BY SUBMARINE THROUGH THE NETHERLANDS EAST INDIES: A paper delivered at the Evening Meeting of the Society on 17 November 1930, by

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It is a great pleasure to me to have the opportunity of telling you this evening something about the voyages I have made during the past year on board a submarine in the Netherlands East Indies. The journeys were undertaken for a scientific investigation of gravity anomalies, to obtain data in regard to tectonic activity. The crust is very unstable in that part of the world, as is shown by the numerous earthquakes and by the geological evidence, and the expedition has given valuable new evidence about the way in which these crust deformations take place. At the last afternoon meeting I dealt with the scientific side of the investigation, and expressed my sincere indebtedness to the Commander of the East Indian Naval Forces, Vice-Admiral Ten Broecke Hoekstra, for having allotted the submarine which was used for more than eight months in observations over the whole region of the Netherlands East Indies.

I knew the vessel, Hr.Ms. K XIII, quite well, because on a former occasion I made a journey of more than six months in the same submarine, going then from Holland to Java by way of the Panama Canal. So I had an intimate knowledge of the ship and of submarine life when I started on my trips of last year. Forward in the vessel is a room about 25 feet long and about 6 feet broad in which eighteen men of the crew lived, seven of them being natives. Aft of that is a room, 20 feet by 7 feet, for twelve petty officers, and behind that a small room about 14 feet by 7 feet, known as the “long” room of the officers. Then comes a small cabin for the commander of the ship, and after that the central control room from which the ship is submerged and steered during submergence. In this room my apparatus had also found a place between the two periscopes. Farther aft comes the Diesel engine-room, and lastly, at the stern of the ship, the room for the electric motors which propel the ship when submerged.

Above the central control room is the tower with the bridge for surface manoeuvring; fore and aft is a long and narrow deck, but it is usually not possible to be on it because the sea comes over unless the water is exceptionally calm. It is therefore only seldom possible to open the hatches leading from this deck to the living quarters below. Thus life on board a submarine necessarily means living at rather close quarters and in a more or less unpleasant atmosphere. To get all possible fresh air through the hatches we managed from time to time to keep them open, even if occasionally a slight wave reached the deck, by putting a barrier before the hatch and a watch beside it, who could close it before the water could get inside and damage the batteries.

Living at such close quarters one can safely say that one is always in the way of somebody and that life is complicated by a number of small annoyances. It has however also another result: circumstances lead to a spirit of companionship between officers and crew. This was certainly the case for my shipmates of the K XIII and also on board other submarines in which I have travelled—
Badjo village on the Banggai archipelago

Houses near Menado, Celebes

House entrance on Bali
Carved house in Minangkabao

Mural decoration showing stylized bicycle on Bali temple

Temple on Bali
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the $S$—21 of the U.S. Navy, the $K$ II and the $K$ XI of the Dutch Navy. I especially wish to mention this spirit of companionship as existing during the last voyage because it was a strenuous time for everybody. My investigations rendered it necessary to submerge many times, generally three or four times in twenty-four hours, of which one or two were always during the night; and submergence in the tropics is not an agreeable business. We usually submerged one or two hours for every observation. I can say that the spirit of companionship and comradeship never suffered, and I may record, with gratitude, that I received most helpful assistance from the Commander, Lieut. Mante, who submerged every time that the research made it desirable.

Also in another regard it was a difficult expedition for the captain. Our route brought us out of the normal navigation tracks and often near to coasts and reefs, which are abundant in the Indian Archipelago. This creates many problems for navigation, especially when it is desired to submerge often.

Life on board a submarine does not allow much exercise. Inside there is, of course, not sufficient room, and it is therefore only in the exceptional cases, when the deck is free of water, that it is possible to take the air there. This circumstance, in fact, makes all the difference to life on board; the hatches can then be opened, fresh air gets inside, and the crew gets outside. It is however only seldom that the state of the sea allows life on deck. During the first trip through the Indian Archipelago, which lasted for two months, it occurred only on two days, but during the following two trips we were more lucky in this regard. When the sea is rough the only way to get fresh air is to get on to the tower, and you would be surprised to see how many can find room in this narrow space of perhaps 4 feet by 10 feet encumbered by periscope and instruments. I remember once having counted a population of twenty! Of course during really bad weather it will not be as crowded as that.

