. left, the lat. is obtained. But the length of a minute of longitude on the earth's surface varies; on the equator it

is equal to a minute of latitude, but decreases to zero at the poles. It is necessary, therefore, to find the D. long. corresponding to the departure from the formula, $D. \text{ long.} = \text{Dep.} \times \text{secant of middle lat.}$

Position by Observation.—For this a sextant, a chronometer, and the *Nautical Almanac* for the current year are required, in addition to the tables. Under favourable conditions the exact position may then be found within a margin of a mile.

Finding the Latitude.—The simplest method of doing this is by a meridian altitude of the sun or a star. It is customary to take the meridian altitude of the sun every day. Just before noon the observer measures the altitude of the sun's lower limb above the visible horizon with a sextant, and repeats the observation at frequent intervals until the sun attains its maximum altitude. It is then apparent noon at ship, and the last altitude, as read from the sextant, is the observed meridian altitude. The index error of the sextant, if any, is applied, and then the following corrections—dip of the horizon due to the height of eye, refraction, parallax, and the sun's semi-diameter: the result being the true altitude. These corrections are given combined as one in the nautical tables. The time at Greenwich is found by applying the longitude expressed in time ($15^\circ = 1$ hour) to the ship time; or the mean time at Greenwich can be obtained from the chronometer. The declination corresponding to this time is then obtained from the *Nautical Almanac* (N.A.). The true altitude subtracted from 90° gives the zenith distance, or arc of the meridian between zenith and the sun. The zenith distance is named opposite to the sun's bearing at noon. The declination is the arc of the meridian between the sun and the equator. The sum of these arcs is taken if they have like names, but their difference if unlike names: the result is the latitude. The proceeding for a star is similar, the correction for a star's altitude being used instead of the sun's. The moon also could be observed; but the calculation is longer, on account of the moon's rapid change of declination.

Latitude by Reduction to the Meridian.—When a meridian altitude is not possible, the navigator finds his latitude by reduction to the meridian. An altitude of the sun is taken as near noon as opportunity allows, and the exact time from apparent noon, found either from a watch the error of which on apparent time at ship is known, or from the chronometer

time, longitude, and equation of time. A quantity termed the 'reduction' is then either calculated, or more generally taken from tables, such as *Towson's Ex-Meridian Tables*. The 'reduction' added to the true altitude gives the true meridian altitude, after which the latitude is found as in meridian altitude. A star may be used in a similar manner, the *Ex-Meridian Tables* being entered with the star's hour angle instead of the time from noon. The latitude may easily be obtained from an observation of the pole star. Its true altitude being found, certain corrections depending upon the time of observation are taken from the *N.A.* and applied, the result being the latitude.

Longitude by Observation.—For this the navigator depends upon his chronometer. The longitude of any place is equal to the difference between the time at that place and the corresponding time at Greenwich at the same instant. The apparent time at ship is deduced from an altitude of the sun. The time by chronometer is taken simultaneously, and with its known error the mean time at Greenwich is found: the equation of time applied to this gives the apparent time at Greenwich. The difference between the apparent times at ship and at Greenwich is equal to the longitude in time, which is then converted into arc. The declination is obtained from the *N.A.*, and from it the sun's polar distance, which = $90^\circ + \text{declination}$ when it is of opposite name to the latitude, but $90^\circ - \text{declination}$ when of the same name. The three sides of the spherical triangle formed by the polar distance, zenith distance, and co-latitude are then known, and from this the sun's hour angle or time from apparent noon at ship is calculated by spherical trigonometry.

The nautical tables contain the logarithms for effecting these calculations. By using Davis's chronometer tables, the hour angle corresponding to the altitude, latitude, and declination can be taken out almost by inspection, thus abbreviating the work. When a star is observed, its true altitude is obtained, and then its westerly hour angle + its right ascension = the sidereal time at ship. The sidereal time at Greenwich is then found from the mean sun's right ascension and the mean time at Greenwich. The difference between these sidereal times is the longitude.

Longitude by Lunar Distance.—This method is not much used since the chronometer has been brought to such perfection.

Finding Latitude and Longi-

tude simultaneously.—To find both co-ordinates, two observations are required. These may either be two altitudes of different objects, such as two stars, taken at the same time, or two altitudes of the same object taken at different times. If an altitude of some object is taken, it is then known that the ship is somewhere on a small circle, the pole of which is vertically under the object, and whose spherical radius is equal to the zenith distance. Two such circles will fix the position of the ship, which must be at that point of intersection nearest the ship's position by D.R. The best result will be obtained when the circles cut orthogonally. This will be the case when the bearings of the objects form a right angle. No appreciable error will be introduced if small portions of these circles in the neighbourhood of the ship are considered as straight lines (unless the altitude is over 70°). It makes the calculation much easier than the rigorous but cumbrous method of spherical trigonometry. The mode of procedure is as follows:—Two latitudes $10'$ to $20'$ on each side of the lat. by D.R. are assumed, and the longitudes corresponding to these are calculated from the altitude of one of the objects. These two positions are then marked on the chart, and the line joining them forms one line of position. By proceeding in a similar manner with the other altitude a second line of position may be drawn, and their point of intersection fixes the ship's position. This is known as Sumner's method. The calculation may be much abbreviated by the use of Burdwood's and Davis's *Azimuth Tables*. An excellent practical method is that introduced by A. C. Johnson in his *On Finding the Latitude and Longitude in Cloudy Weather* (27th ed. 1904).

Directing the Course.—The shortest distance between two points lies along the great circle passing through them; but it is not always possible to follow this track, as it may extend to too high a latitude. The prevailing winds and current have also to be considered, especially in a sailing-ship. Experience has shown which are the best tracks to follow between any two ports, and the navigator fixes certain points through which he intends to pass. The true course from point to point is easily found from the chart, or can be calculated from the formula: $\tan \text{true course} = D. \text{long.} \div \text{meridional D. lat.}$ All nautical tables give a table containing meridional parts. After finding the true course, allowance is made for the variation and deviation in setting the course to steer by compass. The error of

the compass is found at frequent intervals throughout the day as it changes with a change of position or course, or if the vessel heels over. In the present day this is easily done by the *Time Azimuth Tables*. A compass bearing of the sun is taken, and the apparent time at ship noted. Entering the tables with the time, and the latitude and declination, the true azimuth or bearing of the sun is obtained. The difference between the true and observed bearings is the error of the compass—i.e. the variation and deviation combined. Any object besides the sun may be observed in a similar manner. The error may also be found by an amplitude or bearing of an object when rising or setting, and in this case the time is not necessary, except for roughly correcting the declination. The true amplitude can be taken out by inspection from the tables for the latitude and declination, and the difference between it and the observed is the error.

