

# Famous First Facts International

## A

### AGRICULTURE

**1001. Agriculture** may have developed in the Solomon Islands or elsewhere in the South Pacific. Excavations at Kilu Cave on Buka Island, the Solomons (part of Papua New Guinea), conducted by archeologists M. Spriggs and S. Wickler, uncovered small flake tools that held traces of starch grains from cultivated taro. The tools have been dated to circa 26,000 BCE.

**1002. Farmers' almanac** was found at the Sumerian city of Nippur (modern Niffer, Iraq) in 1949. It is an engraved tablet dating from 1700 BCE and contains a father's advice to his son on growing crops.

**1003. University to teach rural agriculture** was Oxford University in Oxford, England, where a professorship of rural agriculture was established in 1790.

**1004. Agricultural research station** was built by English agronomist John Bennet Lawes, the founder of the artificial fertilizer industry. In 1843, on his estate at Rothamsted, England, Lawes and the chemist Joseph Henry Gilbert founded Rothamsted Experimental Station, an agricultural research station to study fertilizers and animal nutrition.

### AGRICULTURE—AQUACULTURE

**1005. Aquaculture** was the invention of the Sumerians, who lived in what is now Iraq. Sumerian ponds for breeding fish have been dated to circa 2500 BCE.

**1006. Oyster farm** of record was started at Lake Lucrin, near Naples, Italy, by the Roman fisherman Sergius Orata circa 110 BCE. Orata built sheltered marine fishponds and provided posts to which the larval oysters could attach and grow.

**1007. Seaweed cultivation** was developed in Edo (now Tokyo) Bay in Japan circa 1700. Probably the first sea plant grown was laver, a red alga much used in Japanese cuisine.

**1008. Fish breeding** techniques were developed by a German naturalist named Jacobi in 1733. Wild trout were collected live and placed in artificial ponds. Fish eggs and milt were expressed from the fish at breeding time and mixed in a hatching box; after hatching, the fish fry were moved to larger ponds.

**1009. Cultured pearls** were the invention of a Japanese businessman, Kokichi Mikimoto. In 1888 he inserted semiglobular mother-of-pearl beads into pearl oysters, hoping that they would form a new pearl around the irritating foreign body, and placed the oysters in a protected inlet. On July 11, 1893, he pulled up a bamboo basket and found in one oyster a semispherical pearl. Mikimoto established a monopoly in the cultured pearl business that destroyed the natural pearl industry. His son-in-law, Tokichi Nishikawa, developed a way to produce the first completely spherical cultured pearls.

### AGRICULTURE—CROPS

**1010. Cereal crop** was wheat. Evidence of its cultivation appears in the human record before 10,000 BCE. It was first grown in Mesopotamia and around the Mediterranean.

**1011. Rice** is widely thought to have originated in India circa 3000 BCE from strains of the genus *Oryza*. However, a 1996 study by environmental archeologist Syuichi Toyama of Kogakukan University in Japan found that the oldest evidence of rice cultivation comes from sites along the middle Yangtze River in central China, with a median age of 11500 years.

**1012. Einkorn domestication** occurred in Southwest Asia's Fertile Crescent circa 9000 BCE. According to DNA analysis of 68 lines of cultivated einkorn and 261 wild einkorn lines conducted by Manfred Heun of the Agricultural University of Norway and Francesco Salamini of the Max Planck Institute for Research on Plant Breeding in Cologne, Germany, the exact location may have been the Karacadag Mountains of southeastern Turkey, where wild strains of einkorn are the most closely related to the cultivated varieties. Einkorn (*Triticum monococcum*) is a one-grained form of wheat.

**1013. Rye** was cultivated in southwest Asia circa 6500 BCE.

AGRICULTURE—CROPS—*continued*

**1014. Beans** have been grown around the world since ancient times. Mung and soy beans may be the first varieties cultivated, probably in China circa 6000 BCE.

**1015. Crops cultivated in the New World** may have been squashes of the genus *Cucurbita*, a domesticated variety that includes pumpkin and summer squash, according to findings by Bruce Smith of the National Museum of Natural History in Washington, DC, USA. He radiocarbon-dated a cache of seeds found in a cave in Mexico to circa 6000 BCE to 8000 BCE, at least 3,000 years before the beginning of maize cultivation in the Americas.

**1016. Barley** was cultivated circa 4000 BCE in Egypt, where it was used as animal feed and for brewing beer.

**1017. Grape cultivation** began at least 6,000 years ago, and probably well before, in the coastal regions surrounding the Black and Caspian seas (in what is now modern Turkey, Iran, Azerbaijan, Kazakhstan, and Russia). The beginnings of winemaking probably date from this period as well, although the first concrete evidence of winemaking dates from 3500 BCE.

**1018. Olive cultivation** has been traced back to Crete (part of present-day Greece) in the mid-fourth century BCE.

**1019. Maize cultivation** began around 2700 BCE in the Tehuacán Valley of the central Mexican state of Puebla, some 4,000 to 5,000 years after the beginning of agriculture in the Old World. The date was derived by accelerator mass spectrometry tests announced in 1995. Maize, also called corn, did not emerge as a major food until perhaps 1,000 years after its introduction.

