15 Mar 1961 ?

R O U G H N O T E S

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AUSTRALIA

I discussed the plans for the Expedition with the following people in Australia: Dr. George F. Humphrey, the President of SCOR; Convenor of the Australian National Committee on Oceanography and Director of the Australian C.S.I.R.O. Laboratory at Cronulla a suburb of Sydney. Mr. Peter Ward, the Scientific Advisor to the Royal Australian Navy who is seconded from the civilian scientific branch of the British Admiralty. RADM. Otto Humphrey Beecher, Deputy Chief of Naval Staff, Royal Australian Navy and the individual who controls the disposition of ships in the Royal Australian Navy and also with whom Dr. George Humphrey works very closely. CAPT. John Miller, USN, U. S. Naval Attaché at Canberra. Mr. Brian Newell a specialist in nutrient salts at the C.S.I.R.O. Laboratory in Cronulla. Dr. Klaus Wyrtki a specialist in circulation and in theoretical physical oceanography at C.S.I.R.O. in Cronulla. Mr. Harry Jitts a specialist in C^{14} fixation at C.S.I.R.O., Cronulla. Mr. David Rochford a specialist in water masses at C.S.I.R.O., Cronulla. Mr. David Tranter a specialist in zooplankton at C.S.I.R.O. Mr. Bruce Hamon an instrument specialist also concerned with deep circulation, tide gauges and mean sea level at C.S.I.R.O. The above people were involved in extended discussions. I also met at C.S.I.R.O. the following individuals: Mr. David Crooks in their data processing program; Mr. John Mac Intyre who is a specialist in benthic organisms; Mr. Fergus Wood a specialist in phytoplankton; Mr. David Vaul in the fisheries oceanography and Mr. David Brown a bacteriologist. In addition, I met a number of other people some of whom are involved in naval and related affairs at a party given by Mr. Peter Ward at Canberra.

There follows brief rough notes which so far have not been viewed by Snider on the information obtained from talks in Australia.

On arrival in Sydney on Sunday, 29 January I stopped briefly and talked with Dr. George Humphrey in Sydney and then proceeded to Camberra for one and-a-half days of discussions there before returning to Sydney to talk to the bulk of the staff at the C.S.I.R.O. Oceanography

Laboratory at Cronulla. Peter Ward in response to a request I had made to him when he was in the United States in the summer of 1960, reported that a VLF station was to be set up in Australia and this had been announced in the public press. It will be completed in 1964. This could contribute to the OMEGA Navigational System although it is not set up entirely for the OMEGA system. The individuals in the United States who have immediate contact with this program are CAPT. Skinner, USN, and Mr. Malone who sits on one of the electronics desks in the Defense Department rather than in the Navy Department in Washington. Peter Ward spoke to Malone about the OMEGA possibilities and Mr. Malone said he would check with the various people in Washington to see whether this station might serve as a possible part of the whole OMEGA system and contribute to the Indian Ocean Expedition's navigational potential.

Both Ward and later Dr. George Humphrey reported that the Hydrographer of Indonesia, Major Wardiman and one other Indonesian, a civilian, rode the Royal Australian Navy's ship DIAMANTINA on its cruise in September. They were picked up in Djakarta after arrangements had been made by Dr. Humphrey directly with Dr. Soertidimaata the Head of the Marine Biological Laboratory in Djakarta. Unfortunately, Dr. Soertidimaata has died recently but Dr. Gatot Rahardjo has taken Dr. Soertidimaata's place and I think that further arrangements of this sort can be made. The Australian Embassy after the arrangements had been made, laid on official diplomatic hands and the whole relationship was very good.