Navigation Acts, a long series of acts between 1381 and 1833 passed to encourage, by the exclusion of foreign competitors, the ships, seamen, and commerce of Great Britain. The principal act was that of 1660, which provided, subject to certain exceptions, that no goods might be imported into England or its dependencies in any other than English bottoms, and that the master and three-fourths of the mariners should be British subjects. The last restriction on the trade of foreign ships in British dominions was removed in 1854, when foreigners were allowed to engage in the coasting trade; but by the Customs Act, 1853, if British ships are prevented from trading in foreign countries similar restrictions may be imposed on ships of those countries in British possessions.

Navigator's Islands. See SAMOA.

Naville, EDOUARD HENRI (1844), Swiss Egyptologist, born at Geneva. In 1874 he was commissioned by the Congress of Orientalists (London) to edit the 'Book of the Dead,' which appeared in 1886 as *Das ägyptische Totenbuch der 18 bis 20 Dynastie*. Since 1882 he has been exploring in Egypt for the Egypt Exploration Fund, and discovered, in conjunction with Mr. H. R. Hall, in 1903-4, at Thebes, the mortuary chapel of King Mentuhotep of the 11th dynasty. In 1891 he was appointed professor of Egyptology at the University of Geneva. He has published memoirs on *The Store City of Pithom* (1885), *Goshen and the Shrine of Saft el-Henneh* (1887), *Deir el-Bahari* (1894-1901).

Navy. See NAVIES.

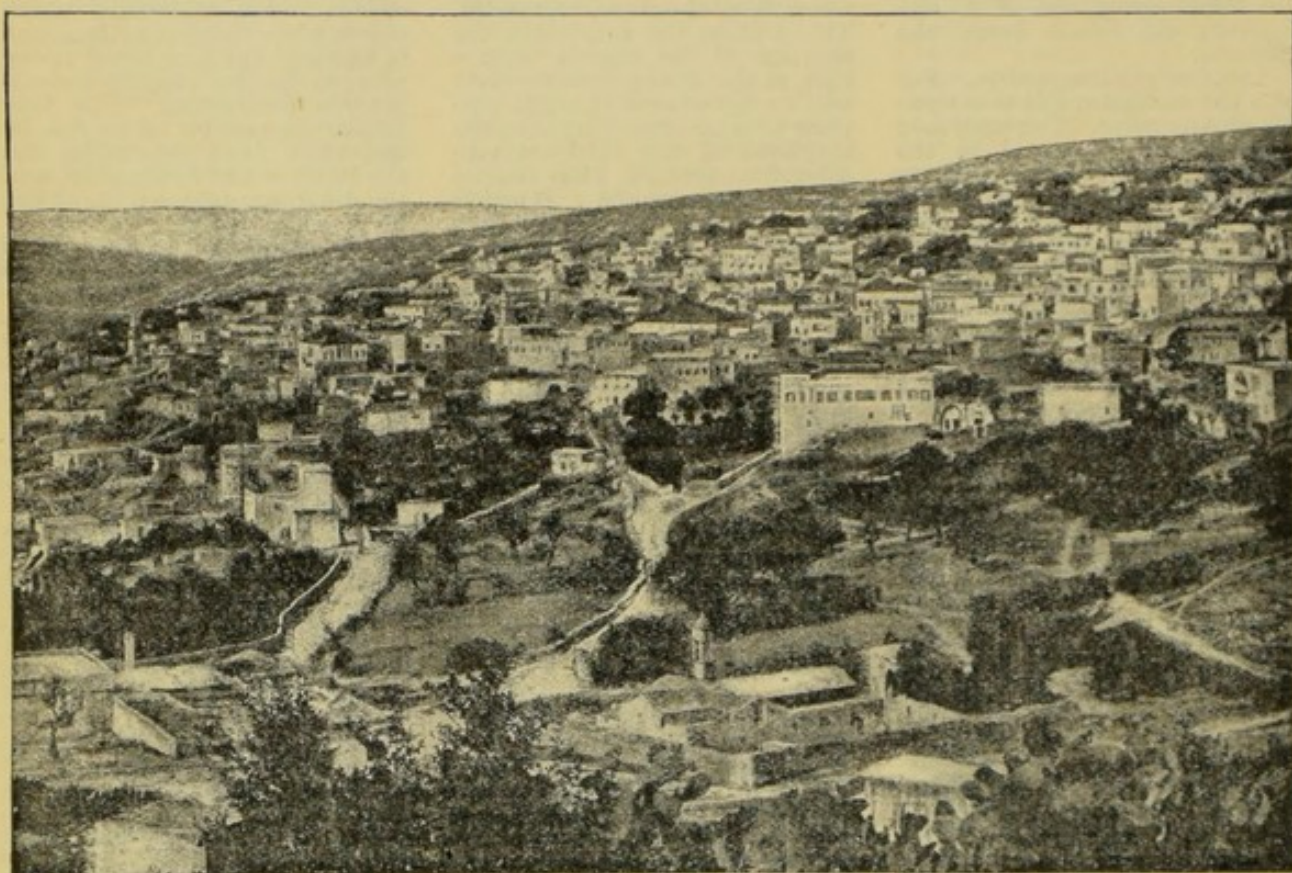
Navy Board, THE, the body of commissioners by whom the civil and administrative work of the royal navy was conducted, with but brief intermissions, between April 1546 and June 1832. The duties of this board are now performed by the Lords of the Admiralty, and by various heads of departments subordinate to them.

Navy League, THE, a strictly non-party organization, to urge upon government and the electorate the paramount importance of an adequate navy as the best guarantee of peace. It publishes *The Navy League Journal* (monthly), and books and pamphlets, employs lecturers, and,

Nawanagar, or JAMNAGAR, feudatory state, Kathiawar, Bombay, India. Area, 3,393 sq. m. The chief town, Nawanagar, is a flourishing seaport, 310 m. N.W. of Bombay. It manufactures gold and silk embroidery and perfumed oils. Pop. (1901) 53,844.