**1020. Millet** was developed as a crop in China circa 2700 BCE. Millet's resistance to drought made it especially suitable for growing in China's arid western regions.

**1021. Orange cultivation** began in China no later than 2200 BCE. Oranges are native to China, the Malay islands, and other hot regions of Asia.

**1022. Pear orchards** may have originated in China circa 2100 BCE. It is certain that the Greeks of the ninth century BCE grew pears.

**1023. Cabbage** was domesticated from wild cabbage (*Brassica oleracea*) circa 2000 BCE in the eastern Mediterranean and perhaps independently in what is now France. Head cabbage (the *capitata* variety), the most familiar cabbage type in the West today, was not developed as a crop plant until after 1000 CE.

**1024. Cacao cultivation** began circa 2000 BCE in the highlands of Central America by the precursors of the Toltec and Maya peoples. Cacao prepared from the roasted cacao beans was used mainly in ceremonial drinks.

**1025. Peach cultivation** was first accomplished in China, the native habitat of peach trees, near the beginning of the second millennium BCE.

**1026. Cotton-producing center in the New World** was El Paraíso, a site on the central Peruvian coast. The inhabitants who occupied El Paraíso between 1800 and 1500 BCE manufactured such cotton products as fishing lines, nets, and clothing from wild cotton—cultivation of the plant was not yet practiced—and traded them to neighboring communities.

**1027. Apples** originated in the forests surrounding Almaty (the city formerly known as Alma-Ata) in Kazakhstan, where ancient cultivars were discovered in 1929 by the Russian botanist Nikolai I. Vavilov. Apple varieties traveled to other regions via the Silk Route and were planted in the Nile delta by order of the Egyptian pharaoh Ramses II in the 13th century BCE.

**1028. Oats** are one of the most recent grains to be domesticated. The grain was cultivated circa 500 BCE in Asia from wild varieties such as *Avena fatua*.

**1029. Banana cultivation** is of uncertain origin. The soldiers of Alexander the Great are known to have encountered bananas during their invasion of India in 326 BCE.

**1030. Pineapple cultivation** originated in the islands of the Caribbean and the northeastern coast of South America, possibly as early as the beginning of the first century CE.

**1031. Plum cultivation** began at least 2,000 years ago in several places: the Caucasus area between the Black and Caspian seas, the area that is now Syria, and in the Andean highlands of what is now Peru. Wild plums were used in medicinal preparations in Babylonia some 800 years earlier.

**1032. Cultivation of potato** was begun by Andean farmers circa 200 CE in what are now Peru and Bolivia. The word potato is derived from the Taino word *batata*, meaning sweet potato.

**1033. Chinese cabbage** was cultivated in China from circa 500 and at about the same time in Korea, where it was used as the basis for kimchi. There are two species of Chinese cabbage, *Brassica pekinensis*, with a cylindrical head and crinkly leaves, and *Brassica chinensis*, or bok choy, with dark, glossy leaves and a thick white stem.

## FAMOUS FIRST FACTS INTERNATIONAL

1034—1049

**1034. Limes** grew in Asia, in and around the islands of Indonesia. They were first seen in Europe at the close of the first millennium CE.

**1035. Brussels sprouts commercially grown** were cultivated near Brussels, Belgium, perhaps as early as 1200. The first recorded description of the vegetable *Brassica oleracea*, a relative of broccoli, dates to 1587.

**1036. Tomato cultivation** began in Mexico in the 12th or 13th century by the Aztecs, from whose word *tomatl* the English word "tomato" is derived. Wild tomatoes are native to the Andean region of South America.

**1037. Peanuts** were cultivated by the Aztecs and other Mesoamerican peoples. The first Europeans to taste them were members of the first voyage of Christopher Columbus in 1492. The peanut, a legume (*Arachis hypogaea*), was adopted by the Portuguese as a cheap food for slaves and was brought by them to Asia, where it was incorporated into Chinese and Thai cuisine, among others.

**1038. Limes in the New World** are thought to have originated with Christopher Columbus, who brought the seeds of a number of citrus fruits to the West Indies in 1493.

**1039. Pineapples in the Old World** were taken to Spain by the crew of Christopher Columbus's second expedition. The explorers came across pineapples on the Caribbean island of Guadeloupe in 1493.

**1040. Bananas in the New World** were specimens from the Canary Islands imported in 1516 by Friar Tomás de Berlanga (later bishop of Panama), who planted them on the island of Hispaniola (now the countries of Haiti and the Dominican Republic).

**1041. Orange cultivation in the New World** began when Christopher Columbus introduced Canary Island orange seeds to the island of Hispaniola (now Haiti and the Dominican Republic) on his second voyage, in 1493. Regular cultivation began in 1519 in Panama and in Florida by 1579. Navel (seedless) oranges were developed by Portuguese growers in Brazil.

**1042. Tomatoes in the Old World** were brought from Mexico to Spain by returning conquistadors early in the 16th century.

**1043. Asian spice to be cultivated successfully in the New World** was ginger (*Zingiber officinale*), originally native to southeast Asia and used for millennia in Asian cooking and medicine. It was grown by planters in the West Indies, notably Jamaica, soon after the arrival of Europeans. The first shipment of ginger from Santiago in Hispaniola (now the Dominican Republic) arrived Spain in 1547.

