observance of the dietary ordered; and, unless these directions are perseveringly attended to—and it may be necessary to extend this over several months—no satisfactory results will be obtained. A patient whose vital energies have been much lowered cannot be restored to a condition of vigour in a short time; and it can, I believe, only be accomplished in one way—*i.e.*, by feeding the patient very frequently with very small quantities of food at a time, that food being chiefly animal food. I have had cases in which very material improvement in the general nutrition of the body was only obtained after months of assiduous treatment in this way; but I have hardly known a case where it has really failed eventually.

The second part of the treatment is the remedying of the diseased condition of the uterus. The principal indication in a not very severe case is in some way or other to prevent the uterus taking a vicious shape or position. While it is soft and the flexion not confirmed, this is generally readily done by simply ordering the patient to maintain the horizontal position; on the back, if there be ante flexion; on the side, and occasionally on the face, if there be retro flexion. And, so long as the uterus is unaffected by the tonic measures adopted, these precautions are required. When the case is a confirmed one, however, and the flexion an established one, the position-treatment of the body, as a whole, is insufficient. Under these circumstances, a more direct treatment of the uterus itself is imperative. If the flexion be not treated, the uterus may become confirmed, literally hardened, in its abnormal shape. Added to which consideration is another, that, with a properly adjusted pessary, the patient may frequently be allowed a considerable amount of out-of-door exercise, and thus be able to get fresh air: a very important desideratum from every point of view.

In most of the cases which have come under my notice, I have limited local treatment to the simple carrying out of this principle of keeping the uterus from becoming flexed and displaced; occasional astringent injections, using warm and never cold water for the purpose. The sound and the pessary have frequently been used conjointly, the one aiding the effect of the other. In one or two cases, I have tried a stem-pessary; but, in a large majority of the cases, vaginal pessaries, the cradle for ante flexion, a modified Hodge pessary for retro flexion.

Many other *adjuvantia* would naturally suggest themselves in the management of these cases, on which I have no space to dilate. Remedies to assist the digestion, always weak under such circumstances: iron and quinine, sea-water baths, other baths containing bromine and iodine, all these and many others might be mentioned, which I have utilised in different cases with advantage. But the essence of the treatment has been to strengthen by nourishment the system at large, and to maintain the uterus in a state of quiescence and freedom from movement until it has recovered itself and is rendered strong in common with the bones, muscles, and other organs of the body.

NOTES ON SEA-SCURVY.*

By SIR WM. SMART, M.D., K.C.B.,

Inspector-General Royal Navy.

AFTER a long disappearance from the sick-reports of the navy, this disease has recently caused the return of an exploring expedition which had been equipped with unprecedented liberality in all that could have been anticipated to conduce to its success, so far as sanitation is concerned. It may, therefore, be useful at this juncture to recall some of the leading points in the history of the disease.

Scurvy would appear to have been common among the Slavic nations, from its name being a derivative from *scorbs*, a Slavic root-word signifying disease in general. It was felt much earlier on land than at sea, and, three centuries after its ravages began to be felt in ships, it was pronounced by physicians of high repute to be not the same disease as land-scurvy. It certainly has been a scourge of armies from the Roman age down to the siege of Sebastopol, especially in besieged towns. There are fair grounds for crediting its presence amidst Roman legions beyond the Rhine and in Arabia; but, in the crusade of 1260, it almost destroyed the contingent of the French nation in Egypt on its way to the Holy Land; but, whether it commenced on the voyage or after landing in Egypt, there are no means of judging; this occurrence may, however, be as so far a doubtful link between the land and sea histories of the disease. When long voyages at sea commenced with the glories of discovery of the way to India, it began to afflict seamen in a notable manner, and from that time it has been a disease of fleets as much as of armies. In all these European regions,

it was generally attributed to cold and wet; but Sinopeus (1734) affirms that, in Tartary, one of the driest of climates, scurvy was as destructive of life in epidemics as small-pox (still unknown there) was in Europe, and we know that milk and its products, with fresh animal food, with rarely any vegetables or fruits, have been through all ages the dietary of the Tartars.