Naxos. (1.) The largest and most fertile of the Greek islands called the Cyclades, in the Aegean Sea. Length, 15 m. Pop. (1896) 15,608. Its chief products are wine, corn, oil, cotton, fruits, and emery. There are marble quarries, worked as early as the 6th century B.C. About 1000 B.C. it was colonized by Ionians. With the rest of Ionia it was con-

Jesus from his connection with Nazareth (Matt. 2:23)—intelligibly enough; the difficulty is, however, that the reference there given to the 'prophets' cannot be verified from their extant writings. For various theories, see, for example, *Century Bible*, Matthew, p. 128 f. note. The name Nazarenes was used of the Christians (Acts 24:5), and seems also to have indicated a sub-section of the Ebionites, which, according to Jerome, had a settlement at Pella at the close of the 4th century A.D. See Lightfoot's *Galatians*, 292 ff., and *contra*, Harnack's *History of Dogma* (index).



Nazareth, from the road to Cana.

generally, enlightens the public as to the state of British and foreign navies, and of the development of naval warfare. The organization was founded in 1895.

Navy Records Society, THE, a society established in London in 1893 for the publication or reprinting of documents and works bearing upon the history of the royal navy. Its foundation was due to a suggestion put forward by Professor J. K. Laughton, which was warmly taken up by Admiral Sir Cyprian Bridge and the late Marquis of Lothian.

Nawabganj, cap., Bara Banki dist., United Provinces, India, 16 m. N.E. of Lucknow; exports sugar and cotton. Pop. (1901) 7,047.

quered by the Persians; after the Persian wars it joined the Athenian League, and was the first city to attempt rebellion, and to be subdued (469 B.C.). Naxos, the capital, is on the N.W. coast. Its chief feature is a Venetian castle. Pop. 2,000. (2.) A colony from Naxos, founded on E. coast of Sicily 735 B.C.; was the first Greek settlement in Sicily. In 403 B.C. it was destroyed by Dionysius of Syracuse; in 358 its scattered inhabitants were resettled at Tauromenium (Taormina).

Nazarene and Nazarenes. There is considerable variety of opinion among scholars as to the significance of both these words. Nazarene is an epithet applied to

Nazareth, tn., Galilee, Palestine, about half-way between the S. end of the Lake of Galilee and the Mediterranean, on the slope of a hill 1,600 ft. high. The district around is remarkably fertile. Joseph and Mary resided here both before and after the birth of Jesus (Luke 1:26; 2:4, 39; Matt. 2:23), and the village continued to be the home of Jesus until He began His ministry (Luke 2:51; 4:16; Mark 1:9; Matt. 4:13). The modern town *En-Nasira* has 10,000 inhabitants. The so-called 'holy house' is a cave under the Latin church. None of the traditional sites have any authority. See Edersheim's *Life and Times of Jesus*, i. 144 ff.

Nazarites, properly NAZIRITES, a name borne in ancient Israel by those who were consecrated to the Lord. Their vow embraced abstinence from wine, from the practice of cutting the hair, and from contact with dead bodies (Num. 6:12). The vow might be temporary, in which case its termination was celebrated by sacrifices; but it was sometimes lifelong, as in the case of Samuel, Samson, and John the Baptist (Nazarites from birth); cf. the Rechabites (Jer. 35). The wilful repudiation of the vow was always regarded as highly sinful; cf. Amos 2:12.

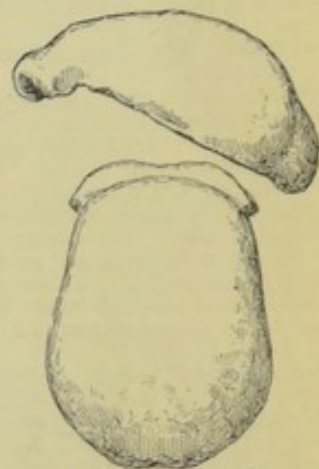
Nazianzen. See GREGORY NAZIANZEN.

Nazrana, or NAZARS, in India, an offering of cash or goods made by any one entering the service of a native chief, or paid by a

Neal, DANIEL (1678-1743), English historian, was born in London, and from 1706 until his death ministered to an Independent congregation in Aldersgate Street, London. His *History of New England* (1720) was followed by the *History of the Puritans* (1732-8), which was carried down to 1689. See Life by Toulmin (prefixed to the *History of the Puritans*, 1793-7).

Neal, JOHN (1793-1876), American author; established a legal practice at Portland, Maine. During a stay in England (1823-7), he acted as secretary to Jeremy Bentham. Among his novels are *Seventy-Six*, and *Randolph* (1823), *Logan* (1823), and *The Downcasters* (1833). He translated Bentham's *Theory of Legislation* from the French of Dumont (1825), and wrote a *Life of Bentham*

history at Heidelberg in 1811, and at Berlin (1812-50). His principal works are *Ueber den Kaiser Julianus* (1812); *Der heilige Bernard* (1813); *Die gnostischen Systeme*



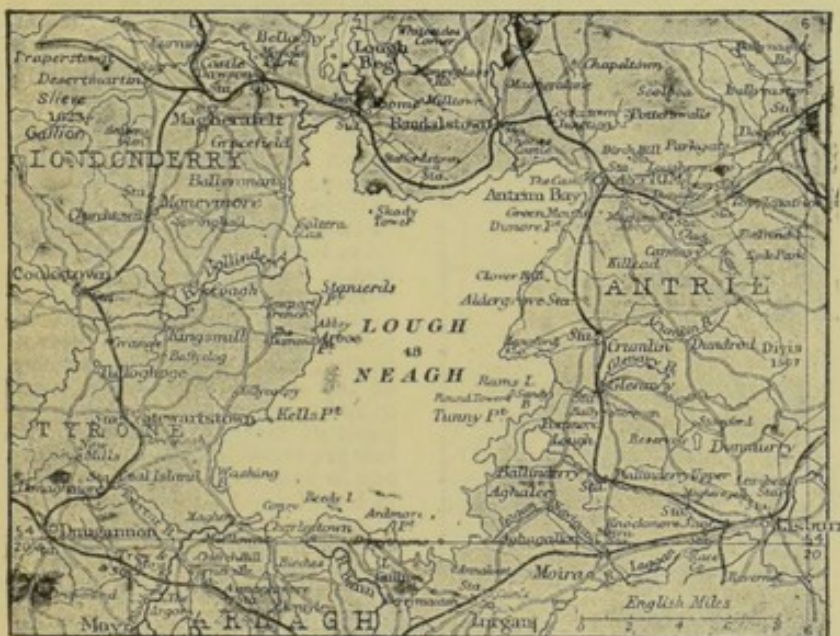
Skull of Neanderthal Man, side and top view.

