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CHRISTOPHER COLUMBUS.

When Columbus set sail on the voyage which was to result in the discovery of a new continent, he was probably 56 years of age, though the authorities differ as to whether he was born in 1435 or 1436. He died in 1506. Born at Genoa, receiving the rudiments of a liberal education at the University of Pavia, and be-

coming a sailor on reaching his fifteenth year, it is certain that, before making the voyage from Palos which was to make him famous, he had already had large experience in navigation, for those times. Of himself he wrote, "Wherever ship has sailed, there have I journeyed." In his eventful career as a navigator, and in his search for aid from different courts and of wealthy patrons, that he might prosecute his idea of finding a westward passage to Asia, he had, therefore, gone through many vicissitudes, before his successful voyage made him a conspicuous figure in the closing years of the fifteenth century. This in some measure accounts for many of the differences in the narratives of his life, about portions of which there is much obscurity, as well as for the different representations of his personal appearance which have come down to us. In the SCIENTIFIC AMERICAN of May 9, 1891, appeared a portrait of Columbus, from a picture painted by Piombo, and which was for years owned by the noble Italian family of the Giovios, the original painting being now in the possession of Dr. De Orchi, of Como. This picture represents Columbus as much older than he appears in the portrait given on this page, which we reproduce from *Natura ed Arte*, of Milan. The picture is made from a painting in the museum of Vicenza, a province of northern Italy,

and the home of Pigafetta, a distinguished Italian navigator. It is believed that this picture, by an unknown Spanish artist, affords one of the best representations extant of Columbus in the prime of his manhood.

The first of the many celebrations planned in honor of Christopher Columbus and his great discovery took place at Palos, Spain, the little harbor from which he sailed, on August 3, the 400th anniversary of the date of starting on the original voyage in 1492. On the 2d of August a number of Spanish vessels, accompanied by several war ships of foreign nations, sailed to Palos,

and Spanish and foreign delegates and the officers of the ships proceeded to the church in which Columbus received communion before sailing, to attend a religious service, commemorating the one held previous to the departure of Columbus. Only one of the three vessels being built to represent the original squadron of Columbus was ready to take part in the ceremonies

squadrons which had come to take part in the celebration, and between opposite lines of these vessels the caravel was towed, all firing salutes. Fifteen vessels of the Spanish flotilla convoyed the Santa Maria several miles to sea, after which the little vessel returned to Palos, her final departure being deferred to a later date, when it is expected that the other vessels,

the Pinta and Nina, to represent the complete Columbus squadron, will be ready to accompany her.

Palos was selected as the scene of one of the principal celebrations of the Columbus year, not alone from its being the starting point of the famous expedition of four centuries ago, and to its possessing that monastery of La Rabida where Columbus received his first encouragement for his momentous project, but also to the remarkable part that Palos took in furnishing the material and men for the voyage. The selection of this instead of one of the larger and more important ports of Spain as the base of the expedition was due to a peculiar circumstance. There had recently been an outbreak or disturbance there of some kind, and as a penalty for it the inhabitants had been condemned to keep up at their own cost two caravels, with crews and arms, for the space of one year. These vessels were to be at the service of the state, ready to proceed to sea at once on receiving orders.

On the 17th of April, 1492, Ferdinand and Isabella had signed a contract at Santa Fé with Columbus for the voyage of discovery on which he was bent. It is a striking proof of his absolute confidence in his success that he made in this instrument so detailed a provision for the government of the islands and continents he expected to discover. He even took a letter of

credentials to the potentates of such territories as he might reach. On the 30th of April Ferdinand and Isabella directed the authorities at Palos to have the two caravels already spoken of ready to sail within ten days under Columbus, and he was to procure a third. Orders were sent to Andalusia to furnish supplies for the vessels; the crews were to have the same wages as on men-of-war, with four months' pay in advance.

But the dread of navigating the Dark Sea, as the unknown portion of the ocean to the westward was called,

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CHRISTOPHER COLUMBUS.

(From an old portrait in the Museum of Vicenza, Italy, by an unknown Spanish artist.)

of the following day, and this was the Santa Maria, shown in last week's SCIENTIFIC AMERICAN. At six o'clock on the morning of August 3, however, the little vessel was got ready for the start, although a dense fog spoiled the effect of the marine display, and when the sailors spread their canvas, there was no breeze. A line was consequently passed to her from a gunboat, and the Santa Maria was thus towed down stream, followed by the Spanish flotilla, past the monastery of La Rabida, which was decorated with American flags. Outside the bar were moored the vessels of foreign

CHRISTOPHER COLUMBUS.