**1044. Sunflowers** were cultivated in the southwestern part of the United States by the indigenous tribes in prehistoric times. They were brought to Europe by the Spanish conquistadors in the 16th century.

**1045. Flower cultivated by florists** was the tulip. Tulips were imported to Europe in 1554 by the Austrian diplomat Ghislain de Busbecq, who sent a packet of tulip seeds to Vienna from the court of the Ottoman Turkish sultan Suleyman the Magnificent, where he was the ambassador. They were cultivated in Holland at the botanical garden at the University of Leiden by Carolus Clusius (born Charles de L'écluse or Lescluse), an Austrian botanist and former director of the Imperial Herb Gardens in Vienna, who brought tulips with him when he emigrated in 1593. At first they were bred for medicinal purposes, and the Dutch stewed the bulbs like onions. Their beauty then gave rise to the tulip craze. By 1633, the art of breeding and perfecting new varieties of tulips, in specialized combinations of color and size, had become a mass obsession. The market for bulbs, inflated by speculation, crashed in 1637.

**1046. Peaches in the New World** were brought by the Spanish conquistadors in the 16th century. Peaches were grown in Mexico by the year 1600.

**1047. Cultivation of New World crops in Africa** was undertaken in 1629 at Portuguese farms near Luanda (in present-day Angola). The crops included maize (corn), sweet potatoes, coconuts, papayas, guavas, and cassava (manioc). Cassava became a staple food in West Africa.

**1048. Pears in the New World** were brought in the 17th century by English settlers, who planted a pear tree at Eastham, MA, USA, in 1640, and by the French Jesuit missionaries to the native peoples in what is now Quebec, Canada.

**1049. Strawberry cultivation** began in Europe in the 17th century. Wild strawberries had been eaten since at least the fifth millennium BCE, as attested by seeds found in archeological sites in England, Denmark, and Switzerland. In 1714, a French naval officer, François Frézier, obtained

**AGRICULTURE—CROPS—continued**

five specimens of the Chilean strawberry (*Fragaria chiloensis*) in Chile and brought them back to France. Bred with *F. virginiana*, a strawberry variety imported from Virginia, they produced the first modern strawberry cultivars.

**1050. Account of rubber production** as it was conducted by the tribal inhabitants of South America was written by Charles-Marie de La Condamine, who came to Peru in 1735 as part of a French scientific team. La Condamine observed local people tapping latex from the rubber tree, *Hevea brasiliensis*, and forwarded rubber samples to France the following year.

**1051. Grapefruit** appeared in Jamaica, in the West Indies, in the mid-18th century, evidently derived by mutation or cross-breeding from a Malaysian citrus fruit known as the pomelo. Pomelo seeds were imported to the West Indies in 1696.

**1052. Grapefruit plantation** was established in 1809 in what is now the state of Florida, USA, by Odette Philippe, a French military surgeon. He had taken a liking to grapefruit (*Citrus paradisi*) upon sampling them in the Bahamas, where he had been interned by the British as a prisoner of war.

**1053. African violets** were first identified in 1892 in the rain forests of German East Africa (now Tanzania and Kenya). A flowering plant of family *Gesneriaceae*, genus *Saintpaulia*, it was probably descended from the Madagascan African primrose. Seeds were brought to Europe and later cultivated as a commercial houseplant.

**1054. Avocado cultivation** began circa 1900 by American horticulturist George Cullen of Florida, who developed a tree that produced uniform fruit. Mesoamerican peoples had long used the avocado in local cuisine; the word avocado comes from the Nahuatl (Aztec) word *ahuacatl*, or “tree testicle.”

**1055. Macadamia nut orchards** for commercial use were planted in Hawaii in 1921. The two species of commercial macadamia nut tree—the smooth-shelled *Macadamia tetraphylla* and the rough-shelled *M. integrifolia*—are native to Queensland, Australia.

**1056. Modern rice hybrid that was successful** was the rice strain IR-8, bred from a tall Indonesian rice and a dwarf rice from Taiwan. The strain was developed by a multinational team of researchers at the International Rice Research Institute at Los Baños in the Philippines, and was introduced in 1964. IR-8 provided double the yield of most Asian rices and matured earlier as well, enabling some areas to plant two crops in one season.

**1057. Black tulip** was long sought by breeders but was not achieved until 1979. Dutch horticulturist Geert Hageman obtained the black flower by pollinating a Queen of the Night tulip with pollen from the Winerwald cultivar. It took almost two decades for substantial numbers of black tulips to appear on the market.

**1058. Genetically engineered plants** were high-yield tobacco plants. The U.S. Department of Agriculture approved them for outdoor testing in 1986.

**AGRICULTURE—CROPS—SUGAR**

**1059. Sugar cane cultivation** began on the islands of the South Pacific circa 6000 BCE.

**1060. Sugar in Europe** produced from sugarcane was imported from Egypt by Venetian traders in 996 CE. Sugarcane probably originated in India, where it was encountered in 325 BCE by Nearchus, an officer in the army of Alexander the Great. Nearchus’s account is contained in Arrian’s *Indica*, a document of circa 150 CE.

**1061. Sugar mill in Europe** was invented by Pietro Speciale of Sicily in 1449. His design used three wooden rollers to crush the dried sugarcane sap. The mill was powered by a waterwheel or by a team of oxen.