(1818); *Chrysostomus* (1822); *Antignostikus* (1825), an essay on Tertullian; *Denkwürdigkeiten aus der Geschichte des Christenthums* (1822); *Allgemeine Geschichte der christlichen Religion u. Kirche* (1826-45); *Geschichte der Pflanzung der christlichen Kirche* (1832); *Leben Jesu Christi* (1837); and *Christliche Dogmengeschichte* (1857). Nearly all these are translated into English, principally in Bohn's Library. Neander was a tower of strength against the rationalism of his time. He joins vast erudition with deep spiritual insight. See monographs by Krabbe (1852) and Jacobi (1882).

Neanderthal Man is the term distinguishing a very low type of European, long extinct, represented by a skeleton found in 1856 in the Neanderthal, near Düsseldorf. The skull, which is very thick and unusually large, is dolichocephalic, with a cephalic index of 72 mm., and is further remarkable for its low forehead, its enormous superciliary ridges, and an exceptional projection of the occipital region. Skulls presenting almost identical characteristics have been found at Spy (Belgium), Cannstatt (Württemberg), Egisheim (Alsace), and Tilbury (London). De Mortillet, in his *Formation de la Nation Française* (1897), concludes that Neanderthal man walked with a slouching gait.

Neapolis. (1.) Ancient name of Naples. (2.) Ancient tn., seapt. (9 m.) of Philippi, in Macedonia. Kavalla is probably on or near the site. For Paul's association with the town, see Acts 16:9-11.

Nearchus, officer of Alexander the Great, who in 326 B.C. was put in command of a fleet which sailed down the Indus and along



Lough Neagh.

native chief to the paramount power on succession to the throne. Nazars in cash are presented at durbars by chiefs to the representatives of the suzerain power. These gifts are either touched and remitted, or, if accepted, a return present of greater value is made to the donor.

N.B. (*nota bene*), 'mark well'; North Britain; New Brunswick.

Neagh, LOUGH, lake in Ulster, Ireland, the largest in the British Isles. The coast is much indented. Ram's Island has remains of a round tower. The principal rivers entering the lake are the Upper Bann and the Blackwater. The Lower Bann drains to the Atlantic; and in s.e. the Lagan navigation connects with Belfast Lough and the Ulster Canal. Length, 20 m.; average breadth, 10 m. Area, 153 sq. m.

and *Wandering Recollections of a Somewhat Busy Life* (1869).

Neale, JOHN MASON (1818-66), English divine and author, was born in London, and became a priest of the Anglican Church (1841). While warden of Sackville College, East Grinstead, where he spent the last twenty years of his life, he founded a nursing sisterhood of St. Margaret. Among his works are a *History of the Jews* (1841), and *Introduction to the History of the Holy Eastern Church* (1850). He is author or translator of nearly one-eighth of *Hymns Ancient and Modern*.

Neander, JOHANN AUGUST WILHELM (1789-1850), German Church historian, was born of Jewish parents at Göttingen. After being baptized in 1806, he was appointed professor of church

the s. coast of Baluchistan and Persia, and up the Persian Gulf and the Euphrates to Babylon (324 B.C.). Nearchus left an account of his voyage, the substance of which is preserved in Arrian's *Indica*.

Nearctic. See GEOGRAPHICAL DISTRIBUTION.

Neath, seapt. and mrkt. tn., Glamorganshire, S. Wales, 7 m. E.N.E. of Swansea; has steel works, galvanizing works, tinplate works, engineering shops, foundries, chemical works, and firebrick works. It belongs to the Swansea district of parliamentary boroughs. There are remains of an ancient castle and of an abbey founded about 1130. Pop. (1901) 13,732.

Neat's-foot Oil is properly obtained by boiling the feet of cattle, though horses' and sheep's feet are often substituted. It consists chiefly of olein, and is of pale yellow colour and without odour.



Nebraska.

It does not easily solidify on cooling, become rancid, or clog, and is a valuable lubricant for finer machinery. It is also used in leather dressing.

Neaves, CHARLES, LORD NEAVES (1800-76), senator of the Scottish College of Justice, was a native of Edinburgh. He was successively advocate-depute (1841-5); sheriff of Orkney and Shetland (1845-52); solicitor-general (1852-3); judge in the Court of Session (1853), and became a lord of justiciary (1858). He wrote sparkling and witty verse (*Songs and Verses*, 1868).

Nebo, MOUNT. See ABARIM.

Nebo, a Babylonian deity, the interpreter of Bel-Merodach, and the patron of literature and science. He was the son of Merodach, and had a temple at Borsippa. His name appears in Nebuchadnezzar, Nebuzaradan, Abednego (for Nebo); perhaps in Barnabas (Deissmann's *Bible*

Studies, 309 f.); also as a designation of a mountain and town in Moabite territory.

Nebraska, N. central state of U.S.A., with an area of 77,510 sq. m. It was organized as a territory in 1854, and admitted as a state in 1867. Its surface is a plain, with a general E. slope, ranging from 1,000 ft. above sea-level at the Missouri, its E. boundary, to 5,000 ft. in the W. In this plain the river Platte and its branches have cut shallow valleys. The rainfall is scanty in the W., and irrigation is resorted to. The state is practically almost treeless. The capital is Lincoln, and the chief city is Omaha, on the Missouri. The industries are almost purely agricultural and pastoral. South Omaha carries on slaughtering and meat packing. Pop. (1900) 1,066,300, of whom 52.9 per cent. were males, and 47.1 per cent. females.

Nebraska City, city, Nebraska, U.S.A., co. seat of Otoe co., 45 m. S. of Omaha. Pop. (1900) 7,380.

Nebuchadnezzar, more correctly, NEBUCHADREZZAR, founder of the Babylonian empire, was the son of Nabopolassar, and reigned 604-561 B.C. Towards the close of his father's reign he defeated Pharaoh Necho at Carchemish (605 B.C.); he reduced Tyre, which had revolted, after a siege of thirteen years; invaded Judah in 598, 597, and 588 B.C., finally destroying Jerusalem and deporting the inhabitants (586). He lavished stupendous sums in the erection of fortifications, temples, and palaces, thus making his capital one of the wonders of the world.