Again, it is certain that the early colonisers of North America, whether English or French, found their efforts almost frustrated by these outbreaks. Cartier, in his second voyage (1535) to Newfoundland, states that the pestilence prevailed amongst the Indians in December; and that, at the middle of February, a hundred and ten of his countrymen had perished, and not ten remained in the whole of the French colony. But a remedy for it was found in the juice of a certain tree—the ameda—made known to them by the Indians. This teaches us that the disease commenced its ravages when the colonists fed on salted meats and fish without vegetables, and were unable to leave their forts for weeks in the winter on account of the ice; and that it disappeared with the appearance of verdure on the trees of which they partook; so that, after April broke, hopes and assurance of safety returned. This lesson in prognosis ought never to be forgotten by anyone compelled to pass long periods in Arctic regions. The same things happened in our own colonies, from Hudson's Bay to Charleston, many of which were nigh to being abandoned from that cause; but the disease is now unknown there, although the climate and seasons, and the duration of winter and of day and night, are unchanged.

Scurvy was well known as a winter disease on land for ages before its being noticed as a disease of seamen, which is accountable for in that voyages entailing a long absence from the shore were not undertaken before the end of the fifteenth century. There is no evidence that the companions of Columbus suffered in any marked degree from this disease; but it must be remembered that they started from a southern port of the peninsula in the month of August, the season when fruits and succulent vegetables abound there, so that it is not unreasonable to suppose that they were then in a very healthy state, and that they most probably took away with them supplies of what forms the main element of the diet of Southern Europe at that season, and their glorious voyage of discovery, such as the world had never before seen, occupied only ten weeks from shores where succulent fruits grow wild. It may have been the same among the Portuguese voyagers, who crept slowly along the Western Coast of Africa, rarely out of sight of the land. But it was different when Vasco da Gama sped boldly along sandy shores and reached the Cape of Good Hope, at which he arrived with his crews enfeebled by scurvy, who there recovered their vigour and spirits, to suffer once more when they struck across the Arabian Gulf for the shores of India, as Casteneda relates that, out of one hundred and sixty men, more than one hundred perished, mostly by scurvy. Until this occurred, history had not recorded the disease since 1260, when it destroyed a French crusade on its way to Palestine.

With reference to our own seamen, it is known that, from the reign of Henry VII, they began to undertake long voyages, first to the Levant, and, in the infancy of our navy, in the reign of Elizabeth, to follow up the Spaniards in the Caribbean Sea and round Cape Horn into the Pacific, and, in the days of James I, to pursue in the track of the Portuguese and the Dutch, round the Cape of Good Hope, an enriching commerce with the East Indies. The great admirals Hawkins and Drake gave accounts of the ravages of scurvy in their squadrons, and the former stated, in 1593, that, in twenty years of sea-life, he had witnessed the destruction of ten thousand brave mariners by scurvy alone. His experience must have been acquired in voyages to the Spanish Settlements in the West Indies, to Peru, and to the coast of Guinea, from which he was the first to transport negro slaves for the service of the Spaniards in America.

Our earliest voyagers to the East Indies, profited, no doubt, in some measure, by the experience of their forerunners, the Portuguese and the Dutch, of whom the former had learned to prevent and to cure scurvy by the use of lemon-juice, and the latter by the use of sour-kROUT as a sea-ration, although its previous ravages on their crews had given to it the name of the Dutch disease amongst our own seamen. Our greatest of medical cyclopædists, Dr. Copland, having been favoured with an investigation of the records of the East India House, learnt from them, what had previously been related by Harris and Purchas in their *Collections of Voyages*, and quoted from them by Dr. Lind, in his work on *Scurvy*, page 156, as "a remarkable and authentic proof of the great efficacy of juice of lemons against this disease", that, in 1609, there were four ships despatched as usual on the voyage, out of the crews of three of which nearly one-fourth died of scurvy, while in the commodore's ship none were at-

* Read before the Section of Public Medicine at the Annual Meeting of the British Medical Association in Manchester, August 1877.

tacked. This immunity of one ship was attributed to the use of lemon-juice, of which three tablespoonfuls were served daily to each of the crew. Possibly, in all the previous voyages from 1600, the date of Queen Elizabeth's charter, all the four ships constituting the convoy had been accustomed to suffer equally, and, as Commodore Lancaster must have been a well skilled conductor on the same service, he probably had heard of this preventive from the Portuguese or the Dutch. However this may have been, his demonstration was fruitful of good results to the seamen employed by the Company in the provision of lemon-juice for future voyages.

The first writer on it in English as a disease of seamen—John Woodall, surgeon—made several voyages in the East India Company's ships, and had thus acquired the strongest confidence in the value of lemon-juice as a prophylactic and a remedy for scurvy. He was afterwards employed by the Company in the management of the medical affairs of its ships, and the procurement of supplies of medicines and comforts for the sick in their employ. In that capacity, he wrote the first edition of his very interesting work, *The Surgeon's Mate*, in 1617, when in the East India Company's service, and the second edition in 1639, when in the service of the Crown, having been appointed the first medical supervisor of the medicine-chests and instruments of naval surgeons, who then provided their own paraphernalia on a voluntary allowance from the seamen's wages.

Woodall's remarks on scurvy, and its preventives and remedies, underwent no material change in his second edition, and, being based on his personal experience at sea, they are particularly interesting on that account, as well as from their being the first description of the sea-scurvy found in English medical literature. For its pathological cause he adopted the theory of disease of the spleen, which had been originated by the Dutch physicians, who considered it to be the enlarged spleen of which Hippocrates wrote. The predisposing cause, he thought, arose from any of the causes of general debility, such as that remaining after fevers when seamen return to duty before their convalescence is perfected; and the chief exciting cause to be the prolonged use of salted meats or fish and of impure water, without *agua vite* or wine "to comfort and warme their stomacks". He also mentions the want of proper clothing, and the practice of "not keeping their apparell sweete and dry", and the ill-ventilation of their berths. He affords a graphic account of the lesions of the spleen, liver, and lungs found in fatal cases, "which do afflict poore seamen, which often are past man's help, in such place and time as they happen." The best of preventives being good sea-victuals and the supplying of the "juices of oranges, limes, or lemons, wherever the ship touches land, which are better than any taken away from England. And yet", he states, "there is a good qualitie of juice of lemons sent out in each ship out of England, by the great care of the marchants, and intended only for the reliefe of every poore man in his neede, which is an admirable comfort to poore men in that disease. . . . The use of the juice of lemons is a precious medicine, and well tried, being sound; let it have the chiefe place, for it well deserves it, the use whereof is: it is to be taken each morning, two or three spoonfuls, and fast after it two hours; and, if you adde one spoonful of *agua vite* thereto to a cold stomacke, it is the better. Some chirurgeons also give of the juice daily as a preservative, which course is good if they have store, otherwise it were best to keepe it for neede. I dare not write how good a sauce it is at meat, lest the chiefe in the ships waste it in the great cabins to safe vinegar. In want whereof use the juice of limes, oranges, or citrons, or the pulpe of tamarinds; and in want of all these, use oyle of vitriol, as many drops as may make a cup of beere, water, or rather wine, if it may be hadde, onely very little as it were soider, to which you may also adde sugar, if you please, or some syrups, according to your store and the necessitie of the disease, for of my experience I can affirme that good oyle of vitriol is an especiall good medicine in the cure of the scurvie."

These quotations serve to prove that the value of lemon-juice was known as the best of preventives and curatives of scurvy, and that it was used, as such, generally in the East India Company's ships immediately after the demonstration of their worth in the voyage of 1609 referred to by Lind and Copland, although Lind made no mention of him or of his writings in his very elaborate treatise on, and bibliography of, the disease.

To plain John Woodall, "ship's surgeon and master in chirurgerie", who became ultimately surgeon of St. Bartholomew's Hospital, we are also indebted for the first concise view of the predisponents to scurvy, lamenting, as he does in his sensible preface, that "it is strange, in so many ages past, that no one chirurgion of our countrey men hath cut of his experience taken in hand sincerely to set down to posterities the true causes, signes, and cures thereof; neither left any instructions, caveats, or experiences for the prevention and cure thereof", which

words show up the barrenness of our literature regarding scurvy up to the date of his memorable descriptions still worthy of our study. But, nevertheless, this must ever be borne in mind, that Woodall was building on the experience that he and others had amassed in temperate or in tropical climates, where all the resources of treatment, in prevention and in cure, were surely obtainable in, at least, the near future. It did not lie within his theme or scan to dilate on the ravages of scurvy in the Arctic expeditions of Willoughby and Frobisher, in regions where none of these resources are possible, in which it has been later proved that scurvy will appear, and cannot be eradicated by an abundance of lime-juice and fresh meats.

Between 1667 and 1675, Drs. Willis, Charleton, and Gideon Harvey, of whom, Charleton had served in the fleet, and Harvey, who had volunteered to do so in the Dutch war, wrote concerning scurvy; but their works are of but little practical importance, as they assumed the chemical views of the age, which rendered them valueless in comparison with the simply practical work of Woodall.

In 1696, Dr. Cockburn, who served as physician of the Channel Fleet, writes in his volume *On Sea-Diseases; or, A Treatise on their Nature, Causes, and Cure*, in which he gave a fair account of scurvy, with a memorable instance of the benefits derived from setting the affected on shore in tents at Torbay, and supplying them with fresh provisions and vegetables, the result of which was, "the most pitiable objects were in a week able to crawl about, and, before the fleet sailed, they returned healthy to their ships". He considered the main cause to be in the foulness of the air in ships, and the chief preventive to consist in thoroughly ventilating them. So far, he taught one of the most essential of hygienic precautions, which, however, it would ever be extremely difficult to apply in ships housed in for the winter in the Arctic regions, as has been lately exemplified. The eighteenth century was that in which the navy of Great Britain attained to the supremacy of the ocean, after having fought for and secured that of the British Channel in the preceding age. It is strange, however, that, throughout the eighteenth century, the domestic affairs of the fleet underwent scarcely any change. That want of progression, so far as it concerned the health of the seamen, was among the causes of disaffection that culminated in the great mutiny of 1795, which, like the great fire of London, led to inestimable benefits by eradicating scurvy, just as the great fire had done for the Plague.

The dietary of the navy was inadequate in quantity; it was left to merchants, who studied their own interests as the prime motive of action; and these were carefully guarded by their nomination of the officers in charge of the victualling stores. The corrupt condition of the rations, added to their smallness, must have been an unceasing cause of scurvy in our fleets, and our seamen lost tenfold as many by this disease and its cognate ship-fever in an age when, mainly by her victories at sea, Britain secured to herself the continent of North America, and that supremacy in the Indian Sea, without which she could never have laid the foundation of her Empire of India.

The dietary of that century gave, per week to each man, four pounds of salted meat, beef which, for its hardness and want of sapidity, was jocularly termed "salt horse", and pork which was too often rancid beyond man's powers of digestion; seven pounds of dry unf fermented biscuit, which none could masticate and swallow without fluids to assist these processes; one pound and a half of wheaten-flour for puddings, which sometimes contained salted suet, an easily perishable commodity, or in lieu of that a sprinkling of raisins, which, in his grumbings, the sailor said required the beat of the drum to make them show themselves; burgoe, the contemptuous word for oatmeal porridge, which, it was said, the English sailor abhorred, although it was his only warm food before the sun had crossed the meridian, and boiled peas with his salt pork. All the farinaceous food being frequently half eaten up by scarabaceous weevils and by larvæ, which were served as an equal weight of bread, and consumed with the good-natured comment that "what doesn't poison will fatten". Now and then, rancid butter, and cheese that crawled, were an indulgence, and the salted flesh-meats were substituted by salt fish, or by unsalted stockfish, which more quickly putrefies; and with such a diet as this, he passed weekly two banyan days, without any animal food. As a diluent, he was given daily a gallon, or as much as he would drink (which plan was a saving to the victualler) from a barrel of very weak, vapid, acescent beer; and when that was expended, he had such viands or spirituous liquors as the purser could procure on the station, always of the cheaper sort.

It cannot be wondered at that, fed on such a meagre ill-conditioned "full" diet, with no water to drink but what had stood long in wooden casks, and no air to breathe when below, by night or day, but that which was more or less damp and vitiated by foul odours, the seamen too often became a prey to scurvy. But the above were the best food conditions of the common sailor's sea-life. And beyond this, medical

history adduces proof that, when thus sickly, or from their ships becoming weather-beaten or damaged in conflicts, they returned home to refit ship and to recruit their own strength, it was not always that any fresh meats and vegetables were issued to them—at the best beyond two days a week; and they themselves, unless they had but recently shared prize-money, had not the means of supplying their own wants and necessities, as no pay was forthcoming till the end of the commission of their ship. In their rude appreciation of the social causes of their great sufferings, our seamen, imposed upon by the attestations of some, credulously believed for generations that one of the class to which they imputed their misfortunes—the contractors to whom the Navy Board deputed the victualling of the fleet, who made the lives of seamen subordinate to their own unhallowed gains—had been carried from London, the centre of his trade, in the arms of his Satanic majesty, flying through the air, and plunging with him into the flaming abyss of Mount Stromboli. Perhaps this tradition is not yet extinct in lower-deck messes.

By a long series of judicious ameliorations of the seamen's condition, all this has undergone a radical change in the present century; and so strong is now the voice of humanity that, even when a merchant ship has returned with a scorbutic taint amongst her crew, the causes are officially investigated, and blame awarded where due; while in the case of the Royal navy an exhaustive inquiry is instituted, more from the desire of prevention than of reprehension, as such an occurrence can only have arisen under exceptional circumstances that could scarcely have been foreseen. Indeed, it may be safely asserted that, so great is the liberality of the naval administration in providing sanitary and dietetic precautions, and so great the anxiety of officers, supported by their confidence in that liberality, that none would designedly incur any risk which they might prevent, of having a single case of scurvy amongst their crews. Now-a-days, there is no issue of "putrid beef, rancid pork, mouldy biscuit and flour, or bad water", which Lind deprecated as causes of scurvy, adding, "which are misfortunes common at sea".

Very little was heard of scurvy in the navy throughout the seventeenth century, owing to short wars being waged at no great distance from our shores; but, with the commencement of the Spanish wars in 1718, the same conditions afloat were restored as in the latter reign of Queen Elizabeth; the coasts of America being again one of the attractive points for naval operations, frequently frustrated by the scurvy and fevers. The deplorably inefficient state of Admiral Hosier's fleet in 1726, and of Lord Vernon's in 1741, both in the West Indies, was brought on by scurvy from defective provisions. About the same time, the dreadful sacrifice in Lord Anson's crews was from the same conditions, which broke out after passing the Straits of Lemaire, when, between April and the middle of June, the *Centurion* alone had lost above 200 out of 500 men, and the *Gloucester* nearly as many. They reached Juan Fernandez, and landed the sick, 169 in number, of whom 12 died between the ships and the shore, and about six were buried during each of the following ten or twelve days; when the *Gloucester*, debarking her sick, 80 in number, who had been furnished with fresh provisions and vegetables before leaving their ships, lost none in the boats, and very few on shore. Of the *Centurion's* crew, 292 perished, leaving 214 who recovered; and the *Gloucester* lost about the same number as the *Centurion*, leaving only 82 alive. With this small remnant, the ships left the Coast of Mexico to cross the Pacific, having regained perfect health; and they were then fed on fresh pork and poultry for a considerable time, but with only a scanty supply of vegetables and fruit that would keep sound at sea. They enjoyed also no lack of water, chiefly rain-water, and they caught also an abundance of fish—such as bonitos, dolphins, and albicores—all of the mackerel family; and the ports being kept open, a perfect ventilation was thereby secured and perfect cleanliness was maintained, yet, in less than seven weeks, the scurvy again broke out as badly as ever. Their course at sea lay within the tropical regions, abounding in heat and moisture, and, although the patent signs of scurvy had been cured, yet, for the very reason of previous infections, the crew were more obnoxious to the predisposing and exciting causes. But after another curative course of juicy acid fruits, they were re-established thoroughly; so that, when it fell to them to cruise at sea four months, hoping to fall in with a Spanish galleon, they had no return of the scurvy. Perhaps, no later description of the disease in ships equals the account of this given by the Rev. Rd. Walker, chaplain of H.M.S. *Centurion*. There were two distinct outbursts. The first, in a lengthy voyage from the Caribbean Sea, round Cape Horn to Juan Fernandez; without fresh meats, vegetables, or fruits, the induced conditions becoming intensified on the bleak cold wet passage round the Horn. The second, across the Pacific, with sufficiency of fresh meats, but with few vegetable products to prevent the recrudescence of the former disease, even when the temperature was changed from cold to heat, with dampness of atmosphere. On the two days

previous to reaching Tinian Island, they cast overboard twenty-one corpses and ten died after landing; but the sick in general received so much benefit from the fruits of Tinian, particularly those of the acid kind—oranges—that, in a week's time, there were but few of them who were not so far recovered as to be able to move about without help. This catastrophe should ever be borne in mind, as it shows the difficulty of eradicating the scorbutic diathesis when once displayed in a crew, even by the free use of fresh meat and vegetables, as it is apt to recur under much ameliorated conditions as well as the actual use of fresh meat and fish, and not to become extinct until fruit-acids are obtained, of which this is the most striking instance on record. On the other hand, the positive value of these juices is recorded by Dr. Mead, that, when Sir Charles Wager proceeded from the Mediterranean to the Baltic in 1740 (A.D.), having shipped a large quantity of lemons and oranges at Leghorn, and having heard of their value, he caused a chest of each to be opened on deck daily and issued to the crew; and the happy result was that "he brought his sailors home in good health". (Vide Mead's *Discourse on Scurvy*, page 111.)

Here the time allowed compels me to draw to a close what I would term a first chapter in the history of scurvy, at the point where we have the best description of it as an epidemic in a ship. Not having space here to extend the inquiry further, I must suspend it for the present, at an epoch which should have been a terminal one, viz., when the catastrophe that befell Lord Anson's expedition should have sufficed to prevent the disasters that did not cease to attend our fleets up to the end of the eighteenth century. In closing at this point, it will be well to collect the principles confirmed by the above recorded facts.

1. It is a change in the crasis, or constitution, of the blood, dependent mainly on malnutrition, from the absence of vegetable food and the use of an impoverished meat-diet as *essential causes*, the force of which is greatly influenced by the precedence and coexistence of other conditions, which may be considered predisposing.

2. Its *predisponent causes*, whether on shore or in ships, lie in all causes that debilitate the general strength of an individual, or community; which, as specially applicable to men confined in ships, are—insufficient rations, in kind or quantity; impurity and scarcity of water; exposure to heat or cold, with dampness long continued; vitiated atmosphere; inattention to personal and domestic cleanliness; inadequacy of clothing to the climate, and disregard of its frequent change when wetted; inactive habits, overwork, and depressing mental conditions. It will be justly said, these are but ordinary and not special causes of a variety of diseases, that, however combined, they have never been known of themselves to cause such outbreaks of epidemic scurvy as those referred to; and that, in fact, individuals, communities, or even nations, are subjected to them of necessity in some degree, without the rise of epidemic scurvy amongst them, as it shows itself in besieged towns, in camps, or in ships, and an essential cause is wanting. Granting so much, yet even then it has been, from the very earliest records of sea-scurvy, clearly demonstrated that no epidemic of scurvy has ever been known to have arisen without the previous prevalence of a combination of some of these conditions that serve to destroy the constitutional strength that fortifies against the essential exciting cause. This is quite true in itself, and that essential cause is to be found in the abstention from succulent vegetable aliment referred to; the development of the disease being always an attendant on this, while the force and the continuance of the epidemic or endemic conditions are regulated and modified by the simultaneous operation of the predisposing with the essential causes of the disease. On these grounds alone can any reason be assigned why, in ships, there has always been found to be a very great disproportion in the remarkable fewness of attacks of officers compared with those among the common seamen? Officers are never subjected, under any ordinary conditions of service, to the same amount or combination of the predisposing causes, nor to precisely the same diet, although there may be no difference in their abstention from succulent vegetables which it has been quite impossible to obtain. In fact, it was proved thus early, that the influence of the predisposing causes is of great weight in the origin and progress of every epidemic outbreak of scurvy; and that, without a due regard being had to them, the prevention and cure of scurvy has never been attended with satisfactory results following the measures adopted.

3. From the very commencement of the seventeenth century, when Woodall wrote his observations on Sea Scurvy for the guidance of surgeons' mates, to whom his advice was proffered—in his modesty not presuming to offer the same for the instruction of the surgeons—these things were for the most part known, and also that vegetable food was the best and surest preventive and remedy of the disease; and further, that, when such could not be obtained, the juices of the Hesperidan fruits were able to prevent and to cure it; and that all the virtues of these juices, preserved in shut vessels, were retainable for a long period.

In short, lemon-juice was known to be the therapeutic specific for scurvy long before anything was known of cinchona being a specific for ague, or sulphur that for scabies. This, however, must be received with the qualification that neither is a specific in the absolute sense, since there are cases of either of these diseases, in which its so-called specific has been found inert.

4. It is to be lamented that this all-important knowledge was so slow in taking root, since it was not officially adopted prior to the last decade of the eighteenth century, when, however, being put into practice, the triumph of it was soon perfected; and scurvy, in the forms and extent that had hitherto prevailed normally, was eradicated from our fleets, and since then has been of little sanitary moment, except in the expeditions sent out on Arctic explorations, which are specialties.

The question may be entertained now, without acrimony, into the causes of the latency, for so long a period, of the principles relative to the origin and treatment of sea-scurvy, so well set forth in the writings of Woodall, the first ship-surgeon who undertook to publish his experience and thoughts in any of the languages of Europe, in a manner which may excite admiration still for its brevity, clearness, and truthfulness. The reason for this is traceable to medical theorists, as much as, if not more than, to naval administrators.

PSORIASIS TREATED WITH PHOSPHORUS "PERLES" AND CHRYSOPHANIC ACID.

By BALMANNO SQUIRE, M.B.Lond.,

Surgeon to the British Hospital for Diseases of the Skin; etc.

PHOSPHORUS has recently awakened fresh attention as a therapeutical agent. It has especially been recommended by Dr. Broadbent as a remedy for leucocythæmia. This suggestion, however, after a particularly patient investigation of it, appears to have fallen through. Dr. Broadbent incidentally remarked, in a discussion which ensued at the Clinical Society, on some improvement which seemed to him to have taken place in a psoriasis which occurred as a complication of one of his cases. It is possible that the discouragement which attended the further investigation of the action of phosphorus in leucocythæmia may have been the cause of this incidental suggestion having been neglected. However, phosphorus had, I believe, prior to that time been tested by Dr. Hardy of Paris, with results which afforded him some encouragement; and, subsequently to the date of the case I am about to report, it has been tried by Dr. Whipham at St. George's Hospital, but with what result it is not quite easy to understand from his description. However, since his paper (published in the *Medical Times* of September 22nd, 1877) is mainly devoted to the confirmation of my original advocacy of chrysophanic acid ointment in psoriasis,* on this account possibly the effect of the phosphorus has been apparently less carefully attended to by him.

During the month of March, Dr. Whipham gave three times a day to a girl of 15, who had psoriasis, a pill containing one-twentieth of a grain of phosphorus. On April 1st, he "found that the psoriasis was rapidly disappearing. The improvement, however, was of very short duration, and, on May 31st, 1877, the eruption was extending on the limbs and trunk"; but Dr. Whipham leaves one in uncertain doubt as to when the phosphorus was left off. Further on in his paper, he again refers to this same case thus: "The psoriasis was disappearing under the use of phosphorus, which was commenced in March 1877. By the end of May, however, the disease was nearly as bad as ever, and it was evident that the drug was of no use in relieving her ailment." One is, therefore, left with this choice: either that the good effect of the phosphorus went off because the use of the phosphorus itself was discontinued, or that the phosphorus, like Penelope, undid in May what it had done in April, or at least would not do in May what it had done in April. Dr. Whipham eventually cured his patient of what on May 31st was "a copious eruption of psoriasis over the trunk, arms, and legs", by the exclusive use of chrysophanic acid ointment, with the following result; namely, that, "on June 21st, exactly three weeks after the commencement of chrysophanic acid ointment", he found that, "with the exception of one or two spots, each rather less than the size of a pea, on each wrist, she was quite free from all trace of the skin-disease". On July 22nd, he again "saw her, and found all traces of the eruption gone and her skin natural. She had discontinued the ointment for some weeks." He adds that "it was not without a feeling of despair that I had recourse to chrysophanic acid; the result, however, and the rapidity with which that result was brought about surprised me extremely, a surprise which is not lessened by the

fact that the girl had suffered from the skin-disease for five years and a quarter at the time when the acid was first employed, and that she was entirely free from psoriasis in twenty-one days". Dr. Whipham's surprise was only natural. The efficacy of chrysophanic acid in psoriasis is certainly one of the most astonishing facts in modern therapeutics. I refer incidentally to this part of his paper because it was in this JOURNAL that chrysophanic acid was first made known to the medical world as a remedy of the utmost efficacy in psoriasis, and, for another reason: because it fell to my good fortune to make that particular discovery. I regard Dr. Whipham's observations as an important addition to the other confirmatory evidence which, prior to his paper, had already appeared in the columns of this JOURNAL. The wide publicity which was given to my observations by their appearance in the JOURNAL has caused the remedy to be now in extensive use for the treatment of psoriasis in all parts of the world, whilst one drawback to its use which I had feared has now been removed. I refer to its price. Chrysophanic acid, which, in December last, could only be obtained at the price of ten shillings an ounce, is now sold for four shillings an ounce. I have little doubt but that it will speedily become much cheaper.

It will be seen from the following report that, in February and March of this year, I had a case very similar to that of Dr. Whipham, which latter extended from March to July, and that the treatment was very similar in the two cases.

Betsy D., aged 13½, was sent under my care as an in-patient of the British Hospital for Diseases of the Skin by her medical attendant, Mr. Essex of Pontypool, in Wales. She had been affected with psoriasis for only two months; but the skin of all her limbs and body was copiously covered with psoriasis, the patches on the posterior aspect of the arms and forearms being the largest of all, and many of them being of very considerable size. She had also two or three very inconsiderable spots of psoriasis on her face.

On February 22nd, after a careful map had been taken of every part of the eruption by means of a complete set of my "outline drawings", she began to take phosphorus "perles"; that is to say, the little French capsules of that name, which contain each one-thirtieth of a grain of phosphorus dissolved in oil, and which are to be readily obtained of any chemist. She commenced by taking only one of them three times a day.

February 23rd. The dose was increased to two perles three times a day.

February 26th. The girl had taken the increased dose for a few times; but complained of severe and long continued pain at the epigastrium after each administration. The dose was now reduced to one perle three times a day.

March 6th. On this, the twelfth day of treatment, many of the smaller patches had almost completely disappeared, and the others, even the larger ones, had lost their scales to a great extent; had become fainter in colour, and flattened at their central portions, leaving only raised margins. Since February 26th, she had taken only one perle for a dose. No pain had been felt. She was now ordered two perles for a dose again.

March 8th. She had now taken six doses, each of two perles, without bad effect, until this morning, when, on taking a walk after her dose, she complained of pain in the stomach. The dose was, therefore, reduced again to one perle.

March 14th. She had taken one perle since the last report till now. The eruption was certainly much fainter, but scarcely any additional patches had completely disappeared.

March 27th. She had taken two perles three times a day until now since March 14th. Now the patches on the chest and upper part of the back had nearly all entirely disappeared, i.e., they could not any longer be identified by means of the map taken on February 22nd. The largest patches of all, viz., those on the forearms, had quite vanished, except at the actual margins, leaving only a slightly livid blue stain, and being quite free from desquamation. Many of the patches on the thighs were gone for the greater part of their area. Those on the legs had undergone the least alteration, but have lost their scales. The diseased area, which used to itch very much, had not done so for the past two or three weeks, except quite recently on the knees only, where a few small fresh patches had appeared. The perles have caused no pain in the stomach and no diarrhoea. She was now ordered to take three perles three times a day. She had not washed since the commencement of the treatment. This regulation was enforced in order that any removal of scales might be clearly due to the action of the phosphorus alone.

April 3rd. All of the large patches on the arms had now lost their margins, which were broken and simply dotted, and the general condition of the eruption seemed improved, though a few fresh spots had

* Published in the BRITISH MEDICAL JOURNAL, December 23rd, 1876.