**1062. Sugar cane brought to the New World** was unloaded in 1493 from the ships of Christopher Columbus’s second voyage at what was to become the city of Santo Domingo, on the island of Hispaniola (now in the Dominican Republic). A sugar mill was built on the island in 1515.

**1063. Sugar cane commercial production** began in 1636, when a Dutch syndicate introduced the crop *Saccharum officinarum* from Brazil, where it had been grown by the Portuguese, to Barbados, in the West Indies. By 1650 sugar cane was the chief crop in the Caribbean islands.

## FAMOUS FIRST FACTS INTERNATIONAL

1064—1079

**1064. Sugar from beets** (*Beta vulgaris*) was obtained in 1747 by Andreas Sigismund Marggraf, director of the chemical laboratory of the German Academy of Sciences, Berlin, Germany. Previously, all the world's sugar came from sugar cane, which grows only in tropical and subtropical climates. Sugar beets can be grown in cold climates as well.

## AGRICULTURE—CROPS—TOBACCO

**1065. Cigarettes** were rolled in Seville, Spain, circa 1518, when the Spanish began importing cigars from their tobacco plantations in Haiti as a luxury item for the wealthy. (The word “cigar” is probably derived from the Mayan *sik'ar*, meaning tobacco wrapped in maize leaves.) The city's street beggars made their own, thinner versions of cigars, called *cigarrillos*, by pulling pieces of tobacco from discarded cigar butts and rolling them in bits of paper. The name was changed to “cigarettes” after French soldiers began to smoke them during the Napoleonic Wars, in the early 19th century.

**1066. Tobacco cultivation by a European** was undertaken at the English colony of Jamestown (now in the state of Virginia, USA) in 1612 by John Rolfe, the future husband of Pocahontas, who had arrived from England with 107 other settlers on May 13, 1607. Rolfe was the first settler to come up with a method of curing tobacco, which made it possible to grow tobacco crops for overseas export.

**1067. Cigarette factory** was founded by Luis Susini in Havana, Cuba, in 1853. This was the first factory to use steam-powered cigarette-rolling machines instead of laborers who hand-rolled the product.

**1068. Cigarette-rolling machine** was patented in the USA by James A. Bonsack in 1880. It deposited shredded tobacco on a roll of paper, shaped the paper into a long cylinder, and cut the cylinder into individual cigarettes.

## AGRICULTURE—EQUIPMENT

**1069. Sickle** known to archeologists was found in Israel. It was made of antler fitted with flint teeth and dates from circa 5500 BCE.

**1070. Hoe** was a flaked, sharpened flint set at right angles to a stick and bound to it with gut or cord, in use in Mesopotamia from circa 4000 BCE. Similar hoes were developed in Egypt at about the same period.

**1071. Grain drill** for planting seed at a set depth was a wooden plow with a seed hopper, invented in Mesopotamia before 2000 BCE. A tube from the hopper released a controlled amount of seed into the furrow as the farmer plowed, thus eliminating the need to sow separately.

**1072. Winnowing machine** was invented by the Chinese before 40 BCE. The device was a simple hand-cranked fan that blew the chaff away while the seed fell to the ground.

**1073. Plow with a moldboard** that was curved to turn aside the soil was invented in China sometime in the first century CE. A plow equipped with a moldboard dug deeper furrows than older plows and was better suited to hard, clayey soils. The first European moldboard plows appeared around 1100.

**1074. Greenhouses** were in use in Rome in the first century CE. The earliest ones were covered with thin sheets of translucent stone. Greenhouses with glass walls are first mentioned by the Roman poet Martial, though not by that name. The word “greenhouse” was coined in the mid-17th century by the English writer John Evelyn, and the first building to be called a greenhouse was erected in 1697 at Chatsworth, England, on the estate of the Duke of Devonshire.

**1075. Horse collar** was introduced in Europe circa 1000; no more definite place or date is known. A major advance over older forms of harness, the horse collar rested on the horse's shoulders rather than across its chest and allowed the animal to put more force into the pull without being choked. With this invention, horses began gradually to replace oxen as draft animals.

**1076. Wheelbarrow** was invented in Europe during the late Middle Ages. It is first mentioned circa 1340, as a “wilbarewe.”

**1077. Wire-screen sifter for grain** was invented in England in 1686 by John Newcomb, John Finch, and James Butler. A wooden frame held a large wire screen or sieve that shook and separated grain from chaff.

**1078. Horse-drawn seed drill** for sowing seed in neat rows in large fields is generally attributed to Jethro Tull of Oxfordshire, England, who invented it in 1701. Tull was trained as a lawyer but preferred farming; he also invented the horse-drawn hoe.

**1079. Patent for a moldboard sheathed in iron** was issued to Englishman Joseph Foljambe in 1720.

1080—1094

## FAMOUS FIRST FACTS INTERNATIONAL

AGRICULTURE—EQUIPMENT—*continued*

**1080. Threshing machine** was probably designed in 1732 by British inventor Michael Menzies. A waterwheel turned a shaft on which a set of flails was attached by chains.