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was such that for a long time it was difficult to get a third vessel for that purpose, and at length the King and Queen ordered that one called the Pinta, belonging at Palos, should be seized by force. Even this did not advance matters much, as there was a need of crews, but at last Martin Alonzo Pinzon, a sea captain and an influential man of Palos, offered his services to Columbus, and this proved the turning point in the preparations. When the three vessels were ready, Columbus hoisted his flag on the largest, the Gallego, having a deck with forecabin and cabin, and changed its name to the Santa Maria. The Pinta and Nina had only a small bridge fore and aft. The Santa Maria carried sixty-six persons, mostly from Seville or the province of Huelva, with two Genoese, one Englishman, one Irishman, two Portuguese, and one Majorcan. Palos itself did not furnish any men for this ship, but it and its neighborhood supplied all the officers and men for the Pinta and Nina. The former had a company of about thirty men, under Pinzon, and the latter a crew of twenty-four, under his brother, Vincente Yanez Pinzon. Palos, though a small port, furnished many hardy navigators to Spain's mercantile marine, but for a time the prospect of a quest so daring, under a captain till recently unknown to them, had naturally excited apprehension. Still, the support actually given to the illustrious voyager has immortalized the little town.

The squadron of Columbus, as pictured by Rafael Manleon, a marine painter, is shown in the accompanying view. The suit of sails of the Santa Maria was that of a small three-masted vessel, with five sails only: a jib, foresail, mainsail, topsail, and a lateen. The mainmast was provided with a top, which the sketch represents as round and basket-shaped, and which was capable of affording shelter to firers of grenades. The general form of the hull was that of the round ships of the period. There was a large poop and a small forecabin. The freeboard was very low amidships, and the deck was here open. The pinnace could not be taken aboard, so Mr. Manleon has represented it in tow of the ship under sail.

The nautical qualities of the Santa Maria were excellent, as the admiral's log proves: "This ship behaved very well in bad weather, and had the speed of a good sailer." The same was the case with the two other ships, and the log often mentions a speed of 15 Italian miles an hour, equivalent to 11 nautical miles—a very good speed for vessels sailing as consorts.

The Nina resembled the Santa Maria. The Pinta carried lateen sails on her three masts, at least at the beginning of the voyage; but the admiral's log tells us that at the first stop (at the Canaries) this set of sails was replaced by square ones, in order that the ship might be placed in the same conditions as the two others.

These three ships, sailing as consorts, flew the flag of Castile at the mainmast and that of the admiral at the mizzen. The first was divided into four squares, two red and two white. The latter each bore a lion and the others a castle. These were the arms of Castile. Those of Aragon were excluded by the orders of Queen Isabella, the government of that country having refused to participate in the expenses of the expedition. The admiral's flag was a white pennant with a green cross between two crowned letters F and I—the initials of the names of Ferdinand and Isabella, who had given these arms to Columbus. A cross was painted on the sails of the ships, according to the custom adopted by the Spanish and Portuguese, in order to distinguish their vessels from those of the infidels.

Treatment of the Czar's Consumptive Son.

The Grand Duke George, the Czar's second son, who, ever since his enforced return, through illness, from his Indian tour, has been under medical treatment for pulmonary disease, has been passing the winter at Abbas-Tuman in the Caucasus. A private letter from that place states that his imperial highness is undergoing a most remarkable course of treatment. The walls in his apartments are bare and unpapered, the furniture is of plain wood or cane, without upholstering or stuff covering of any kind, and his bed consists only of the thinnest of mattresses. Throughout the winter only a very moderate fire has been kept up, while the windows of the grand duke's rooms have

been continuously open. His attendants have suffered dreadfully from the cold; but his medical advisers hold that this low temperature is very beneficial to their imperial patient, as it tends to destroy the bacillus and prevent the formation of tubercle. They maintain that the progress of the disease has been arrested, and express hopes that, if the treatment which they prescribe is persevered with, the grand duke will in two years' time have completely recovered.—*Medical Record.*

A Series of Mistakes in a Boiler Room.