Discussions with Dr. Humphrey and with RADM. Beecher revealed that GASCOYNE and DIAMANTINA had a dual mission. The Australian Navy utilizes these two vessels as training vessels for seamen and junior officers. They put these individuals on the two vessels for training in seamanship, navigation and related duties for six-week cruises. The six-week cruise is the standard period for most of the Australian operations although they have run up as high as ten or eleven weeks under very special conditions. The cruise of GASCOYNE to Honolulu for the Tenth Pacific Science Congress is one of these. Both Admiral Beecher and Dr. Humphrey state that this situation is most satisfactory for their two objectives. The smooth running depends upon the indoctrination of both the Chief Scientist and the Commanding Officer so that there will be no interference but there is evidently a very satisfactory situation and aside from the routine seamanship and training activities it appears as though the two vessels carry out their intended schedule of oceanography, biological oceanography without any interference at all. Since the navy would be doing this

training anyway, they operate these ships at no charge to C.S.I.R.O. Mr. Ward said that he would be able to send through Dr. Humphrey the operating costs for GASCOYNE and DIAMANTINA so that they can be fitted into the overall operating cost of the Expedition. This dual mission of these two Australian frigates make their range limited and calls for reasonably frequent returns to some Australian port so that their activities can hardly be fitted into a weather ship routine in the Bay of Bengal.

Miscellaneous Notes From My Discussions At Canberra - CAPT. Tankard, RAN is the new Hydrographer and he is based at Sydney. He had had the post several times back and is now returning to it. I did not see him. The Australian Fiscal Year is 1 July to 30 June but the budget decisions are made two or three months after the Fiscal Year begins. An open appropriation carries the various agencies for these several months until the Treasury decides what the various expenditures will be after recommendations from the individual departments. Since Lord Casey was made a life Peer, the Ministry of External Affairs has been in the hands of the Prime Minister but actually for most administrative purposes, Senator John Gorton who is Minister of the Navy acts as Minister of External Affairs. C.S.I.R.O. which was under the Ministry of External Affairs while the then Mr. Casey was the Australian Foreign Minister, has now been transferred from External Affairs to the Ministry of Health. C.S.I.R.O. was a protégé of Casey's. Budget requests for C.S.I.R.O. go in through the Prime Minister's estimates. Some question has been raised about whether there is a sympathetic budgeting for C.S.I.R.O. now as there was at an earlier period, However, this agency has a six million pound (Australian pounds) budget and does not appear to be pressed for funds.

The meteorological activities of Australia are under the Minister of Interior. I had talked to both Dr. Humphrey and Admiral Beecher about the fact that Australia's program seemed to be limited to two disciplines - biological oceanography and physical and chemical oceanography I pointed out that in many instances other countries with similar developments were concerned with the geology and geophysics of the surrounding sea bottom and were also making substantial efforts in meteorological studies. Dr. Humphrey pointed out that although the Australian Academy of Sciences had nominated a geological member and a meteorological member of the Australian National Committee, that correspondence with the geological and meteorological people in various institutions and agencies had not resulted in a substantial offer for participation by these disciplines in the Expedition. Some concern was expressed that there might be a lack of understanding on the part of people at the ministerial or principal secretarial level about the long-range implications of the Expedition in terms of geology and meteorology as well as other aspects of the Expedition. As a result of these discussions Admiral Beecher offered to explore at the highest governmental levels, the possible interest of government and to see

whether the top levels might be interested in setting up a policy of quite substantial participation in the Expedition with the long-rang goal of drawing more knowledge from meteorological, geological as well as biological and physical and chemical oceanographic observations.

It was pointed out by Mr. Ward and Admiral Beecher that the survey vessels of the Australian Naval Hydrographic Office were fitted to do geological and geophysical work and this might be possible. They also pointed out that GASCOYNE and DIAMANTINA had the necessary facilities to do this but that there had not been a wide spread interest on the part of Australian geologists to investigate the geology and geophysics of the area to the west of Australia in the Indian Ocean. It was agreed that there was a national interest in better weather forecasting and that intensified meteorological observation by Australia and by other countries would be of considerable value to Australia. There was a difference of opinion about where Australia's major weather came from. The heavy population concentration on the south and east coasts of Australia have a bearing on governmental decisions about expenditure of funds. It was also agreed upon by knowledgeable observers that both GASCOYNE and DIAMANTINA could carry out geological and geophysical work since they were fitted with adequate winches but there was no personnel and certainly no coring facilities on board. It might be noted that in the opinion of the Australians the EDO echo sounder and Time-fax recorder is the best combination. The EDO sounder runs about £5,000 Australian and the Time-fax is about £1,200 Australian.