It would be unfair to think only of the disadvantages of submarine life; there are certainly some good sides also to it. One of them is the possibility of seeing the sea in a way no liner will permit. I do not think any traveller on a big ship would get such deep impressions of the sea as we got on board our submarine. In rough weather it is impressive to watch the rollers coming over the horizon and breaking against the tower. Even then you can safely stand there, although of course you will get wet. When so near the water you see marine and bird life in a way which would be impossible from any other ship. We have often sat watching jelly-fish, porpoises, sharks, and whales; and between Surabaya and Makassar we saw an enormous white flat fish between 15 and 20 feet in diameter gliding through the sea and from time to time moving great white fins out of the water. The little boat which the submarine carries on its afterdeck was put to sea in order to try to get near it, but we did not succeed; the fish was swimming quicker than the boat could be rowed.

We made three trips in all, the first of two months’ duration covering more than 7000 miles in the eastern part of the Archipelago; the second round the island of Celebes of 4000 miles, taking us one month; and the third round the island of Sumatra of 5000 miles, during a month and a half.

The Netherlands East Indies are an interesting part of the world. It is distinguished by beautiful tropical scenery and it is inhabited by a numerous population belonging to many different peoples and races, each with their own
civilization, ranging from the most primitive on New Guinea and on some of
the islands in the eastern part to highly developed ones on Java and Sumatra.
Every people has its own customs, and so the traveller finds much to be noticed
in this regard. Moreover, the contact with Western civilization is intensified
in the last century, and so customs and circumstances are quickly changing; in
many places the adaptation to new ways of living and to new ideas is in full
growth. The representatives of the Dutch Government do much for guiding
this transition, in the meanwhile trying to preserve as much as possible of the
native arts; the economical development is furthered by the making of new
roads, by the creation of new means of communication, by irrigation, and in
other ways; the spiritual development is furthered by the erection of numerous
schools, by native libraries, and in the primitive parts by the work of the Pro-
testant and Roman Catholic Missions. Needless to say that in this time of
quick changes many problems arise of world-wide significance. The leading
thought of the Colonial Government is to have the people governed as much as
possible by their own leaders and chiefs and to keep the interests of the native
population in the foremost place.

The Netherlands East Indies cover 1-9 million km., which extend over
17 degrees of latitude and 46 degrees of longitude, i.e. over an extension
equalling Europe. The population is quickly increasing. In 1920 it amounted
to 51 millions, of which 36 millions were on Java; the new census of 1930 gave
60 millions, of which 42 millions were on Java.

Starting from Surabaya the first trip took us past the celebrated small island
of Bali, to the east of Java. Practically isolated for a long time, it had much con-
tact with Europeans, and developed a civilization almost entirely of its own. In
times past there must have been colonists there from Hindustan, probably in
the first centuries of our era, and those colonists introduced the Hindu religion
on Bali. The same must have been the case on the islands of Sumatra and Java;
we know that great Hindu empires flourished on these islands, and we know
fairly much of their history since the eighth century. Bali would probably have
had relations with these empires, and it certainly must have been in contact
with and from time to time under the domination of the Javanese empire which
in the Middle Ages had its centre consecutively in Singasari and Modjopait in
Eastern Java. When in the beginning of the sixteenth century Sumatra and
Java were conquered by Islam in a surprisingly short time, Bali remained
untouched, and the Hindu religion continued to reign there. Numerous
Javanese must have come to Bali during the Middle Ages, and the legend says
that at the fall of the empire of Modjopait part of the Javanese nobility fled to
this island to escape the Muhammadan menace; we still find many men who
claim to be descendants of them there. Since these times the Hindu religion
has developed on Bali to what it is now without much influence from outside;
nowadays it is the only part of our whole East Indies where this religion still
exists.

It must have been this historic development which has led in their remarkable
civilization to a unity between religion, daily life, and art, which is perhaps
unique at this time. Daily life is bound up with religion, and all special occasions
of ordinary life are accompanied by religious ceremony and festivals, the latter
often finding very artistic expression. The people have a remarkable archi-
tecture and magnificent wood and stone carving, which is executed by humble villagers with a natural aptitude for artistic decoration. Their houses are generally separated by walls with well-proportioned gateways, of which the richer are beautifully decorated. But their skill finds its highest expression in the numerous temples of the island. Every small village boasts at least three of them: one funerary temple; one connected with daily village life, where we always find a place for the meetings of the village council; and one temple dedicated to the sea or to the mountains. All these temples, even the newest, are richly decorated with stone and wood carving often representing scenes and figures of the Hindu religion, but often also splendid realistic incidents of daily life. A curious example of modern mural decoration is shown in a carving where a bicycle is represented. Although it is not perhaps the happiest idea to incorporate it, we may admire the way in which the artist has treated his subject, stylizing it and working in lotus flowers and other floral designs.

The temples have several enclosures, of which the inner contains shrines for offerings. Besides these stone-carved shrines we often find high pagodas with many roof-lines, perhaps developed from an older type of architecture, preceding the Hindu influence.

I may here remark that it is now generally thought that the population of the Netherlands East Indies, which consists of a great many different peoples and races, came from Asia in different waves of migration. Specialists now think they can see four of these waves, all prehistoric, of which the third has brought the people now living in the central part of Sumatra, in a few mountain districts of Java, and in part of Bali. Since that time the Malayan wave has come over the Archipelago, and the great majority of the people of Sumatra and of Java are now of Malayan origin. The greater part of the population of Bali is also Malay, but in some isolated villages descendants of the original population can still be found. It is considered probable that the pagoda type of temple finds its roots in the art of this original race.

Since the beginning of this century Bali has been brought under direct Dutch government; the local principalities were then abolished. The island enjoys now a quickly increasing prosperity.

After Bali we rounded the island of Lombok and followed the south coast of the island of Sumbawa, where we entered Tjemi Bay for a few hours' rest before heading for the Indian Ocean. The following days brought us rather rough weather in the Indian Ocean, and we were glad, after occupying the necessary stations, to return and to find shelter for part of a day in the harbour of Endeh, the capital of the island of Flores. We went ashore, but had no time to visit the most remarkable feature of this island: the coloured crater lakes. These lakes—a red, a blue, and a green one—high up in the mountains, can now be reached by motor, but our time was too short for going. A shorter drive however gave us the opportunity to admire the splendid mountain scenery covered with rich tropical vegetation. Flores, although it is very seldom visited by travellers, is without any doubt one of the most beautiful islands of the Archipelago.

One more day at sea brought us to Kupang, the capital of the Dutch part of the island of Timor, where we again enjoyed a day of rest. It is a small town with some noticeable old houses but without many points of interest.
The women dress in cloth woven by themselves and remarkable for beautiful colour and design. Indeed, on all the islands of the Archipelago, with the exception of a few in the north-eastern part, there is a flourishing textile industry. Every island has its own pattern, and nearly all of them are beautiful, not only on the islands with a more advanced civilization, but also on those where the population is most primitive. The patterns differ widely even on neighbouring islands; some of them are in silk, some in native thread extracted from plants, or nowadays of imported cotton.

Leaving Timor we followed an eastward course in the Timor Sea and met with rough weather, so were glad to find a new anchorage after some time on the Tenimber Islands, where we spent two days. The people are very primitive there, and until some twenty years ago were continuously at war with each other; every village was a little fortress, mostly situated on rocky hills which could easily be defended. The Government then took the thing in hand, and nowadays there is a settled atmosphere.

The people appear to be quite content with the new conditions. They leave their old villages, which are difficult of access, and build new ones at the coast. During our stay a football match was held between a team recruited from the crew of the K X III and one of the numerous native teams of the island. This sport is much liked by the islanders; it gives in a harmless way vent to their old fighting spirit, and it is therefore encouraged by the Controleur, the representative of the Dutch Government. Nearly every village has a team and matches are often organized, being the occasion of much excitement and emotion, of players and bystanders. As everywhere else in the East the natives play barefooted and hit the ball with the upper surface of the foot.

Leaving the Tenimber Islands we again encountered a rough sea and therefore had again much rolling and pitching. On one occasion the caique was damaged by the waves, which broke with great strength over the deck. On another occasion one of the men having to do some repairs on deck was swept overboard but picked up with some difficulty by going astern and bringing up broadside to him so that neither the screws nor the horizontal rudder-planes at the front of the ship should injure him.

Our next trip took us rather far up into a bay of Western New Guinea: Arguni Bay. It was possible to get more than 40 miles inland, but the navigation was difficult because of strong and irregular currents. The shores are covered with dense jungle, and at only a few places are traces of human habitation. It would have been a beautiful trip had it not rained continuously. We anchored at the head of navigable waters near a small village, and after a few moments we saw a little native canoe set off, flying a big Dutch flag, and containing an old Papuan, the chief of the village, clad in khaki, and on his head something like an old lift-boy’s cap. He offered his services, and after some talking he managed to make it known that he would be most grateful if the ship would take him in tow; but after a short stretch he had to cast off because his canoe made too much water.

Our next shore station was Banda Neira, one of the Banda Islands, famous for their nutmeg plantations, which date from old times. When the Portuguese arrived in the East Indies Banda was already the principal nutmeg-growing island, and it has kept this position for many centuries. It was one of the first
Native harbour in Macassar

Fort Rotterdam, Macassar

Native house in Pare Pare, Celebes
Houses near Padang, Minangkabao

Native house: island of Nias

Natives of Siberut
Dutch settlements in the Archipelago in the beginning of the seventeenth century, and nowadays the nutmeg trade is still active, but Banda has now no longer the monopoly of this trade.

Several of the plantation houses on Banda date from old times and are worth seeing. The scenery is admirable and there are some remarkably beautiful coral formations in the bay between the islands.

On leaving Banda we were accompanied for a while by three big native rowing boats, each festively decorated with flags and other finery and rowed by a great number of native rowers. These boats managed to keep up with us although the speed of the ship was some 8 knots.

At Amboina, the first Dutch settlement in the seventeenth century in these parts, we had a rest for more than a week. Leaving Amboina, our route brought us out into the Pacific and back towards the Talaur Island south of Mindanao. For half a day we entered the bay of Siao, one of the Sangir Islands, where one of our native seamen got the opportunity to visit his family, which he had not seen for eight years. Most of these native sailors are not Javanese, but come from Amboina, Menado on North-East Celebes, and the neighbouring Sangir Islands.

Our next station was Ternate, the small volcanic island to the west of Halmahera, where also the Dutch settlement dates from the beginning of the seventeenth century, and we visited an old fort, overgrown now by tropical vegetation, which was founded by one of the first Dutch governors. On one of the days of our stay the Sultan of Ternate organized an afternoon festivity in the honour of the Governor of the Moluccas, where native dancers appeared in curious old-fashioned costumes with seventeenth-century helmets on their heads, the costumes more or less like old Dutch uniforms.

Still another relic of old times is worth mentioning, the priceless old Chinese porcelain and hardware, which is found here and there in the Moluccas and of which some particularly beautiful specimens may be seen in villages on Halmahera in the neighbourhood of Ternate. Some of these objects date from long before the Dutch or the Portuguese arrived in the Indies and derive from Chinese commerce in the Archipelago, which at least dates from the beginning of our era. Nowadays native fishermen, when fishing near reefs or shoals, still find from time to time pieces of old Chinese porcelain in their nets, which must have come there by shipwrecks that, because of the strong currents, would have been numerous in the Archipelago. It is of course mostly broken, but in a few cases some very fine and rare specimens have been obtained in this way.

While at Ternate we had a number of visitors, among whom was an old Sultan of Bachan, an island south of Ternate. He wished to get home the same day, and, as the submarine would be going towards Bachan, the captain offered to take him aboard. We submerged shortly before reaching Bachan, and came up in the bay. The Sultan went first on deck and saw an enthusiastically cheering and much impressed population. Three boats were afloat in the bay which came at once towards the K XIII. One contained the ladies of the court of the Sultan, another the European inhabitants of Bachan, and the last the Sultan's musicians. I am sure this return of the Sultan, rising from the waters, will go down in the history of the island. From Bachan we returned to Surabaya.
without touching any further ports, and this finished our first trip through the Archipelago.

The second trip, round the island of Celebes, was favoured by good weather, and thus we could spend a great deal of the time on deck. At the ports we touched we had again the opportunity to see something of native life and were struck again by the great diversity of the peoples in these different parts.

Our second port was on the island of Butong, to the south-east of Celebes, which is known for its asphalt works. This island has, like so many parts of the Netherlands East Indies, a feudal social system. But the nobility, the *kaums*, are of a different race from the people. The people belong to the Alfur group and have not a high level of civilization. The *kaums* are probably of Javanese origin, and it seems likely that their settlement dates from the times of the East Javanese empire of Modjopait which in the fifteenth century had a widespread influence throughout the whole Archipelago, reaching as far as Malacca and Siam. The greater part of the *kaums* live in poor native houses inside an extensive native fort, the *kraton*, which is surrounded by walls and bastions, some 3½ km. long. Till lately the Sultan lived also in this *kraton*, but now he has a modern house nearer to the harbour. The Sultanate is not hereditary, but the Sultan is elected by an electoral committee, partly consisting of representatives of the *kaums* and partly of representatives of a third caste, the *Malaccans*, not yet mentioned, which occupies a position between *kaums* and people. This social system works satisfactorily; although apparently feudal, it has never given rise to oppression of the people and in its organization it is fairly democratic.

In the Banggai Archipelago, to the east of the eastern arm of Celebes, we got into contact with another curious population, the *Badjos*, which is of Malayan extraction and not related with the population of these islands. They are a special seafaring people, originally living by piracy, to which the Netherlands Government put an end. Now they live by fishing and other means, but they continue to live on the water, either in boats or in villages built on piles far out from the coast. These villages may be found along the coasts of the whole Archipelago, but especially on the eastern coast of Celebes and Borneo. A similar people has settled here and there on the eastern coast of Sumattra and on the neighbouring islands.

The Badjo village which we visited in the Banggai Archipelago was built on piles in the water at some distance from the coast. It was curious to note that several houses had primitive flowerpots on the wooden balcony before the houses. The little wooden mosque was also built on piles.

At our next shore-station, Gorontalo, on North Celebes, we had the opportunity to admire some fine drainage and irrigation work, which has been accomplished there by the initiative of the Assistant Resident, the representative of the Government. A great extent of fertile ground has been reclaimed in this way, and in many places we saw the natives beginning plantations on it; in the near future we may expect here a settled and prosperous native population. It is one of a great many instances, which may be seen over the whole Archipelago, of the economic condition of the natives being successfully furthered by the Government.
We stayed also a few days in Menado, the principal town of the Minahassa, the north-eastern province of Celebes, where the Protestant Mission has been working in the last half-century with good results. A great part of the population, which originally was animistic and primitive, has been christianized and is living now on a higher level of culture.

On the west coast of Celebes we went ashore in Donggala and made a tour in several motor cars, accompanied by part of the crew, to Kulawi, a province in the inner part of Celebes which until a few years ago was wild and isolated. Since then a good road has been established and the country is opened up to motor traffic. The mode of life of the natives, who belong to the Toradja race, is already beginning to change. Motor buses run up and down the new road and are full of natives who in this way can easily bring their goods to the market-place near the coast. Formerly the native plantations were mostly transitory and small, but now the new conditions bring about a more developed and settled cultivation of the ground.

At Lemo, one of the biggest villages, where we saw a native dance, the women still wear petticoats with frills and nice jackets all made of bark cloth, like the trousers worn by the men. But it is not strong, and it especially wears out quickly when it gets wet. We may expect that this use of bark will now disappear, because the new communications will facilitate the import of other and better materials. In this same village we saw a little house in which, until a short time ago, human offerings were made. When the burial of a chief took place they carried off a man from some other tribe and sacrificed him. That of course is no longer possible, and the Government has also put an end to the old disfiguring practice of removing the front teeth by filing and breaking them.

On our way to Kulawi we visited at Kalawara an agricultural settlement of the Salvation Army, which is doing here some fine work. The purpose is to take care of abandoned native children of Java, mostly from the big cities, to educate them and to make useful farmers of them. The settlement, founded in 1907, is a great success; there is already a number of houses inhabited by former pupils, who are farming now their own pieces of ground. The houses, as well as the little church and school, have been built by the boys themselves. The settlement numbers now 250 pupils. We may expect it to become the centre of a prosperous Javanese settlement in a fertile part of Celebes, where the native population is so sparse that the greater part of the soil lies unused.

After leaving Donggala our programme brought us to Balikpapan on the east coast of Borneo, the great oil settlement of the Batavian Oil Co., a daughter company of the Royal Shell group. From there we left for Macassar, the principal port of the eastern part of the Archipelago, on the south-western arm of Celebes. It is a prosperous town with a developing trade and good harbour installations. Besides the harbour for big ships there is a large native harbour with a considerable fleet of native ships, descended from old times, when the State of Goa, of which the capital was a few miles south of Macassar, was well known for its bold seafaring population. In the later part of the Middle Ages they dominated the seas of the Archipelago; and from this time an interesting law-code has come to us, regulating the sea-trade, of which the original may be found in the Royal Asiatic Library in London.

The greatest part of Fort Rotterdam, in Macassar, dates from the second
half of the seventeenth century, after the taking of Goa by the Dutch in 1667, but the surrounding walls appear to be older. The buildings inside give a good idea of the way in which the Dutch people lived in those early times; they apparently had not yet successfully adapted their houses to the tropical climate. The only way in which they tried to shut out the heat was by building eaves to afford some slight degree of shade.

Our third voyage was round the island of Sumatra, in order to make investigations in the Indian Oceans, and in the South China Sea and the Java Sea. Leaving Surabaya, we crossed the Java Sea towards Batavia, where we stayed a few days, and from there made towards the Indian Ocean through Strait Sunda. We passed the volcano of Krakatoa, but it was not active and made a most peaceful impression. Throughout our whole programme in the Indian Ocean, west of the island of Sumatra, the elements treated us with clemency; we seldom had to close the hatches, which is a rare thing in the open ocean. Only the last day of this research brought us some rough weather. Our route gave us the opportunity of making short visits to two islands west of Sumatra, the islands of Siberut and Nias. The first shows native life nearly in its original condition, as it has not yet had much contact with Europeans or other people; in the second the Mission has had a great influence on the way of living. These peoples belong to a different race from those of Sumatra and have developed independently, apparently without any relations with this island. Both peoples are attributed to the second migrational wave from Asia; but notwithstanding this common origin the peoples of Siberut and Nias are widely different; they obviously have had as little communication with each other as with the coast of the main island. The population of Siberut is rather dark-skinned and primitive. The men are nearly nude, but the women wear grass petticoats like the well-known grass costume of the Hawaiian Islands.

The population of Nias is lighter-skinned and has a more advanced civilization. They live in curious houses, built round a central space in the village, which is paved with stone. Around this space and before the houses are often stone benches and stone lingga, which are mostly primitively carved. The houses also show remarkable, though primitive, wood-carving; in the south of the island they are square and more decorated, in the northern part they are oval in shape with a curious dome-like roof. On special occasions the men wear a kind of helmet and peculiar head and shoulder ornaments.

Their social system is well organized. They are governed by a council elected by themselves, and presided over by a chief. Their territorial rights are well defined, and they have instituted a committee for giving a decision in case of differences of opinion. These institutions must have been developed by themselves without influence from outside.

During a few days' rest at Padang we made a trip to the high mountain range which runs along the coast.

This mountain district of Minangkabao is remarkable for the houses of the natives. They are beautifully carved and decorated, and have curiously shaped roofs with high peaks and gables. Each house is big, as it contains a number of dwellings inside, inhabited by different households belonging to the same family. The peculiar shape of the roof does not occur in any other part of the Archipelago with one exception: a small mountain village near Garut in the
Karbouwengat near Fort de Kock

Island of Sabang

Valley of Karbouwengat
Toba lake, showing native rice fields, in Central Sumatra

Sabang: coaling harbour

Native Batak village near Kabandjahe
Preanger Regencies on Java, where similar roofs are found. It has not yet been possible to decide if the similarity is accidental or if some historic connection lies at the root of it. The area in Western Sumatra where this roof is found is not extensive; on the coast near Padang we find the normal roof again. It is a pity that nowadays many natives in the Minangkabao district, as in other parts of the Archipelago, prefer corrugated iron to the old materials for making their roofs, but it cannot be denied that the uninflammability is an advantage. It is however satisfactory to see that they have kept the old shape. It appears difficult to prevent this introduction of new building materials in the East Indies, and it must even be doubtful whether the Government would have the right to deprive the natives of new possibilities in this regard.

Our stay in Sabang, the big coaling station with good facilities for repairing ships on a small island at the northern point of Sumatra, did not present many points of interest; nor did the harbour of Belawan, near the town of Medan on the north-east coast of Sumatra. This new great harbour has been made for the exportation of the products of the tobacco district of Deli, a part of Sumatra which has been reclaimed from the jungle in the last fifty years and where now extensive stretches have been planted. The principal exploitation is tobacco, which has proved to be especially successful here, but plantations of rubber, tea, and sisal may also be found.

During our four days' stay in Belawan-Medan the captain and I stayed a day at the mountain resort of Brastagi at an altitude of some 4000 feet, which is attractive because of its beautiful scenery, its cool climate, and its great modern hotels, where every comfort can be found. In the neighbourhood are some interesting native Batak villages, built in a peculiar style, quite different from those in any other part of the Archipelago, and pleasant to look at. As in Minangkabao they contain dwellings for several households of the same kin, mostly eight, but houses for twelve households also occur.

Other tribes of the Batak race have somewhat different houses, but all these styles show a certain relationship, which points to a common origin. We saw one of these other types next day, when we continued our trip towards the high Toba lake. The new motor road crossing Sumatra from Padang towards Medan has rendered it easily accessible, and many tourists visit it nowadays. A comfortable hotel at Prapat on a promontory in the lake makes it possible to stay there.

Not only Europeans make use of these motor roads; during our trip we met many buses full of Bataks running through the country. This people, which up to the beginning of this century has been living in nearly complete isolation, is now quickly adapting itself to the new settled conditions. We heard that the motor buses are generally owned and run by Bataks themselves, who appear to have a keener commercial sense than most of the natives of the Archipelago. On other islands, Java not excepted, nearly all the trades, motor-bus companies included, are in the hands of Chinese.

The last part of the programme in the China Sea and the Java Sea took us to Palembang, some 40 miles inland on the Musi River, which at that point is still more than 1000 feet broad. The town has a large native population in houses on piles over the water or on floating boats. Probably Palembang is a very old settlement, as it is supposed nowadays that the old Hindu empire of
Cri Widjaja, which is mentioned in the Chinese chronicles of the first centuries of our era, and which temporarily dominated a great part of South-East Asia, had its centre here. Nothing however of this old glory is left and no remains have been found.

With brief mention of the great oil settlement of Plaju, a few miles below Palembang on the banks of the Musi, and of our last port of Tanjong Pandang, on the island of Belitong, where we visited the establishments of a great tin-mining company, I come to the end of our last trip. A few days more brought us back to Surabaya. With a feeling of profound content everybody enjoyed his first cooling drink, his first bath, and his bed. I do not think it is easy for those who are accustomed to ordinary life to imagine what those three things mean to those who are returning from a submarine voyage.

Let me conclude with a piece of native philosophy. One of us was grumbling in the long-room about some of the usual small adversities of which submarine life is full, and a young mess servant said in Malayan: "Well, Tuan, you must not grumble; people who grumble quickly grow old."

DISCUSSION

Before the paper the President (Admiral Sir William Goodenough) said: In Dr. Vening Meinesz we welcome an old friend. He has lectured to us on other occasions, and a week ago on a subject which took us very deeply scientifically and terrestrially. To-night, if I may use a nautical expression which I hope is not inappropriate, he is going to blow his tanks and come to the surface, and give us some notes of his journeys in some of the lesser-known parts of the Dutch East Indies. It was a very arduous journey and lasted for eight months, but the scientific results have been of great interest, as are the incidents I will now ask Dr. Meinesz to describe.

Dr. Meinesz then delivered the lecture printed above, and a discussion followed.

H.E. The Netherlands Minister (Jonkheer D.R. de Marees van Swinderen): I have come on the platform at the invitation of the President because I am proud to be the representative of a country of which Dr. Meinesz has shown such beautiful pictures. I think you will agree with me that it is remarkable that a country so small as Holland has been able to establish such an Empire in the East and to bring it to such a degree of civilization. In that connection we can learn a great deal from each other. England has her troubles in building up an Empire in the East; Holland has the same troubles. Let us hope we will always profit and benefit as much as possible the one from the experience of the other. England and Holland have many qualities in common. Both countries have always been seafaring and navigating nations. Our navigators have succeeded, as has been proved by what we have seen to-night. But we have something which you have been spared: that same water on which we like so much to travel has always been Holland's greatest enemy, and she has struggled for many centuries against it, to such an extent indeed that there is a great deal of truth in the lamentation, according to biblical legend, that God created the earth with the exception of Holland, which had to create itself! Let us hope that Dr. Vening Meinesz, in his peregrinations through, on, and under the sea, has sometimes met the spirit of old Father Neptune, and that he has so greatly impressed Father Neptune with what a Dutchman of the present time can do on the domain of the waters and in the seas, that he will keep quiet and not trouble Holland any further by robbing her of her possessions. In that case we may see the gratitude of