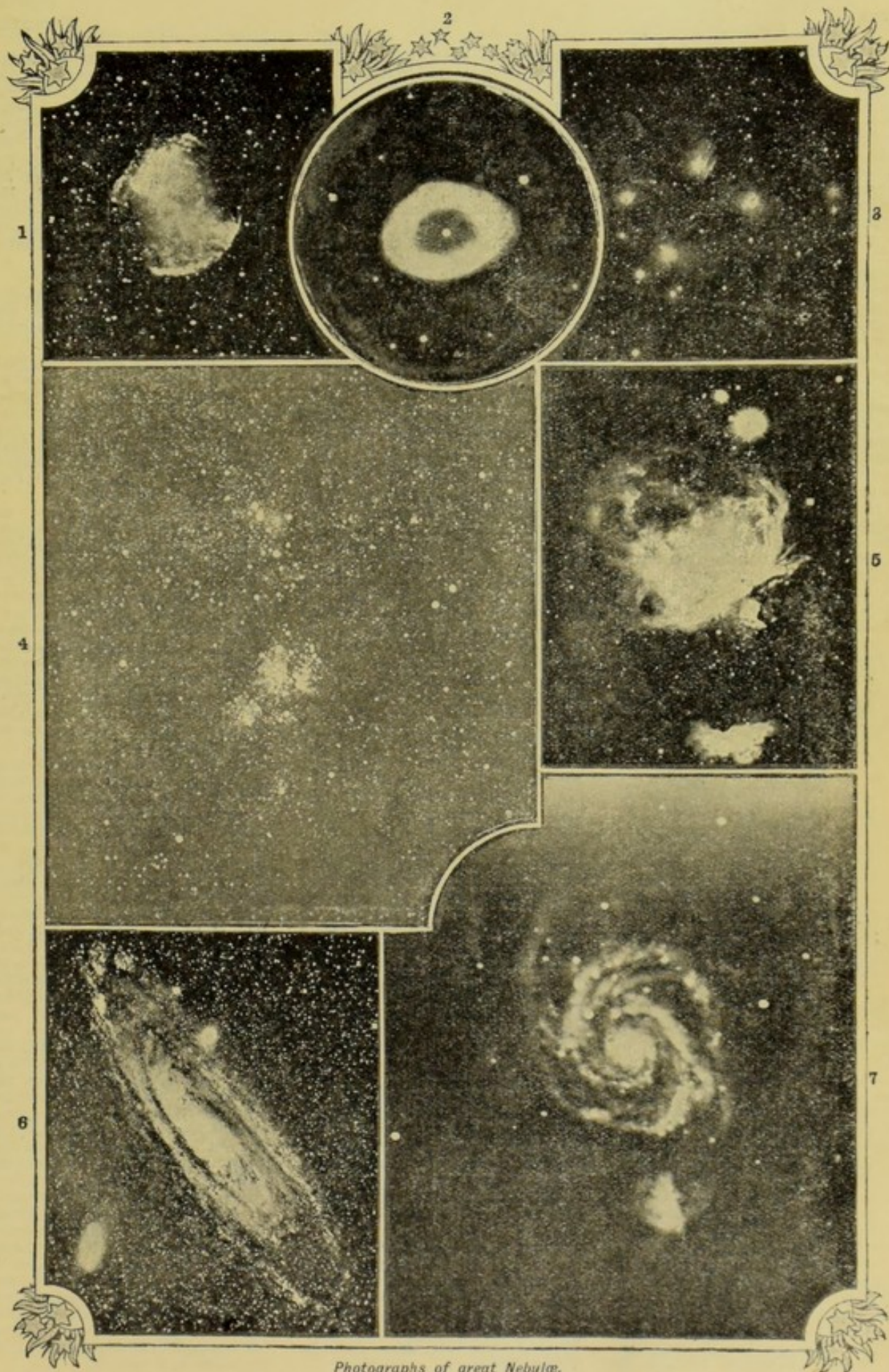
Nebula, a cloudlike sidereal object irresolvable into stars. The great nebular ellipse in the girdle of Andromeda noted in the 10th century, and the 'fish-

mouth' formation in Orion observed in 1618, typify respectively the two leading varieties. White nebulae give a faint continuous spectrum; they are mostly elliptical or spiral in structure; and they crowd towards the poles of the Milky Way. About 9,000 have been already catalogued, and their numbers may be almost indefinitely increased by photographic charting. Gaseous nebulae were discovered as such by Sir William Huggins in 1864. They shine with a greenish light, analyzed by the spectroscope into three conspicuous green rays, besides some thirty-five others in the blue and ultra-violet. Their chief constituent is the unknown substance nebulium, with which hydrogen and helium are associated. All the great irregular nebulae, as well as those of planetary and annular forms, are gaseous. Only a few hundreds, however, have yet been registered; and they tend to congregate in the plane of the Milky Way. Dr. Max Wolf has begun at Heidelberg a photographic nebular survey, the first volume of which was published in 1902. The distances of nebulae from the earth are probably enormous. None has a measured parallax or an ascertained proper motion, though their radial velocities, determined by Keeler in 1890-1, are comparable to those of the stars. They often occur in pairs and groups, but give no signs of mutual revolution. A few are variable in light—notably one in Taurus discovered by Hind in 1852 (N.G.C. 1555); and many are attached to stars as brushes, trains, or halos—e.g. in the group of the Pleiades.

Nebular Hypothesis, a speculation regarding the origin of the planetary system, propounded in an imperfect form by Kant in 1757, and with fuller knowledge by Laplace in 1796. See COSMOGONY.

Necessaries. See INFANT, and HUSBAND AND WIFE.

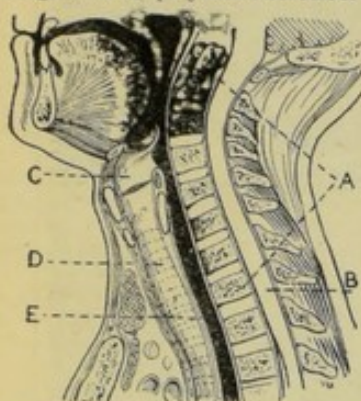
Necessity. By the necessity of a proposition or judgment is meant that logical certainty which attaches to it in virtue of its self-evidence or full demonstration, and which compels us to accept it as true. A distinction, of much importance in the history of philosophy, has been drawn between necessary and contingent truths, as by Leibniz (*Monadology*, sec. 33): 'There are two kinds of truths—those of reason and those of fact. Truths of reason are necessary, and their opposite is impossible; truths of fact are contingent, and their opposite is possible.' For example, the proposition that two sides of a triangle are together



Photographs of great Nebulae.

1. Dumb-bell nebula in Vulpecula. (Lick Observatory.) 2. Ring nebula in Lyra. (Lick Observatory.) 3. The 'nebulae' in the Pleiades. (By Dr. Isaac Roberts. By permission of his executors.) 4. Nebula in Argus. (Sydney Observatory.) 5. Great nebula in Orion. (Yerkes Observatory.) 6. Great nebula in Andromeda. (Yerkes Observatory.) 7. Great spiral nebula in Canes Venatici. (Lick Observatory.)

greater than the third could not be rejected without inherent contradiction; but there is no such apparent necessity that any given historical event must have happened just as it did happen. But this distinction would not now be accepted by a thoroughgoing logic as ultimate. It would rather be held that necessity is a characteristic which pertains to all knowledge in so far as the latter is definite and systematic, and which does not belong to any one class of judgments exclusively. The more systematic any department of knowledge becomes, the more the character of necessity attaches to it, and therefore to all the propositions included in it. Thus, when the necessity of a causal sequence is asserted, the assertion means simply that we do not recognize chance as anything real or objective. When the conditions of an event are fully present, there is no room left for the event to happen in any other way than the conditions determine. But it should be added that necessity in this very general sense is not to be conceived as exclusively of the mechanical type which is recognized in physical science.

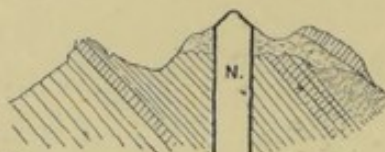


Diagrammatic Section of the Neck.

A, Cervical vertebrae; C, spinal cord; C, larynx; D, trachea; E, oesophagus.

Neck. (1.) In anatomy, that part which lies between the head and trunk. The cervical part of the spinal column, protecting the spinal cord and supporting the head, lies at the back of the neck, covered by masses of muscle for keeping the head erect or drawing it back. The lowest cervical vertebra is easily felt just under the skin. In front, in the middle line, the cartilaginous larynx and trachea can be felt; and behind them lies the soft muscular tube, the gullet or oesophagus. On either side of the middle line lie large muscles for supporting and moving the head, large arteries, veins, and nerves, each side being a duplicate of the other. (2.) In geology, the name given in former volcanic craters to

the conduit up which the lavas arose. Necks are found in all old volcanic districts—e.g. Arthur's Seat, North Berwick Law, Dumbarton Hill (in Scotland), in Auvergne, in the Eifel, in Bohemia, Texas, and California. The most famous examples are the diamond mines of Kimberley, South Africa, where the diamantiferous 'blue ground' is a brecciated igneous rock, occupying a cylindrical conduit, the walls of which are nearly vertical.



Diagrammatic Section of Arthur's Seat, showing volcanic neck, N.

Neckar, riv., trib. of Rhine, rises between Black Forest and Swabian Jura, in s.w. of Württemberg, and flows N.E., N.W., and W., and joins the Rhine at Mannheim, after a course of 247 m.

Necker, JACQUES (1732-1804), French financier, was born at Geneva, where he founded (1762) a bank which became one of the most famous in that part of Europe. In June 1777 Louis XVI. made him controller-general of finances; but he seems to have been little more than a first-class business man and manipulator of figures. He managed to restore the credit of the French treasury for a time; but his economies were more than neutralized by the war with England on behalf of the American colonies. In 1781 Necker appealed to public opinion by the publication of the *Compte Rendu*, a statement of the financial position of France. It is now held to have been too optimistic in many particulars, and to have concealed the real bankruptcy of the country. But its importance consisted in the fact that for the first time the public of France learned on official authority the incidence of the burdens of the state in all their injustice. Necker's dismissal in 1781 made him a popular hero. He was recalled in 1788 and made director-general of finance; but his second dismissal, on July 11, 1789, was one of the direct causes of the attack on the Bastille. He was recalled a second time on July 20, as a consequence of the popular victory; but he was quite unequal to the situation, and resigned in September 1790. His *Œuvres Complètes* appeared in 15 vols. (1820-1). See Mme. de Staël (his daughter), *Vie Privée de M. Necker* (1804); and Hermann, *Zur Geschichte der Familie Necker* (1886).

Necker, SUZANNE CURCHOD, MADAME (1739-94), was born near Lausanne, and was at one time engaged to Gibbon the historian. The wife of the financier, her *salon* in Paris was famous. She wrote treatises on literary and moral topics, collected as *Mélanges* in 5 vols. (1798-1802). Her daughter was Madame de Staël. See D'Haussonville's *Le Salon de Mme. Necker* (Eng. trans. 1882).

Necklace, DIAMOND. See DIAMOND NECKLACE.

Necromancy, the practice of the black art, enchantment, and magic in general. See DIVINATION.

Necropolis, a city of the dead; especially applied to a cemetery of the ancient world, and to any burying-ground in modern times. The most celebrated necropolis was the so-called suburb of Alexandria, the scene of the suicide of Cleopatra. The only remains are a series of catacombs.

Necrosis, in pathology, the death of circumscribed portions only of bodily tissue, most frequently the death of bone. Tissues necrose through localized failure of nutrition, by the cutting off of the blood-supply, by suppuration, or after severe local injury, such as crushing. Necrosis in bone follows after destruction of periosteum, the protective covering through which the blood-vessels enter bone. The surgeon's aim is to remove the sequestrum.

Nectar, the sweet secretion of certain organs present in a large number of flowers, and the source of honey. By means of its nectar a flower attracts insects, which, by conveying pollen from the stamens of one flower to the stigma of another, bring about cross-fertilization.

Nectar, the name given by Homer to the drink of the gods of Olympus, their food being ambrosia. It was red-coloured, and mixed with water, like wine. Mortals were not permitted to taste of it, as to drink it conferred immortality.

Nectarine, a fruit which, for its successful culture in Britain, requires a south wall or the protection of a glass-house, and a deep, well-drained, open loamy soil. It should be planted about the end of September, and the surface of the soil above the roots should be covered with long litter. In most soils budded trees do far better than trees on their own roots. Every January the wood which has borne fruit in the previous season is cut out, the last season's new shoots being left intact or but very slightly shortened. The general treatment is similar to that for the peach, of which indeed the nectarine is a variety.

Nectary, the organ or floral part of a flower whose function it is to produce nectar from the fluids circulating in the plant tissues. In most umbelliferous plants the nectary is almost on the surface, for these plants are fertilized by flies; whereas in the honeysuckle, which is cross-fertilized by moths, the nectary is at the bottom of a long tube, and can only be reached by an insect with a long proboscis.



Types of Nectary.

1. *Parnassia* (fingered nectary). 2. An umbellifer (parsley). 3. *Fritillaria*. 4. *Aconite*. 5. *Tropaeolum*. 6. *Aquilegia*.

Nederland Steamship Line, THE, was established in 1870, under a subsidy from the Netherlands government, and has a fleet of seventeen steamers aggregating 66,113 tons, the largest vessel being the *Oranje* (4,500 tons). Originally formed only to carry passengers and cargo between Holland and Java, the company now runs a mail service from Amsterdam *via* Southampton to Port Said and Suez, and has also a combination service with the Rotterdam Lloyd, which runs to Java from Rotterdam.

Nedim (fl. c. 1700-30), Turkish poet, acted as custodian of the library founded at Constantinople by Ibrahim Pasha, grand vizier. He exhibits greater originality, grace, and power than any other Turkish poet.

Needle, an instrument used to carry the thread in sewing, knitting, embroidery, etc. Needles are now generally made of fine steel, but bone, ivory, and wood are also used. The manufacture of needles is an important industry. After a suitable wire has been chosen, it is cut out into one hundred eight-foot lengths, and again into lengths of two needles. These are collected into bundles, slightly softened by firing, and pressed to make them perfectly straight. They are then pointed at both ends by a grindstone, and the eyes punched by dies, broken apart, polished, tempered, and the heads ground into shape.

Needle, MAGNETIC. See COMPASS.

Needle-gun. See RIFLE.

Needles, THE, group of three rocks off W. point of Isle of Wight, England. The original 'needle,' a slender pinnacle 120 ft. high, fell in 1764. They were formerly connected, but the sea pierced them before 1820.

Needlework. In sacred writings frequent mention is made of needlework. Aholiab, of the tribe of Dan, celebrated as a skilled embroiderer, was chosen to execute the beautiful hangings of the tabernacle. Tents occupied by primitive man were embellished with devices in needlework. The Greeks attributed the invention of needlework to Minerva, and Grecian women excelled in the art. Homer makes Helen weave and embroider the story of the siege of Troy; and the same authority has familiarized us with the stories of Penelope and her web, and the ambitious challenge to a test of needlework skill sent by Arachne to Minerva.

The early Britons were accomplished in needlework, for Boadicea on the day of her defeat wore a richly-embroidered mantle. Anglo-Saxon women won fame all over Europe for their skill in needlework. In the days of chivalry exquisite work was done on the banners, scarfs, and surcoats and ecclesiastical hangings and vestments. Tapestry—a combination of embroidery and weaving—played a prominent part at this period. The historical Bayeux tapestry worked by Queen Matilda is one of the most celebrated specimens.

The degeneracy of needlework in England dates from the reformation. In the time of James I. portraits were executed in needlework, in which the face and background were often painted. During the reign of Charles I. hangings and furniture were worked in woollen crewels—a style which found favour until the reign of Queen Anne. After that followed revivals of coloured embroideries executed in wools and silks of curious designs of fruit, flowers, birds, and animals; as well as print-work, an imitation of stippled engravings worked in threads of black and gray on a white silk ground. Cross-stitch samplers, on which were represented alphabetical letterings, quaint devices, landscapes, trees, and flowers, were also popular. Then came Miss Linwood with her celebrated series of sixty-four pictures in needlework. The various operations in the making of personal and household linen formed an important branch of female education. But the advent of the sewing-machine obviated the necessity for expending so much time and skill on hand work. Nevertheless, dainty, well-executed

plain needlework has been gaining more appreciation in recent years. During the early Victorian era a popular form of embroidery was the open-hole cambric work, which has been revived recently. Tambour work (a species of chain-stitch executed with a hooked needle on muslin, cambric, net, or silk), designs darned on coarse net, and plain and ornamental netting, were also in vogue. Appliqué work, in which designs cut out in one material are placed on to a contrasting fabric, and the edges secured by button-holing or by braiding, also found favour. Berlin-wool work, which is cross-stitch worked in wools on canvas, and in most elaborate designs, embellished footstools, hand-screens, and other articles of furniture. Coloured beads were also employed in this form of ornamentation. Tatting—done by means of a small hand-shuttle made of bone or wood, with cotton or linen thread—was much used in making collars and edgings; and crochet, which calls for a hooked bone or steel needle used in conjunction with thread or wool, also attracted much attention. Knitting was pursued for hosiery, gloves, and shawls. Then came crewel work, a most inartistic and crude revival of embroidery in wools. The establishment of the Royal School of Art Needlework at S. Kensington in 1872, and the constant encouragement extended in high quarters to the reinstating of needlework as a fine art, have resulted in remarkable improvement of design and treatment. Embroidery of a natural or conventional nature is now beautifully executed in silks, wools, and flax, and is used largely for decorating ladies' dresses and every kind of house draperies. Drawn thread work, which consists in removing the cross threads from linen or canvas and embroidering the remaining threads into cunning designs containing whorls, cobwebs, hem-stitching, and buttonhole work, is much used. Ribbon embroidery, originally a French work, and composed of light and graceful patterns formed by stitches made with soft, pliable ribbons, is also popular for dress garniture and decorative purposes. A description of raised embroidery in white cotton, applied to linen articles, is very effective, and is known by the name of Mountmellick work. The introduction of flax thread, dyed, has done much towards improving embroidery and outline work. Russian cross-stitch, worked in coloured threads on soft canvas fabrics, or applied to linen by means of working over stiff canvas attached to the linen, and withdrawing the canvas threads



Needlework.

1. Ribbon work on satin. (Royal School of Art Needlework.) 2. Quilt; raised flowers of coloured silk. 3. Cut and embroidered work on linen; English, 18th century. 4. Panel designed by Sir Edward Burne-Jones, embroidered in silks. (Royal School of Art Needlework.) 5. Purse, green silk, and gold and silver thread; English, 18th century. 6. Velvet coat embroidered in silk; English, 18th century. 7. Silk waistcoat, embroidered with silver-gilt thread; English, 18th century. 8. Silk waistcoat, embroidered in silver-gilt thread; English, 18th century. 9. Cut and embroidered work on linen; Saracenic. 10. Scarf end: cut linen, covered with embroidery in silks and gold and silver thread; Italian, 16th or 17th century. 11. Japanese silk embroidery. (Exhibited at the Royal School of Art Needlework.) The examples not otherwise allocated are in the South Kensington Museum.

after the design is worked, is executed in elaborate designs. Church embroidery shows much painstaking and very beautiful work, different in treatment from any other style of artistic needlework. Crochet is capable of beautiful effects, such as those which are displayed in the exquisite Irish crochet laces, collars, and trimmings.

See *Needlework as Art*, by Lady M. Alford (1886); *Dictionary of Needlework*, by S. F. A. Caulfield and B. C. Saward (1881); *The Art of Needlework from the Earliest Ages*, by the Countess of Wilton (1844); *Needlework for Ladies*, by 'Dorinda' (1883); *Needlework*, by E. Glaister (1880); *Embroidery, its History, Beauty, and Utility*, by E. E. Wilcockson (1857); *Art Needlework, Embroidery in Crewels, Silks, and Appliqué* (1882); *Elementary Needlework*, by the 'Silkworm' (1875); *Illuminated Book of Needlework*, by Mrs. H. Owen (1847); *Ancient Needlework and Pillow Lace*, by A. S. Cole (1875); *Universal Guide to Art Embroidery* (1882); *Home Decoration, Art Needlework, and Embroidery*, by J. E. Runtz Rees (1881); *Artistic Embroidery*, containing practical illustrations (1880); *La Broderie* (1864); *The Handbook of Needlework, Decorative and Ornamental*, by Miss Lambert (1864); *Encyclopædia of Needlework*, by Thérèse de Dillmont (1890); and *Art in Needlework*, by Lewis Day (1900).

Neenah, city and summer resort, Winnebago co., Wisconsin, U.S.A., on Lake Winnebago, 80 m. N.W. of Milwaukee. It manufactures paper, lumber, and flour. Pop. (1900) 5,954.

Neerwinden, or NERVINDE, comm., prov. Liège, Belgium, 2 m. W.N.W. of Landen. Here the allies, led by William of Orange, were defeated by Marshal Luxembourg in 1693; and in 1793 Dumouriez, the French general, was defeated by the Austrians.

Ne Exeat Regno, a prerogative writ issued to prevent a person from leaving the kingdom, now very seldom used; but by the Debtors Act, 1869, a plaintiff who proves that he has a claim against a defendant for £50, and that there is some reason to believe that the defendant is about to leave the kingdom, and that the plaintiff will suffer thereby, may obtain an order detaining the defendant for six months, or till he gives security.

Neff, Felix (1798-1829), Protestant pastor, native of Geneva; laboured devotedly in a large parish of Hautes-Alpes, France. See *Memoir* by Gilly (1832), and *Correspondence and Biography* by Bost (Eng. trans. 1843).

Nefi (d. 1635), Turkish poet, who produced not only eulogies of considerable power and brilliancy, but satires, which led to his execution, through the action of powerful enemies.

Negapatam, munic. tn. and chief port, Tanjore dist., Madras, India, 50 m. S.E. of Tanjore; one of the earliest settlements of the Portuguese on the E. coast. It was taken by the Dutch in 1660, and by the British in 1781. Oil is extracted, and here are the workshops of the Great Southern Railway. Pop. (1901) 57,190. Off the town Vice-admiral George Pocock brought to action the French fleet under Comte d'Aché in 1758; the fight was indecisive. Again, in 1782, another indecisive action was fought between Vice-admiral Sir Edward Hughes and the Bailli de Suffren.

Negaunee, tn., Marquette co., Michigan, U.S.A., 3 m. E. of Ishpeming, with iron mines and blast-furnaces. Pop. (1900) 6,935.

Negligence. Negligence is the omission to do something which a reasonable man, guided by those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man would not do. The person who complains must prove negligence on the part of the defendant, and that he has suffered harm as the reasonable and probable consequence of that negligence. But even if the defendant has been guilty of negligence, if he can prove that the harm sustained by the plaintiff could have been avoided had the plaintiff himself exercised reasonable care, then the defendant will not be held liable. This is the doctrine of 'contributory negligence.' A man is liable not only for his own acts, but also for the acts of others employed by him, so long as they do not go beyond the scope of their authority. (See also EMPLOYERS' LIABILITY.) If a man undertakes by contract, express or implied, to perform some service that requires special skill or knowledge, he will be liable for negligence if he fails to exercise adequate skill or knowledge. Hence a doctor must treat his patient with medical or surgical knowledge or skill, and a solicitor must conduct his client's business with legal knowledge. Again, if a man undertakes the charge of gold or jewels, he must take greater care than would be required in the case of things of little value. (See CARRIER, and INNKEEPER.) The neglect of duties imposed by law upon various persons for the preservation or protection of life involves criminal responsibility in the event of some one being injured or killed. The

commonest case at the present day is the prosecution of engine-drivers or signalmen in connection with railway accidents.

In England, but not in Scotland, there is a rule of law that a personal right of action dies with the person; and if a man is killed by the negligence of another, his representatives have, apart from statute, no right of action for damages. Lord Campbell's Act (9 & 10 Vict. c. 53) gives a remedy by way of exception in certain cases, conferring a right of action on the personal representatives of a person whose death has been caused by a wrongful act, neglect, or default such that if death had not ensued that person might have maintained an action. The right conferred is only for the benefit of the wife, parent, husband, or child of the person killed. The damages must be assessed according to the injury or loss to the parties for whose benefit the action is brought, and apportioned among them by the jury. See Smith, *On Negligence* (2nd ed. 1884); Pollock, *On Torts* (7th ed. 1904); and Beven's *Negligence in Law* (2nd ed. 1895).

Negotiable Instrument. A negotiable instrument is a document the mere delivery of which confers, by virtue of the law merchant or by Act of Parliament, a good title to the property secured thereby, on a transferee who acquires it in good faith and for value, and gives him a right to sue on it notwithstanding that the title of the person from whom he acquires it is defective. Bills of exchange, bank notes, promissory notes, and cheques (provided, if payable 'to order,' they are properly endorsed) are all negotiable instruments, but not bills of lading, iron warrants, or post-office orders. Modern decisions tend to establish the doctrine that the courts will give effect to a trade usage to treat a particular document as negotiable, although such usage is of recent origin.

Negri, Ada (1870), Italian poetess, was born at Lodi, and taught in a school at Motta Visconti (1888) till she suddenly rose to fame by the publication of *Fatalità* (1892), a volume of poems steeped in melancholy and bitterness, and full of feeling for her fellow-sufferers the poorer classes. This secured her a post at the normal school of Gaetano Agnesi in Milan. In 1895 followed another remarkable set of poems, *Tempeste*, breathing socialistic ideals. *Maternità* (1904) contains some tender pieces, but as a whole is devoid of inspiration and true poetry. See *Ada Negri*, by Papa (1893) and Henckell (1896).