Peter Ward also pointed out that there is a large supply of explosives which are surplus to the Australian Navy in one and one-quarter pound units. These can be built up in different combinations to almost any size of explosive and in addition there are a number of three hundred pound depth charges. All of these are available at Fremantle and after negotiation with the Royal Australian Navy it is quite likely that these could be obtained by any vessel for use in geophysical work and seismic in particular in the Indian Ocean at no cost.

Admiral Beecher said that refueling at sea by Australian vessels was possible particularly the ones engaged in oceanographic research but that the six-week training program would limit the application of this because the vessels would not be out long enough to need to refuel. Mr. Ward agreed to check with the British petroleum representative in Melbourne who is a personal friend, on the possibility of their refueling some ships. I agreed to check with various countries to attempt to coordinate a refueling rendezvous schedule once a year or at some given infrequent period with a twelve to twenty-four month advance notice.

In extended discussions with the scientific staff at C.S.I.R.O., Cronulla who are and will be participating in the Indian Ocean Expedition, the following points were brought out:

1. - A number of the scientists were concerned about the lack of a systematic grid-like treatment of the Indian Ocean. They felt that there would be a number of small projects worked up by various countries but that there would not be what might be called essentially a synoptic view of the Indian Ocean. One argument was that a number of vessels from outside the Indian Ocean plus Indian Ocean vessels should be brought in for a simultaneous survey of some four hundred stations in a short time.

2. - Another expression of concern was that there was no particular goal for the Indian Ocean Expedition. I pointed out that there had been a series of goals set up and that the program as now laid out was a rolling program which would be developing as time went on.

3. - A third point of view expressed was that the plans were being developed by people who were not thoroughly familiar with the Indian Ocean and possibly would not even be participating in the Expedition. I suggested that the circulation of total or partial national plans was one way of getting an exchange of ideas about what might be done in the Expedition and that actually we did expect reactions from scientists who were familiar with the area. It was brought out that many of the Australian scientists had seen various documents circulated and had noted them but had failed to comment on them at all.

As a result of these discussions the agreement was that Australia would draw up a national plan of its activities in the Expedition which would be made available to other countries and I believe that its scientists will also comment on other programs. The proposed tide gauge network developed by Mr. Disney of the U.S. Coast and Geodetic Survey and commented on by Mr. Chugh of the Survey of India and Dr. Rossiter of the Birkenhead Observatory would be adopted in general and furthermore, that a more formal effort would be made to enlist the meteorological participation of Australia not only in carrying out radiosonde and rawind-sonde observations but also consideration would be given to providing an Australian aircraft equipping it with the necessary sensing devices to work in the eastern part of the Indian Ocean.

There was no commitment whatsoever about whether this could be achieved but efforts would be made to get a meteorological plane. It was also agreed that Australia would take under consideration the possibility of partial support one way or another of weather ships although it did not seem possible that any of their vessels could serve as weather ships in the plan proposed by the U. S. Meteorological Working Group.

Dr. Humphrey agreed to consider the possibility of developing a system of exchange of information on biological problems particularly exchanging biological specimens by individuals interested in species occurring over the entire Indian Ocean area. This will have to be developed at a later date. He also noted that Professor Zenkevitch had on January 2, 1961 suggested in a letter to him that a year round biological station of a fairly small size be established on an island perhaps Chagos Archipelago for the study of productivity and for biological species distribution studies. Since this fits in very much with suggestions made by Dr. Preston Cloud of one of the U. S. Working Groups and also by some of the Royal Society proposals for island observations, this might well be worked out by a combination of various nations' efforts.

DIAMANTINA and GASCOYNE are made available by the navy under the conditions outlined above for a maximum of thirty-four weeks a year to C.S.I.R.O. Cronulla. Upkeep periods are rather rigidly fixed and Dr. Humphrey has found it difficult to get them changed in any way. Dr. Humphrey has also agreed to explore the the possibility of obtaining airplane services for meteorological work and also to explore the possibility through the Meteorological Service or the meteorological physics research group of getting instrumentation for necessary weather observation work.

INDONESIA

A meeting with Dr. Sarwono Prowirohardjo, President of Madjelis Iluma Pengetahuan Indonesia (MIPI) the Indonesian science council and Dr. Soediman Kartohadiprodjo, Executive Director of MIPI and Dr. Koesnoto Setyodiwiryo, Chairman of their National Committee on Oceanic Research revealed that Indonesia was on the verge of announcing formally that she would participate in the Indian Ocean Expedition.

A final decision on the extent of participation and the extent of hospitality afforded visiting vessels will be made by the Prime Minister in the near future and there is every indication that this decision should be favorable. The Ministry of Sea Communications will play an important role in so far as liaison with visiting vessels goes.

Approval has been obtained for the specialized training of two advanced students and an effort is being made to obtain approval for training of three additional students. The two for whom approval has been obtained are marine biologists and in addition, they want to have two individuals trained in geophysics and meteorology and one in fishing techniques. The plan is to carry out this training under Japanese war reparations in Japan. This will relieve the Indonesian government of cost of travel and subsistence. Tidal observations including one permanent tide gauge and five sixty day stations as recommended by the tentative memorandum drawn up for the Permanent Service for Mean Sea Level with regard to the Expedition has been agreed upon by MIPI, the Hydrographer of the Navy Department and the Ministry of Sea Communications all of whom are involved. Participation by the Meteorological Service in the meteorological network for the Expedition will be possible in so far as the Met. Service is concerned.

Indonesia has drawn up plans for a new oceanographic research vessel which will be paid for by Japanese war reparations and will be built and completely fitted out in Japan. These plans have been somewhat modified by Japanese naval architects and research vessel designers and the whole plan has been put out for bids which should be in within the next month. Construction is expected to start in April 1961 and delivery is expected by April 1962. The ship, whose name will be JALANIDHI will be a 650 gross ton vessel, 55 meters overall, 9 meters beam, 4.4 meters draft with a designed speed of 12 knots, single screw and adjustable pitch. She will be fully equipped for biological, meteorological, physical and chemical oceanographic, and geological work with Japanese equipment. Her cruising endurance is designed for 25 days to one month and she has quarters for 17 research scientists plus 19 research assistants plus 12 officers plus 26 crew members. She will have a variety of laboratory spaces and among other equipment, will have one 10,000 meter range deep sea winch, one 5,000 meter winch and two 2,500 meter winches. Her cost is estimated fully equipped at the equivalent of $1,500,000 U.S. Indonesia expects to have about 30 senior and bachelor degree scientists and assistants. They will have quarters and facilities for visiting scientists. The decision has not been reached on who will man the craft for operations and this is being discussed with both the Navy and the Ministry of Sea Communications.

With regard to vessels planning to visit Indonesia enroute to or from the Indian Ocean or in the case of those operating around Indonesia, MIPI group urged that the various agencies responsible for the operation of the ships, i.e. the laboratories, advise the Ministry of Foreign Affairs early in the planning period and continue to keep the Ministry advised of changes in the dates or any other plans up to the actual time of arrival. Copies of such communications should be sent to MIPI, to the Ministry of Sea Communications and to the Navy. Very considerable emphasis was placed on this procedure and in particular, adequate advance warning and immediate notification of change of plans.

The MIPI officials also indicated that the large institution which is being financed by a grant £1,750,000 from the U.S.S.R. government as announced in February of 1960, will be a school for ship building techniques and for oceanography. Initially it will be possibly staffed by Russians. It was reported that there is no building at the Amboina Center as yet. It was also reported that on the final and official approval by the Prime Minister, the Indonesian National Committee would be somewhat reconstituted to provide for representation of all scientific bodies and government agencies involved in the Expedition in any way.

I visited the following individuals at their offices to discuss the Expedition with particular reference to the matter of hospitality and facilities for ships: Mrs. Maria Ullah Santoso, Secretary of the Cabinet of the First Minister; RADM. Eddy Martadinata who is Chief of Naval Staff and also Secretary of the Navy and a very influential individual; members of the staff of Mr. Sarontsong of the Ministry of Sea Communications; Mr. