

SECTION ON HISTORICAL PHARMACY, AMERICAN PHARMACEUTICAL ASSOCIATION

EAST INDIAN VOYAGES OF THE SIXTEENTH AND SEVENTEENTH CENTURIES IN THEIR RELATION TO DRUGS, SPICES AND DYESTUFFS.*

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SPANISH VOYAGES.

While many important drugs were added to our *materia medica* as a result of Spanish explorations in the Western Hemisphere, it is not within the scope of this paper to discuss these. Hence no more than incidental reference will be made to Spanish voyages to the Americas. We should not lose sight, however, of the fact that it was a search for the Indies which first took the Spaniards to America. Columbus started on his first voyage, not in the expectation of finding continents between Europe and Asia, but confident of discovering a direct route to Cathay.

In 1493 Pope Alexander VI divided all of the lands that had been or were to be discovered between the crowns of Spain and Portugal. The dividing line was a meridian passing through a point 100 leagues west of the Cape Verde Islands; the Spaniards were to have all between this point and another 180 degrees to the westward; the remainder was to belong to the Portuguese. By a convention between the two countries it was agreed to move the line 270 leagues to the west of the point designated by the Pope, also that each party should be free to sail in the seas belonging to the other, but that neither should attempt to trade outside of his own dominions. (Purchas, ii, pp. 64-65.) Possibly the bull and the convention would have been sufficient to avert misunderstanding, had men been able to measure longitude accurately in those days.

It will be remembered that the Portuguese had found the source of cloves to be the Molucca Islands and that of nutmegs the *Bandas*; both groups well to the eastern part of the Indian Archipelago. Spain was soon to cast longing eyes toward the islands which produced such coveted spices. In Purchas we find the following extract from an old record: "Fernandus Magalianes, a Portuguese, having made proof of his valour in Africa and India, being rejected in a suit to the King, conceiving deep indignation, renounced allegiance to King Emanuel, and went to the Court of Castile, where he acquainted the King of Spain that the Islands of Banda and the Moluccas appertained to him by that division which John II and King Ferdinand had agreed on . . . offered to discover these rich islands of spicerie from the west."

The King, apparently quite willing to believe that the coveted islands belonged to him, agreed to fit out an expedition. Magellan left Seville in August, 1519, with five vessels. One of Magellan's officers was Duarte Barbosa, a Portuguese who had spent several years in the Indies, and who, in 1516, had written his "Description of the Coasts of East Africa and Malabar," which is still one of our most reliable sources of information as to conditions in the Portuguese Indies in the early sixteenth century. The squadron sailed to Brazil and followed down

* Continued from p. 380, April issue.

the coast, spending five months at Port St. Julian, in Patagonia. Here mutiny broke out among the Spanish crews, and Magellan hanged and quartered the ring-leaders. The daring commander, on the flagship *Victory*, led the way through the terrible straits which have since borne his name. The mariners suffered dreadfully from cold and exposure, many members of the crews perishing during the passage. The Mare Pacificum was sighted November 28, 1520. Shortly after the open sea was reached one of the vessels stole away and returned to Spain.

Terrible experiences still awaited Magellan and the little company who went on. During the long voyage across the Pacific all of their drinking water "putrefied," and all of the food was consumed. They were reduced to the extremity of eating leather which had been dragged in the sea four or five days to soften it. In March, 1521, they reached an island, probably one of the Philippines; at least they visited a number of the islands of this group and spent some time on Cebu. On one of these islands Magellan was killed in a skirmish with natives. Duarte Barbosa became commander for a time, only to be killed himself.

Search was continued for the Moluccas. A call was made at Borneo, where the Spaniards found camphor, cinnamon, ginger, myrabolans, oranges, lemons, sugar, curcuma, and melons. In November, 1521, Tydore, in the Moluccas, was reached. The natives were friendly and exchanged cloves for quicksilver, glass cups, and red cloth. A treaty was made, and the King of Tydore sent presents to his royal brother of Spain. Leaving the Moluccas, the Spaniards visited Timor, where they found white saunders (sandal-wood) and ginger.

The *Victory* alone completed the circumnavigation, reaching San Lucas, near Seville, September 7, 1522. (Purchas, ii, pp. 84-119.)

Another Spanish expedition under Villa Lobas was despatched to the Moluccas, and others followed. The Spaniards established trading stations. The Portuguese, however, did not intend to divide the rich trade of these islands with another nation. A party of Spaniards was captured and taken to Goa, where they were treated kindly and sent to Spain. (Purchas, xii, pp. 142-143.) For a number of years the two nations quarrelled and fought. Each maintained that the Moluccas fell within the dominions granted it by the Pope, and each party had maps to prove the justice of its claim. (Hakluyt, ii, pp. 174-176.)

The Spaniards continued to send expeditions to the Moluccas from New Spain (Mexico). The natives allied themselves alternately with Spanish and Portuguese. Every new Portuguese commander came with orders to drive out all intruders. The strife between the two nations was ended only when the Emperor Charles V, in 1529, sold to Portugal his claim to sovereignty of the islands. The price received is variously stated at from 35,000 to 350,000 ducats. (Tschirch, p. 732; also, Motley, iv, p. 246.)

So intent had the Spanish been upon securing a portion of the Molucca trade that apparently for a time they neglected the Philippines, some of which Magellan's expedition had explored before reaching the Moluccas. In 1566 an expedition sent out from New Spain, under Lopez de Legaspi, further explored the Philippines, baptized some of the natives, and laid the foundations of the city and fort of Manila. This city continued to be the centre of Spanish influence in the East, and came to be much resorted to by merchants from China, who brought musk, silk, and porcelain. Every year ships went from New Spain to bring the products of the islands and those obtained by commerce with China. (Purchas, xii, pp. 147-153.)

The Spaniards also sent an expedition from Peru, which, sailing far into the

South Pacific, discovered a group of islands exceedingly rich in gold, and producing also cloves, ginger, and cinnamon. Supposing these to be the islands from which King Solomon obtained the gold to build his temple, the Spanish named them the Solomon Islands. It was planned to colonize this group, but Drake's circumnavigation led the Spaniards to conclude that a colony there would probably be plundered by English expeditions. (Hakluyt, xi, pp. 287-290.)

DUTCH VOYAGES.

We have seen that during the sixteenth century Europe's supply of spices came around the Cape of Good Hope in Portuguese carracks. This traffic made Lisbon the most important commercial city of Europe. Her docks and warehouses were piled high with all of the aromatic products of the distant East. The transportation of these wares to the various distributing centres of northern Europe the Portuguese left to other nations. The Venetians, in their era of prosperity, proud to be merchants as well as conquerers, had increased their profits on the spice trade by sending trading vessels to French, Flemish, and English ports. The haughty Portuguese apparently considered such traffic a matter too small to merit their attention.

During the sixteenth century the carrying trade between northern and southern Europe had passed almost entirely into the hands of the Hollanders. The discovery of the sea route to India had greatly benefited the cities of the Netherlands, especially Antwerp and Amsterdam. Motley, with his rare ability, paints a graphic picture of the commerce of Holland at this period. "The nations of the Baltic and of farthest India now exchange their products on a more extensive scale and with a wider sweep across the earth than when the mistress of the Adriatic alone held the keys of Asiatic commerce. . . . In Holland, long since denuded of forests, were great markets of timber, whither shipbuilders and architects came from all parts of the world to gather utensils for their craft. There, too, where scarcely a pebble had been deposited in the course of the geological transformations of the planet, were great artificial quarries of granite, of basalt, and of marble. Wheat was almost as rare a product of the soil as cinnamon, yet the granaries of Christendom and the magazines of spices and drugs were found chiefly on that barren spot of earth. There was the great international mart, where the Osterling, the Turk, the Hindoo, and the Atlantic and Mediterranean traders stored their wares and negotiated their exchanges. . . ." (Motley, "United Netherlands," iii, pp. 544-545.)

The group of States which in the sixteenth century comprised the Netherlands consisted of 17 provinces, which we may consider in three groups: the Walloon provinces next to France, the central or Flemish provinces corresponding approximately to modern Belgium, and Holland, which included most of the coast States. The entire group was united under the States-General, but the power of this body was subject to that of Spain, of which the Netherlands was a tributary.

In 1567, unable longer to remain submissive under the intolerable rule of Philip II, the Netherlands commenced that struggle which, in spite of internal dissensions and numerous crushing defeats, was finally to yield them their independence.

It may, at first thought, seem remarkable that for many years of the time during which the States and Spain were locked in this bitter struggle commerce between the two countries went on with apparently little interruption. The explanation is found in the fact that the two were mutually dependent. To build and equip the fleets which Spain was sending to her over-sea dominions, as well

as against Holland itself, Spain needed timber, tar and other naval stores which the Dutch ships brought from the Baltic ports. She also needed the grain and provisions of which the Hollanders were chief distributors. As for Holland, she was forced to buy and sell wherever trade was to be had. Whatever prosperity the Netherlands enjoyed at that period was built upon commerce. No more than Venice could they be prosperous if shut off from the world's markets. However, this condition of affairs was radically changed soon after the union of the crowns of Spain and Portugal in 1580. Philip now decided to strike a blow at the Dutch by destroying their commerce. Since William of Orange out-generalled his best generals, and the sturdy burghers outfought the Spanish infantry, at that time considered the finest troops in Europe, Philip would bring them to time by starving them. He forbade Dutch vessels to trade in ports of Spain or Portugal. This order meant to the merchant whose ship went to Spain loss of the vessel by confiscation; to the crews it meant prison and the Inquisition.

Sir Walter Raleigh mentions this action of Philip's as one of the five reasons for the "upgrowing of the Hollanders and Zealanders," . . . "and the fifth; the embarguing and confiscating of their ships in Spain, which constrained them, and gave them courage to trade by force into the East and West Indies, and in Africa, in which they employ one hundred and eighty ships, and eight thousand seven hundred mariners. The success of a counsel so contrary to their wisdom that gave it as all the wit, and all the force the Spaniards have, will hardly, if ever, recover the damage thereby received." (Sir Walter Raleigh, "The Invention of Ships," in *Old South Leaflets*, vii, p. 309.)

The situation was a serious one for the Netherlands, especially for the maritime provinces. Not only had Holland at this time the largest merchant marine that had ever been known, but a larger proportion of the population were mariners than had been the case in any nation up to that time. (Motley, iii, p. 546.) Now she found herself denied the carrying trade of the greatest power in Europe, denied the distribution of the products of the East and West Indies which all the world was demanding. It was not strange, then, that the Hollanders turned their thoughts to the possibility of a direct commerce with the Indies, which, in spite of their splendid merchant marine, they had never yet attempted. It is a curious fact in regard to the Portuguese control of the East Indian traffic during the sixteenth century, that the other nations seem to have tacitly acknowledged their title to the Cape route by right of discovery. Because they had blazed the trail, they had a certain claim to the exclusive use of it.

However, if the exclusive right to a sea route was granted, the Protestant nations, at least, did not admit the right of a Pope to divide the Indies between Spain and Portugal, as Pope Alexander VI had done. Holland and England both believed that if they could only find a way of their own to Cathay and the Indies, for instance by a northeast or a northwest passage, they would have a perfect right to trade with those countries.

Any scruple which the Dutch may have entertained in regard to the propriety of using the Portuguese route was removed when Portugal came under the dominion of their arch-enemy, especially since he had forbidden them his ports. There was just one remaining reason why the Dutch did not at once follow the Cape route; namely, they did not know the way. This route was never used until the English voyage of 1591, except by the Portuguese. The Portuguese had a thorough knowledge of the route, accumulated by long years of experience in following it, but this knowledge they had jealously guarded.

For this crisis in the affairs of the Dutch a man had been in training. Jan

Huyghen van Linschoten was born in Haarlem about 1563. At the age of sixteen he went to Seville, in Spain, to join two brothers who had been there for some years. In 1563, impelled by a desire for travel and adventure, he joined himself to the Portuguese Indian fleet. While on the outward voyage he was fortunate in receiving an appointment to the suite of the Archbishop of Goa, who was a passenger on the same ship. Jan remained in the service of this dignity for five years, at the end of which time the Archbishop left for Europe, expecting to return to Goa. However, he died on the voyage, and, hearing of this, which meant that his own prospects for advancement in India were destroyed, Jan decided to return to his native land. He spent two years in the Azores, finally arriving in Holland in 1593. In 1595 and 1596 an account of Linschoten's voyage to the East Indies appeared in print. This work proved to be a storehouse of information for all who were interested in the Indies, and was exactly what the Dutch needed. Linschoten had recorded his observations of the social, political, and religious institutions of the native races of India, as well as those of the Portuguese who had established themselves there. He wrote with accuracy of the plant and animal life and of the physical and political geography. He described the commercial products and discussed markets and means of transportation. Most important of all, perhaps, to the Dutch, was the information he gave in regard to routes from Europe to India and to all parts of the Indian Archipelago. He included notes on winds, currents, shoals, and harbors. His work was for the scientist, the merchant, the navigator. It would be difficult to overestimate its importance in stimulating and assisting the Dutch in the work they were about to undertake. (Jan Huyghen van Linschoten, from English translation of 1598, H. S., Introduction; also, Motley, iii, pp. 547-548.)

Before considering the East Indian voyages of the Dutch, we should note the efforts they made to find a route all of their own to Cathay and the Spiceriës. Linschoten himself and other Dutch geographers and navigators believed that the northeast route would cut 10,000 miles from the long journey to the East. The first expedition, in 1594, reached Nova Zembla and thoroughly explored and charted its coast. In 1595 a second expedition was fitted out. So confident were the promoters that this one would be successful that a stock of articles for barter in China was carried. The only products brought back were a quantity of pebbles considered to be "a kind of diamonds." A third expedition of two ships, manned by carefully selected crews, sailed in 1596. One ship's company wintered at 76° N. The effort spent on these expeditions was not entirely wasted, for on all of them accurate astronomical, geographical, and meteorological observations were made. (Motley, pp. 572-578.)

The first Dutch expedition to attempt the Cape route consisted of four vessels: the *Maurice*, *Holland*, *Amsterdam*, and a pinnace, under the command of Cornelius Houtmann. Leaving the Tessel in April, 1595, the Stormy Cape was sighted just four months later. Since cloves, nutmegs, and mace were more valuable than pepper and ginger, Houtmann directed his course to the islands of the Far East. We read that they reached Sumatra in May, 1596, and in June passed through the Strait of Sunda, between Sumatra and Java. By this route they avoided the Straits of Malacca, the narrows of which were guarded by the Portuguese fort at the city of Malacca. Nevertheless, the Dutch vessels did not escape the notice of the Portuguese, for we learn that on July 6 the Dutch were warned of a plot to destroy them. The principal officers were to be invited to a feast given by a certain Javan prince, and during their absence the Portuguese were to spoil the ships. In December they reached Tuban and Cydaia, and pur-

chased nutmegs and cloves. Here they had another evidence of Portuguese hostility in an attack by natives instigated by the Portuguese. The expedition reached home in August, 1597. So heavy had been the losses from scurvy that the ship *Holland* did not have enough well men to weigh the anchor. (Purchas, v, pp. 196-201.)

This first expedition had lost heavily in men, but at that time, as later, human life was held cheap when great commercial gain was in prospect. Dutch ships had brought spices directly from the East Indies, and men, money, and ships for another venture were not lacking. Within a few months after the return of the first voyage a fleet of eight vessels was on its way. In December, 1598, three of these rode in Bantam harbor. (Bantam is at the extreme western end of the Island of Java. In the sixteenth and seventeenth centuries it was a very important pepper market.) The other five ships arrived later, reporting 35 dead and many sick among their crews. The Bantamites welcomed the Dutch and ejected the Portuguese factors. The thrifty Hollanders were delighted to find that for one pewter spoon they could purchase in Bantam enough food to supply a man for a week. In 1599 four ships of the fleet were laden with pepper and started homeward; the others went on in search of cloves and nutmegs. Their full itinerary is not available, but we know that two of them reached Banda and bartered there for nutmegs and mace. All were home by April, 1600. (Purchas, v, pp. 201-205.)

The Dutch were not satisfied with making trial of only one route to India, but in July, 1598, started a fleet of four sail, under Oliver van Noord, to make the voyage by way of the Straits of Magellan. We have learned of the discovery of this route by Magellan on his voyage of circumnavigation; since then it had been used not only by the Spanish but by an English squadron under Drake in 1577, and a second under Cavendish in 1586. The chief pilot of the Dutch expedition was Captain Melis, who had made the voyage with Cavendish. Having accomplished the dangerous passage through the Straits, van Noord ran off the South American coast at St. Iago (Valparaiso) and captured two Spanish vessels. Striking across the broad Pacific, the fleet touched at the Ladrone group, and later reached the Philippines. At that time the Spaniards sent every year from New Spain (Mexico) great carracks to bring silk, gold, and spices from the Philippines. Van Noord found two of these vessels in Manila harbor, and there ensued a battle in which one ship of each flag was sunk. The Dutch traded for mace at Juratan and for pepper at Borneo, sailing home by way of the Cape of Good Hope. (Purchas, ii, pp. 187-206.)

To return to the Cape route and the fleets which followed that way to India: Not waiting for the return of the second voyage, the enthusiastic Hollanders fitted out two other expeditions, one of three ships and one of four. Several companies were organized, and other ventures followed one another at intervals of a few months. In 1601 a fleet of 13 vessels sailed from Amsterdam. Between 1595 and 1601 46 ships were sent to India by the Dutch, of which, in due time, 43 returned richly laden. (Purchas, v, p. 227.)

Up to this time the Indian ventures had been free to all associations of Dutch merchants, but this was not to continue. Holland, in the opening years of the seventeenth century, was to give birth to a monopoly which grew to compare in size with the great ones of the early twentieth century. Very soon after the Dutch commenced to trade with the Indies the complaint began to be made by merchants that spices were becoming too cheap in Europe. Possibly some of the thrifty Dutch housewives were pleased that this was the case; if so, they seem to have had no voice in the action which followed. Probably their "Consumers'

League" was not well organized. Although the desire of the merchants to maintain prices was one of the factors which was working to cause a union of the companies, there was another and more important reason. The nation understood that the Indian fleets must be able not only to defend themselves against the efforts already being made by Spain to sweep them from the seas, but they must be prepared to strike back and to strike hard. To capture a spice-laden carrack meant not only cargoes for the Dutch galeots; it meant also a blow at Spanish power. The States-General had no ships to spare to send to distant seas; the merchants must have an organization of their own, powerful enough to provide not only ships and sailors, but guns and fighting men as well.

On March 20, 1602, the States-General granted to the Universal East India Company a charter conferring the exclusive right to trade to the eastward of the Cape of Good Hope, and to sail through the Straits of Magellan. The capital stock was 6,600,000 florins. The company was given power to make treaties with Indian princes in the name of the States-General, to levy troops, and to build forts. Of the value of the prizes captured from the enemy a certain percentage was to go to the Admiralty. (Motley, iv, pp. 132-135.) Before the end of the year the company's first fleet, consisting of 14 vessels, under Admiral Wybrand van Warwyck, was *en route* to the Indies. These were more than simple merchant ships that sailed from Amsterdam and Rotterdam during the first years of the seventeenth century. Built as they were to carry merchandise, they could be, and frequently were, transformed to ships of war on very short notice. Many of the captains had seen service by land or sea in the wars with Spain. Every Zealand fisherman who shipped for the Indian voyage knew that he might be called upon to fight to protect the cargoes of his company, or to win other cargoes at push of pike and thrust of sword. We have already noted van Noord's battle with the Spanish in Manila Bay; other fights followed in rapid succession. Armadas were despatched from Spain to protect the factories scattered through the Indies, as well as the richly-laden carracks with their great cargoes of pepper and cloves, musk and ambergris.

In 1601, Jacob Heemskerck, while bartering with the King of Jabor on the Malay Peninsula, was informed of the approach of a Portuguese carrack from Macao. The carrack was manned by a crew of 700 or more, while Heemskerck's two small craft had together only 130; but he did not shrink from the encounter. After a short conflict Heemskerck was able to divide booty amounting to over 1,000,000 florins among the members of his crews. The spoils of battle included silk, sugar, cotton, and musk. (Motley, iv, p. 108.) In 1602, Spilberg, a Dutch commander who had recently been entertained by the King of Ceylon, "to gratify the King," fought and captured three Portuguese ships and gave the captains to the King. Spilberg was the first Hollander to trade to Ceylon for cinnamon. Wolfert Hermann, the commander of five small vessels, encountered near Bantam an armada commanded by Andreas Hurtado de Mendoza, who had been commissioned to purge the Indian seas of the Dutch traders, and to chastise the natives who had dared to hold commerce with them. Hermann's squadron was hopelessly outclassed, since Mendoza's vessels numbered 25 or more, and his flag-ship alone was superior in weight and armament to Hermann's combined force. The Dutch, although they did not dare to come to close combat, harried the armada for three days, capturing two vessels and sinking and driving ashore a number of others. Mendoza considered it prudent to leave these antagonists, and found less dangerous ones in the natives of Amboyna, whose villages and spice groves he destroyed. (Motley, iv, pp. 106-107.) The King of Bantam might well greet the Dutch as

his deliverers. In Bantam was established the first factory of the Hollanders, and near this vicinity were laid the foundations of the city which eventually became the capital and metropolis of their colonial empire. "Not many years later, at the distance of a dozen leagues from Bantam, a congenial swamp was fortunately discovered . . . and here a town, duly laid out with canals and bridges and trim gardens and stagnant pools, was baptized by the ancient and well-beloved name of Good-Meadow, or Batavia, which it bears to this day." (Motley, iv, p. 107.)

Many other naval battles between Hollanders and Portuguese might be mentioned. In every sea the contest was waged; wherever the hostile ships sighted each other the red flag went to the mast-head and the merry conflict commenced. The Dutch were usually inferior in numbers of ships and men, as well as in the weight of ships, but in the majority of cases they were victorious, or at least inflicted a much greater loss than they suffered. Nor was this due wholly to superior bravery on the part of the Hollanders. The Dutch galeots, vessels of from 100 to 200 tons, at this period, broad, bull-nosed, and clumsy as they would appear to-day, were the best sailing craft of their time. The Spanish carracks, some of them 500 to 1000 tons or even larger, were slow, topheavy, and even more unwieldy than the galeots. The latter could sail all around the carracks, could fight from any range or angle they desired, and frequently had their adversaries in a position in which they could not use a single gun. Hermann won his battle against great odds, just as many another Dutch commander did, by out-sailing and outmanœuvring his antagonist. (Motley, iv, pp. 106-107.)

The Dutch were not satisfied to whip the Spaniards only on the sea, but within a few years after their first voyage were bombarding and taking by storm the Portuguese and Spanish forts all over the Indies. They devoted their energies especially to reducing the strongholds of the enemy in the Eastern Archipelago. We have seen them established at Bantam. They soon held forts at Jahore (Malay Peninsula), at Achin (in Sumatra), and on Amboyna (one of the larger Molucca group). From the first the true Moluccas, comprising Ternate, Tydore, Motiel, Makian, and Baera, were a bone of contention. For centuries before the Europeans came, Chinese, Malays, Persians, and Arabs had fought for these "Clove Islands." The Portuguese had established themselves here in 1512, but, as we have seen, soon had to maintain their title against the Spaniards. Not until Charles V sold his title did strife between Portuguese and Spaniards cease, and now the Dutch had arrived to cause further trouble. The King of Ternate had willingly submitted himself to the Dutch; Tydore remained loyal to the Portuguese. In 1605, Cornelius Sebastian, with some assistance from the Ternatans, undertook to storm the castle of Tydore. It was bravely defended by the Portuguese, but the explosion of the magazine at a critical moment in the conflict almost ended Portuguese resistance. There was an English fleet in the harbor at the time. The English claimed to be neutrals, but were accused by the Dutch of having furnished ammunition to the Portuguese. ("Voyage of Sir Henry Middleton," H. S., pp. 50-58.)

In 1607 the Spanish sent a force from the Philippines which secured control of the Moluccas, only to be dispossessed by the Dutch under Matelieff. In these contests between the various European nations for the control of the Moluccas and their cloves the poor native, like the "innocent bystander," always suffered.

Motley's comment on the wars and dissensions, caused by the apparently inoffensive clove, cannot fail to interest: "The world had lived in former ages very comfortably without cloves. But by the beginning of the seventeenth cen-

tury that odoriferous pistil had been the cause of so many pitched battles and obstinate wars, of so much vituperation, negotiation, and intriguing, that the world's destiny seemed to have almost become dependent upon the growth of a particular gillyflower." ("Gillyflower," an old name for the clove. French name of to-day is *girofle*.) "Out of its sweetness had grown such bitterness among great nations as not torrents of blood could wash away. A commonplace condiment enough it seems to us now, easily to be dispensed with, and not worth purchasing at a thousand human lives or so the cargo, but it was once the great prize to be struggled for by civilized nations." (Motley, iv, p. 245.)

Somewhat later in their Indian career, finding it impossible to completely control the output of cloves from the Moluccas, the Dutch adopted the policy of introducing the tree into Amboyna and some other islands which were securely under their control, and extirpating it from the Moluccas. This policy seems to have been successful in giving them the monopoly. The clove tree is not found to-day in the Moluccas. (Flückiger and Hanbury, p. 283.) Tavernier, in the middle of the seventeenth century, found that the Dutch clove monopoly was not absolute, because the Dutch factors surreptitiously traded it to native merchants for rice and other merchandise. Tavernier, who was prejudiced against the Dutch, says that the factors were so miserably paid by their company that they were forced to follow such practices in order to subsist. (Tavernier, ii, p. 16.) In the case of the tree (*Myristica fragrans*) which produces nutmegs and mace, the Dutch made determined and persistent efforts to restrict it to the Banda Islands. In order to prevent propagation elsewhere, they early introduced the practice of immersing the kernels in milk of lime for three months. It was later discovered that the exposure of the kernels to sunlight for a week would have accomplished the same purpose. The Dutch are said to have frequently carried in stock at Amsterdam the entire nutmeg crop of 16 years. (Flückiger and Hanbury, pp. 504-505.) We find in 1620 one of the English captains writing to this company that the Dutch had forced the natives of Poolorom to present them with a nutmeg tree planted in a basin of the earth of the island, this symbolizing that the island and its products were to belong to the Dutch. ("Calendar of State Papers," Colonial East Indies, 1617-1621, p. 423.)

The Dutch seem also to have early secured a monopoly over cinnamon, at least over Ceylon cinnamon, produced on the island of that name. Tavernier tells us that in the middle of the seventeenth century it all came from Ceylon, and, further, that in the season of cinnamon harvest the Dutch were obliged to use 1500 or more armed men to guard the natives who gathered it. The guard, which was necessary because of the hostility of the King of Kandy, greatly increased the cost of the cinnamon. (Tavernier, ii, p. 18.)

Batavia, the capital of the Dutch Indies, grew to be a great and flourishing city. By reason of the grandeur of its buildings, wealth of its inhabitants, and vast extent of its commerce, it came to be called the "Queen of the East." François Leguat, who visited the city near the close of the seventeenth century, nearly 100 years after the Dutch first rounded the Cape, has given us a description. He tells us that it was built of white stone and that the streets were fine and beautiful. Like all well-regulated Dutch cities, Batavia was intersected by canals. A strong citadel, mounting 60 pieces of artillery, was garrisoned by a thousand men. The population was a cosmopolitan one, including, besides Dutch and Javanese, French, German, Portuguese, Chinese, and Moors. The city was the centre of all Dutch activities in the Indies, both political and commercial. The General or President was absolute in authority. Unlike the Portuguese viceroys, he held office for

life. Roman Catholics were allowed freedom of conscience, but not the privilege of public worship. ("Voyage of François Leguat," H. S., p. 221.)

Jean Baptiste Tavernier, a French diamond merchant, about 1649 made the homeward voyage from Batavia in one of the Dutch East India Company's vessels. He has left us one of the best descriptions of a voyage of this period.

Shortly before the departure of the vessel from Batavia it was visited by the Surgeon-general, whose business it was to make sure that no servant of the company was going home for medical treatment who could be cured in Batavia. Another inspection was made by a military officer to make sure that no soldier was going without leave. After a run of 54 days the vessel arrived at the Cape, and, as was the custom, made a stay of several weeks for refreshment. The Dutch maintained a fort and a village at this place. Any soldiers or sailors who were willing to remain were allowed to do so, as the policy was to build up a strong settlement here. The natives brought for barter cattle and young ostriches; the latter were purchased as delicacies for the sick. The Hottentots, degraded as they were, Tavernier says, had a knowledge of simples, and were able to cure 19 members of the ship's company who were afflicted with ulcers and wounds. The sailors were allowed to go ashore in parties, those with a record of good behavior being given the first opportunity.

The next stop for refreshment was made at St. Helena, in the South Atlantic, afterwards famous as the prison of Napoleon Bonaparte. The run from the Cape to St. Helena, Tavernier tells us, was looked forward to by the sailors with much pleasure, since the winds were nearly always favorable and steady; hence there was no necessity for changing sail. Immediately on arrival at St. Helena all hands were employed for two days in scraping the hull. This being completed, the crew was divided into two parties, each of which in turn was sent ashore for 11 days for rest and refreshment.

In those days of long voyages, when canned and preserved fruits were almost unknown, and refrigeration had not been dreamed of, these long stops were necessary to prevent and to cure scurvy. Even with this precaution, few voyages to the East Indies were made at this period without some deaths from this dread disease; in some cases a large percentage of the crew was lost.

Tavernier tells us that the party ashore, having killed wild pigs and gathered sorrel which grew there, cooked the pork and sorrel, together with rice from the ship, to make a kind of soup. This soup was an important article of diet during the stop at the island, and acted as a gentle purge. (Various species of oxalis are known as "sorrel." The leaves of the sorrels contain potassium binoxalate, and have been used as anti-scorbutics.) The men on shore were required to send some of the wild pigs to the vessel every day. Those on the ship were employed in catching fish for use on the remaining portion of the homeward voyage. Not only the crew, but the pigs, sheep, geese, ducks, and chickens on the ship were sent to have a touch of shore life and a diet of sorrel. The beasts and fowls became so fat that it was impossible to eat them on the way home.

A serious difference arose between the crew of the vessel Tavernier was on and that of another Dutch vessel which had reached the island a few days earlier. The seamen of the first vessel had gathered all of the limited supply of lemons found on the island, and had locked them in their chests. Since lemons were then as now regarded as one of the best remedies for scurvy, this attempt of one ship's crew to monopolize them was a serious matter. The commander of Tavernier's vessel, who ranked as vice-admiral, threatened to hang some of the offenders if the lemons were not disgorged. The sailors thought it wise to do so.

While the Dutch were at St. Helena, two Portuguese ships arrived from the Guinea coast with slaves for the mines of Peru. Some of the Dutch sailors, being familiar with the dialect of the Africans, found opportunity to tell them of the fearful treatment they might expect in Peru. A number of the slaves ended their misfortunes by jumping into the sea.

Leaving the island, the vessels sailed for three days through great beds of sargasso (*Fucus natans*). Tavernier erroneously speaks of the vesicles or floats as fruits. The homeward route was apparently by rounding the north of Scotland. While in the North Sea the voyagers were met by vessels which had been watching for them, and which brought them very welcome supplies of smoked meats, butter, cheese, biscuit, and beer. As the Indiamen ran through a fleet of herring fishers they traded spices for fresh herring.

Before land was reached the officers of the vessels met in council and passed judgment upon those members of the crews who had committed offences against discipline during the voyage. Two were sentenced to be hanged, a number of others to minor punishments. The sentences were executed before land was reached in order that there might be no appeal.

Many of the Dutch soldiers had participated in an attack upon the Philippines. Here they had pillaged some convents, and among other booty had secured a great number of wax candles. Now, as the vessels neared the coast of the homeland, a great number of these were lighted, producing, as Tavernier describes it, a remarkable illumination.

Members of the ship's companies were not allowed to carry their chests ashore. The latter were all sealed and carried to the house of the India Company, there to be examined by an official. This was one of the means adopted to prevent private trade. (Tavernier, ii, chapters xxvii to xxix.)

(*To be continued.*)

CO-OPERATION VS. INDIVIDUALISM.

Through the history of the past runs a dominant chord, namely, the efforts of man to bring about a state of equilibrium between the rights of the individual and those of the social whole. The nineteenth century was pre-eminently the age of individualism, and that individualism, carried to excess, brought about a social and industrial condition against which the prophets of the age, men like Thomas Carlyle, Ruskin, Hugo and Tolstoi, thundered. It was the epoch of machinery, of ultra-Darwinism, the effects of which hang like a black pall over the people of the present epoch. The twentieth century represents the subordination of the individual to group control; the greatest good for the greatest number. The spirit of co-operation is in the air, of brotherhood. Despite the ravages of the great war in Europe, humanity will arise phoenix-like from its ashes, and the torch of liberty will be carried forward again. In the field of education this subordination of the individual to the group is plainly seen, leading directly "to wider opportunity for the masses of the people to rise above their former level."

—*New Age.*