**1081. Cast iron plow** was built by English inventor Robert Ransome, who obtained a patent in 1785.

**1082. Mechanical reaper** was invented in England by Joseph Boyce, who received a patent in 1799. His reaper was pulled by a team of horses or mules and harvested grains using revolving teeth to press the sheaves against a cutting blade. An American, Henry Ogle, developed a new design in 1826. Ogle's reaper consisted of a straight scythe blade that moved against a series of triangular fingers. The cut grain fell on a collecting board.

**1083. Self-sharpening plow** was patented by English inventor Robert Ransome in 1803. Ransome later created the first plow made of interchangeable parts that could be repaired in the field.

**1084. Haymaker** was invented in 1820 by an Englishman, Robert Salmon. His machine used mechanized forks to lift and turn cut grass for drying.

**1085. Grain stripper** that cut the crop, separated the grain from the stalk, and placed the grain into bins was invented in 1843 by John Ridley and John Bull of South Australia.

**1086. Beehive with removable frames** was patented by Lorenzo Lorraine Langstroth, a former pastor, in Oxford, OH, USA, on October 5, 1852. Langstroth's hive design revolutionized beekeeping because it was the first that allowed bees to build combs on wooden frames that could be removed, stripped of honey and wax, and then replaced. His key discovery was the "bee space," the minimum air space that bees would not bridge with wax or bee glue. By setting up his frames at this distance, he prevented the bees from building connections between them. This allowed him to remove one frame at a time without damaging the adjacent frames, and enabled him to maximize the amount of honeycomb in the hive.

**1087. Self-propelled rotary cultivator** was developed in 1855 by the Canadian inventor Robert Romaine of Montreal. A steam engine provided propulsion for the tractor-like vehicle as well as power for the rotary cultivating blades.

**1088. Steam-powered plow** appeared in the Netherlands in 1862.

**1089. Barbed wire** was commercially produced beginning on November 1, 1873, in De Kalb, IL, USA, by Joseph Farwell Glidden, who obtained a U.S. patent for his invention on November 24, 1874. In 1875 he co-founded the first company to make the fencing, the Barb Fence Company. Royalties from the patent made him a rich man. The barbs were cut from sheet metal and were inserted between two twisted steel wires. The fencing was sold in rolls and bales. Glidden's cheap fencing made it possible to confine the large herds of cattle that were then being raised on the North American plains.

**1090. Mechanical cream separator** was invented in 1878 by Carl Gustaf Patrik de Laval, a Swedish scientist, engineer, and inventor with the Klosters-Bruck Steel Works. His design operated by means of centrifugal force. A bowl containing the milk was spun at high speeds, allowing the denser skim milk to rise to the rim of the bowl and flow into a collector. The lighter cream stayed in the center of the bowl. Laval went on to apply his experience to the design of high-speed turbines.

**1091. Rotary cultivator** was invented in 1912 by an Australian, A.C. Howard. It used revolving blades to stir the top layer of soil around a planted crop, aerating the soil and reducing weeds. Howard introduced a tractor-powered version in 1922.

**1092. Coconut processing equipment** that extracted the entire meat, milk, and oil from the coconut in one continuous operation was developed by Biotropic, a French company, and marketed beginning in 1990.

## AGRICULTURE—FERTILIZATION AND IRRIGATION

**1093. Large-scale irrigation project** was constructed circa 6000 BCE in Choga Mami (near Mandali in present-day Iraq). Channels cut at right angles to an existing stream directed water to crops. Similar systems were soon developed in China and Egypt.

**1094. Water-lifting device** was the shaduf, also called the swipe, an upright beam with a long pole pivoted on its top. The pole had a bucket attached to one end and a clay or stone counterweight attached to the other. The shaduf, invented in Assyria (now Iraq) circa 2200 BCE and quickly adopted in Egypt, made the process of irrigation much more efficient than when water was drawn and transferred by hand. It is still used in parts of Africa and Asia.

## FAMOUS FIRST FACTS INTERNATIONAL

1095—1106

**1095. Synthetic fertilizer** was superphosphate, produced in 1817 by James Murray of Ireland. He applied sulfuric acid to bones, which contain calcium phosphate. A process for making superphosphate by applying sulfuric acid to phosphate rock was patented in 1842 by John Bennet Lawes of Rothamsted, England, who then founded the world's first fertilizer factory.

**1096. Nitrogen-rich bulk fertilizer** was guano, the dried droppings of seabirds, used in South America for centuries and first imported to Europe from the Chincha Islands off the coast of Peru in 1839. Bird guano contains 11 to 16 percent nitrogen, 8 to 12 percent phosphoric acid, and 2 to 3 percent potash. Bats and seals also produce large quantities of guano, but it contains less nitrogen and was not preferred for fertilizer.

## AGRICULTURE—PEST CONTROL

**1097. Insecticide** was pyrethrum (also known as pyrethrin), extracted from powdered chrysanthemum petals by the Chinese circa 100 BCE.

**1098. Large-scale use of a pesticide** occurred in Europe during the 1840s to aid in eradicating the vine powdery mildew (a common fungus, *Uncinula necator*). Vine powdery mildew had been imported from the New World and was a particular menace to vineyards. Crops were successfully sprayed with lime sulfur and then powdered sulfur.