It is a wonder that more serious accidents do not occur when boys and inexperienced persons are set to repairing steam boilers, or superintending their operation. The *Locomotive* tells the following story, and the editor vouches for its accuracy:

A short time ago our attention was called to some most remarkable doings in a boiler room, which we proceed to relate. The boiler was originally built to furnish power, and was good for about 75 pounds steam pressure; but it is now used only for heating purposes. Some of the steam and return valves to the large coils leaked about the stems, and the owner of the boiler, instead of sending for a steam fitter to repack them, called in a plumber. The plumber, being busy, sent his boy helper. The boy began work on some of the valves that were within sight of the boiler front, but being troubled by the steam that escaped, he shut off the steam valves, leaving the return valves open. The coils were large, and when the steam in them had condensed, water began to back up from the boiler, for there was no check valve on the returns. As the boy worked

side of the street. When the fire had been hauled and the danger averted, the plumber soon learned the cause of the disturbance, and quiet was speedily restored by shutting off the damper regulator and the blow-off, and throwing a few buckets of water on the burning boards.

It seems hardly possible that such a succession of mistakes could follow one after another in so orderly a manner, but we can testify, from personal observation, that they did. And we may add that not long afterward, when the boiler was out of use, a coal dealer put 100 tons or so of coal into the same boiler room, piling it up in such a manner that some of it ran down into the open manhole, and the rest of it covered up the blow-off pipe and the rear door of the setting, which were both open, so that there was plenty of trouble digging them out before the boiler could be started again.

Notes for Painters.

The campaign banner and transparency will soon bring plenty of work to the sign painter. Let us hope, however, that the efforts of these worthy gentlemen will be more successful than they sometimes are. In these days, when solar print photographs are so easily obtained of any given dimensions from a small picture, there seems to be no excuse for the impossible portraits we sometimes see. One of these solar prints can be readily used as a stencil for duplicating a picture any number of times, by means of pounce. Or if but one banner is wanted, the muslin can be laid down on a drawing board, with a sheet of carbon impression paper, face downward, on top of it. The solar print,

which should be made on thin paper, should be placed on top of all, face upward, and secured by thumb tacks. With a hard agate point the lines of the face can then be carefully traced, when they will appear on the muslin or canvas below. The print, of course, can be used as a guide for the shading, in finishing the work. Of course, in this method of transferring a design, it is necessary that the material to which the pattern is to be transferred must be laid on a hard background.

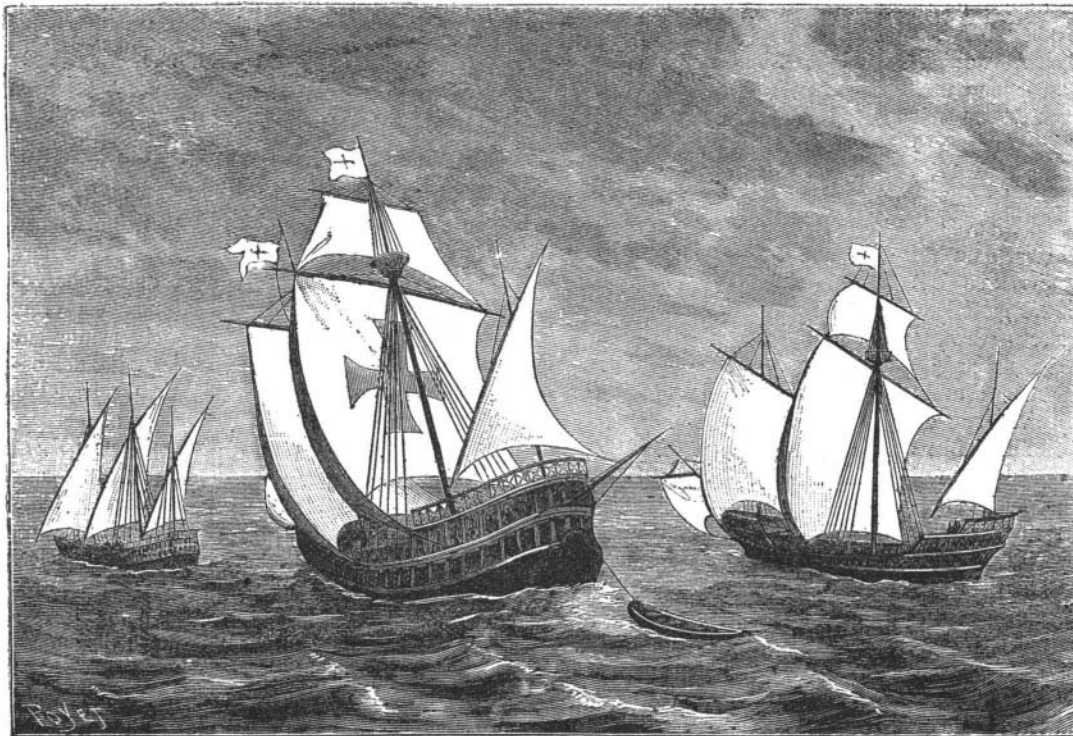
In making a sketch for an ornamental design, a rapid method of duplicating the second half of a symmetrical pattern is often wanted. I have found it very convenient to make my sketch on a sheet of smooth, hard-surfaced writing paper, first folding it lengthwise, and after opening it, making the drawing on the inside, the creased line being used for the center line of the figure. A soft lead pencil should be used—not harder than a number two.

When the half ornament is drawn, the paper should then be folded again, laid upon a hard surface with the penciled half upward, and rubbed rapidly with the thumb nail, using considerable pressure. On opening the sheet again, the complete pattern will be found. This is an extremely rapid method, and I have found it a great help, as it enables me to judge of the finished effect of a symmetrical design without taking the time to use tracing paper for reversing the half already drawn.—*Painting and Decorating.*

Congress of German Naturalists and Physicians.

Its meeting, the 65th, will this year take place at Nurnberg, from the 12th to 16th of September. The congress differs in several important respects from its daughter the British Association. It includes not merely "natur-forscher," i. e., men engaged in scientific pursuits, but physicians, who of course are, or ought to be, men of science.

The number of sections is thirty-two: 1. Mathematics and astronomy. 2. Physics. 3. Chemistry. 4. Botany. 5. Zoology. 6. Entomology. 7. Mineralogy and geology. 8. Ethnology and anthropology. 9. Anatomy. 10. Physiology. 11. General pathology, pathological anatomy. 12. Pharmacology. 13. Pharmacy and pharmacognosy. 14. Internal medicine. 15. Surgery. 16. Obstetrics and gynecology. 17. Pædiatry. 18. Neurology and psychiatry. 19. Ophthalmology. 20. Otiatrics. 21. Laryngology and rhinology. 22. Dermatology and syphilis. 23. Hygiene and medicinal policy. 24. Forensic medicine. 25. Medical geography, climatology, hygiene of the tropics. 26. Military sanitation. 27. Dentistry. 28. Veterinary medicine. 29. Agricultural chemistry and agricultural experimentations. 30. Instruction in mathematics and natural science. 31. Geography. 32. The knowledge of instruments.



THE SQUADRON OF COLUMBUS—THE SANTA MARIA, NINA, AND PINTA.

away he noticed that the water in the gauge glass was going down somewhat rapidly and also that the steam pressure was rising. He did not know where the water was going to, nor did he know how to feed it more; but he thought that if he opened the furnace door and so checked the fires, the evaporation and the rise of pressure would proceed much more slowly. Jumping down into the pit in front of the boiler, he opened what he thought, in the darkness, were the fire doors, but it appeared subsequently that he did open the ash pit doors, this making matters worse instead of better. The fire brightened up, and the pressure began to rise rapidly, and the water level to go down. The boy was greatly troubled at this, and when the rubber diaphragm in the damper-regulator burst from the increasing pressure, he "went all to pieces," as the saying is, and ran for his boss. The boiler being originally intended for furnishing power, the safety valve could not be set to blow at less than at about 20 pounds, while the damper regulator was designed to carry not more than six or seven pounds, so that its diaphragm burst, naturally enough, before the blowing-off point of the safety valve was reached. The plumber came in haste and found the people in the building overhead badly frightened, and the boiler room filled with steam, so that he could not make out precisely what had happened. He told the boy how to turn on the feed, however, and that well-meaning but badly "rattled" individual went to the back end of the setting, and, instead of opening the plug cock in the feed pipe, he opened the plug cock in the blow-off pipe, which only added to the noise and confusion. Meanwhile, the plumber hauled the fire out on to some pine boards that the regular attendant had laid in the damp pit. The boards took fire and smoke was soon added to the escaping steam, to the intense horror of the occupants of the building, who by this time were on the other