**1099. Organic pesticide** was dichlorodiphenyltrichloroethane (DDT), a chlorinated organic chemical first synthesized in 1874 by a German chemist, Othmar Zeidler. Its usefulness as an insecticide was discovered in 1939 by Paul Hermann Müller, a research chemist at the J.R. Geigy Company, Basel, Switzerland, who won the Nobel Prize in Physiology or Medicine in 1948. DDT kills disease-bearing mosquitoes, lice, and fleas, as well as beetles and moths that attack crops. Some species become resistant to it. The chemical was eventually banned in many countries after it was shown to be highly toxic to birds, fish, and mammals.

**1100. Biological pest control** was initiated on a large scale in the United States in 1886 against the cottony-cushion scale, a tiny insect threatening California's citrus crop. A predatory species of ladybird beetle, *Rodolia cardinalis*, also called the vedalia beetle, was imported from Australia to destroy the pest, and within a year or two had succeeded so well that the technique was adopted around the world.

**1101. Systemic pesticide** was octamethylpyrophosphoramidate, an organophosphate pesticide sold by the trade name Schradan. It was developed during World War II in Germany circa 1944, from research on military poison gas. Schradan was absorbed directly into plant tissue, making the plant itself toxic to pests; however, the pesticide was also poisonous to mammals, including humans.

**1102. Modern integrated pest management program in Asia** was introduced in Indonesia in 1986 through the Inter-country Program for Integrated Pest Control in Rice in South and Southeast Asia, under the auspices of the United Nations Food and Agriculture Organization. The program aided Indonesian farmers in developing an ecological, low-pesticide approach to controlling pests that attack rice crops.

## ANIMALS

**1103. Domesticated animal** was the dog. Dogs may have been bred by humans as early as 135,000 BCE, according to genetic data derived by American evolutionary biologists at the University of California at Los Angeles, Texas A&M University, and Brigham Young University in Utah, in cooperation with Swedish researchers at the Royal Institute of Technology in Stockholm. Study of a control gene in the chromosomes of 162 wolves from 27 habitats and in 140 domestic dogs of 67 breeds indicated unusual diversity in ancient dogs, an indication of domestic breeding. The earliest known dog breeds are the New Guinea singing dog, the African basenji, the Australian dingo, and the Egyptian greyhound.

**1104. Skeleton of a domesticated dog** known to archeologists was found at Ain Mallaha, a site in northern Israel that contains remnants of the Natufian culture, circa 9600 BCE. A grave at the site was found to contain two skeletons, one of an elderly woman and the other of a puppy. The woman's hand was resting on the puppy's back.

**1105. Ornamental goldfish breeding** was started by the Chinese circa 1000 BCE, at the same time that raising carp for food became a common practice (goldfish are a type of carp).

**1106. Elephants taken on a sea voyage** were probably the 38 elephants who formed a cavalry unit in the army of Hannibal, commander of the Carthaginian armies against Rome in the Second Punic War (218–201 BCE). They were shipped across the Mediterranean from North Africa. Most of them died crossing the Italian Alps in 218. In 801, an elephant that had been

**ANIMALS—continued**

taken by ship from Tunis, in present-day Tunisia, to Italy was given as a present from the caliph Harun al-Rashid to the Frankish king Charlemagne, who had recently been crowned Holy Roman Emperor .

**1107. Horses in the New World** were introduced in 1493 by Christopher Columbus during his second voyage. Twenty horses, all that survived of 34 stallions and mares that left Spain, were landed at the location of the future city of Santo Domingo (now in the Dominican Republic) on the island of Hispaniola.

**1108. Horses on the North American mainland** were war horses brought by Hernán Cortés in 1519 to the Yucatán to aid in his conquest of Mexico. Horses had lived in the Americas in prehistoric times, but had become extinct at the close of the last ice age.

**1109. Animal exterminated by human action in historical times** of record was the dodo (*Raphus cucullatus*), a flightless bird formerly native to the island of Mauritius in the Indian Ocean. First described by Portuguese sailors circa 1507, the slow-moving dodos were relentlessly hunted by humans and animals introduced by humans and were extinct by 1681.

**1110. Greyhound racing** has been practiced since ancient times, notably by the Egyptians and Greeks. The first known greyhound coursing club was founded in 1776 at Swaffham, Norfolk, in England.

**1111. Large terrestrial mammal exterminated by human action in historical times** was the blaauwbok or bluebuck (*Hippotragus leucophoeus*), a species of southern African antelope hunted to extinction. The last known living specimen was killed in 1799.

**1112. Pigeon racing** as an organized sport began in Belgium, where it has remained more popular than elsewhere in the world. The first long-distance race of more than 100 miles (160 kilometers) took place in 1818. The world's top event in pigeon racing, the Belgian Concours National, a race from Toulouse to Brussels, was first held in 1881.

**1113. Dog show** was held at Newcastle upon Tyne, England, on June 28–29, 1859. The organizers were two local sportsmen. Hunting dogs were the only breeds exhibited.

**1114. Transatlantic crossing by a bird** to be verified by scientists was made by a common tern, *Sterna hirundo*. In August 1917 it was found dead at the mouth of the Niger River in Nigeria, West Africa, wearing a band that had been attached at Eastern Egg Rock, ME, USA, on July 3, 1913.

**1115. Coelacanth caught alive** was netted in December 1938 in the coastal waters of the Indian Ocean near Cape Town, South Africa, by the fishing trawler *Nerine*. On December 23, Captain Hendrick Goosen invited Marjorie Courtenay-Latimer, a museum curator in East London, South Africa, to check through his catch for unusual specimens. She noticed a fish that she could not identify. It was 5 feet (1.5 meters) long and 126 pounds (57 kilograms), pale mauve blue with iridescent silver markings. On January 3, 1939, J.L.B. Smith, a chemistry teacher at Rhodes University, Grahamstown, positively identified the fish as a coelacanth (*Latimeria chalumnae*), a lobe-finned fish known from fossils more than 350 million years old. Coelacanths were thought to have become extinct some 65 million years ago. The discovery, termed a “living fossil” by the newspapers, was hailed as the paleontological find of the century. A second coelacanth was caught off the Comoro Islands near Madagascar in 1952.

**1116. Large mammal discovered since World War II** was *Pseudoryx nghetinhensis*, a new species of bovid (cow) described from recent skulls and hides by British zoologist John Mackinnon, head of the Asian Bureau for Conservation in Hong Kong, in June 1993. The animal, called *saola* by Hmong villagers, was believed to live in the Vu Quang rain forest on the border between Laos and Vietnam, but no live animal was seen or captured by scientists.

**ANIMALS—BREEDING AND REPRODUCTION**

**1117. Hairless dog breeds** were developed in the Americas before the third century BCE. Pottery vessels made by the Colima culture of Mexico dating from circa 250 BCE depict dogs with the genetic abnormalities, including missing teeth, warts, and wrinkled skin, characteristic of hairless breeds.

**1118. Livestock breeder** who applied a scientific program to the development of new breeds was Robert Bakewell of Dishley, Leicestershire, England, considered the founder of modern animal breeding. While the basic principles of breeding have been known since ancient times, Bakewell was the first to use them consistently.

## FAMOUS FIRST FACTS INTERNATIONAL

1119—1131

He chose breeding stock only for the most desirable traits; bred the best to the best, on the premise that "like produces like"; inbred animals to reinforce traits; and test-bred animals to determine if they were appropriate for breeding on a larger scale. Bakewell began work with sheep in 1755 and developed a new breed called Leicester. His experiments with beef cattle began in 1760. By 1769, his breed of short-legged, bulky, thickly fleshed cattle were in great demand by other breeders.

**1119. Artificial insemination center** was founded by Russian biologist Ilya Ivanovich Ivanov in 1901, for the breeding of horses. Semen was collected when a stallion mounted a dummy mare, then was diluted, stored, and inserted into the genital tract of a real mare.

**1120. Platypus born in captivity** was delivered in 1944 at Healesville Sanctuary, a zoo in Melbourne, Australia. A second platypus birth was not achieved until April 8, 1999, also at Healesville, when twin males were born, the first twin birth in captivity. Platypuses are extremely difficult to raise; as of 1999, none had survived in captivity outside Australia.

**1121. Interspecies birth of a cat** was announced by Betsy L. Dresser and colleagues at the Cincinnati Zoo in Cincinnati, OH, USA, on February 7, 1989. The kitten, an Indian desert cat (*Felis sylvestris*), an endangered species, was fertilized in vitro (a first for any exotic cat) and was carried to term by an ordinary domestic cat (*Felis catus*).

**1122. Big cats born by in vitro fertilization** were three tiger cubs delivered in May 1990 by cesarean section on a nine-year-old Siberian tiger at the Henry Doorly Zoo in Omaha, NE, USA. The technique, used for humans and domestic animals, was tailored to tigers by the reproductive physiologists Ann Miller and Leslie Johnston of the New Opportunities in Animal Health Sciences program at the National Zoo in Washington, DC, USA, along with colleagues at the Henry Doorly Zoo. Two of the cubs died from unconnected causes.

**1123. Transgenic bull** was developed in 1992 by GenPharm International, a small biotechnology company in Mountain View, CA, USA, co-founded by Jonathan MacQuitty. Transgenic animals are genetically engineered to contain human genes. The bull, named Herman, sired the first transgenic calves in 1993. Each calf carried a gene for production in cow milk of human lactoferrin, which is produced naturally in human milk. Important properties of HLF include antibacterial action and iron transport.

**1124. Aye-aye born in captivity** was a 5-ounce infant delivered on April 6, 1992, at Duke University in Durham, NC, USA, by a pregnant mother brought back from Madagascar in January 1992 by American primatologist Elwyn Simons of the Duke University Primate Center. An aye-aye is a rare prosimian, a near relative of apes and monkeys.

**1125. White lion born in the Western Hemisphere** was one of three cubs delivered of a white lion mother on March 24, 1994, at the Philadelphia Zoo in Philadelphia, PA, USA. It was also the first white lion born in captivity. At that time, a total of 15 white lions were believed to exist worldwide.

**1126. Gorilla born by in vitro fertilization** was Timu, a lowland gorilla delivered at the Cincinnati Zoo in Cincinnati, OH, USA, in 1995. It was also the first test-tube birth of an endangered primate. The mother was impregnated with sperm from a gorilla at an Omaha zoo. The process was managed by Betsy L. Dresser and colleagues at the Cincinnati Zoo's Center for Research of Endangered Wildlife.

**1127. Cross-breeding of a llama with a camel** took place at a government veterinary center in Dubai, United Arab Emirates, in 1997. The baby animal resembled its sire, the camel.

**1128. Captive-bred lemurs returned to Madagascar** were black and white ruffed lemurs released in November 1997 in the Betampona Reserve, where they joined a small existing population of the rare, endangered animals. The lemurs were bred and raised at the Duke University Primate Center in Durham, NC, USA.

## ANIMALS—FOOD AND CLOTHING

**1129. Animal domesticated for food** was probably the pig, which may also have been the second animal domesticated by humans, after the dog. Pig bones yielding evidence of human consumption between 10,000 and 10,400 years ago were found in a 1994 excavation at Hallan Cemi, an early human settlement in southeastern Turkey.

**1130. Cattle herders** are thought by some archeologists to have been Africans who lived in Egypt's Western Desert in the eighth millennium BCE. Evidence for this possibility was uncovered at Nabta Playa, near the Sudanese border, where cattle bones were found. It is not yet clear whether these were domesticated cattle or wild cattle taken in hunting.

**1131. Domesticated chickens** were raised in India some 5,000 years ago. They were bred, chiefly for cockfighting, from wild birds with red feathers that are native to India's jungles.

**ANIMALS—FOOD AND CLOTHING—continued**

**1132. Domesticated pigeons** were bred by the ancient Egyptians of the fifth dynasty (about 3000 BCE) for use primarily as food and sacrificial offerings.

**1133. Depiction of milking** is visible on a frieze unearthed at the Sumerian city of Ur (now Tel-el-Muqayyar, Iraq). It was made circa 2900 BCE.

**1134. Beekeeping** originated with the Old Kingdom Egyptians circa 2780 BCE. Honey was highly valued, being the main source of sweetening (sugar was unknown in that era).

**1135. Domesticated ducks** were bred in China from wild mallard ducks some 2,000 years ago.

**1136. Beef cattle in North America** were introduced in 1550 by the Spanish colonists in Florida (now in the United States).

**1137. Sheep-shearing machine** was patented by James Highen of Melbourne, Australia, in 1868. The first practical sheep-shearer was used in 1888 at the Dunlop Station. It was patented by Frank Wolseley and John Howard.

**ANIMALS—PROTECTION**

**1138. Law against cruelty to animals** appeared in 1641 in the Massachusetts Bay Colony (now the area around Boston, MA, USA), which had been founded 20 years earlier by Puritan immigrants from England. The law stated: "No man shall exercise any Tirranny or Crueltie towards any brute Creature which are usuallie kept for man's use." However, the idea of compassion towards living creatures was previously expressed in many religions, both eastern and western, and by Greek philosophers such as Pythagoras.

**1139. Antivivisection prosecution** was launched in Britain in 1874 against a visiting French physiologist who had given a demonstration in which he killed two dogs by injecting them with alcohol. The physiologist was charged with wanton cruelty but was eventually let go. Public outrage over the case led to the passage two years later of the Cruelty to Animals Act.

**1140. Law regulating animal experimentation** was the Cruelty to Animals Act, enacted in Britain in 1876 after a public furor over experiments on dogs. The law allowed the experiments to continue, but required scientists conducting them to be licensed and to meet a number of conditions intended to avoid the worst suffering.

**1141. International animal protection society** to campaign on global animal welfare issues was the World Federation for the Protection of Animals, founded in 1953. In 1981 it merged with the International Society for the Protection of Animals, founded in 1959, to form the World Society for the Protection of Animals.

**1142. Treaty on the international trade in rare animals** was the Convention on International Trade in Endangered Species of Wild Fauna and Flora. It was adopted in 1973 by representatives of 80 nations and later ratified by the governments of most of them. It prohibited commercial trade in 375 endangered species of wild animals and in products derived from them, such as hides, and set up a permitting system for trade in 239 more rare animal species. Rare plants, such as certain species of orchids, were also protected.

**1143. Elephant hospital** was opened in 1994 within the Thai Elephant Conservation Center near Lampang, Thailand. The founder was Soraida Salwala. The hospital was funded by private donations collected by the organization Friends of the Asian Elephant. Most of the patients were elephants who had been overworked and mistreated in the tourism and illegal logging industries.

**ANIMALS—WORK AND TRANSPORTATION**

**1144. Horse riding** was dated to circa 4000 BCE by archeologists David W. Anthony and Dorcas Brown of Hartwick College, Oneonta, NY, USA. They discovered microscopic bit wear—the damage done to a horse's premolar teeth by a bit—on the teeth of horse remains found in burial sites in the steppe grasslands of the Ukraine and Kazakhstan. The bit wear indicated that the horse was ridden with a bridle and a soft bit of bone, leather, or rope in its teeth. The discovery pushed back the beginning of horseback riding some 2,000 years earlier than had previously been thought.

**1145. Beasts of burden** to be domesticated were the ox and the onager (wild ass), used for agricultural work in Mesopotamia circa 3000 BCE.

**1146. Horses for transport** were employed by the Sumerians from approximately 3000 BCE. Sumerian wagons were drawn by onagers (*Equus hemionus onager*), a breed of wild ass native to central Asia. The word "onager" derives from the Indo-European root *agro*, meaning "field."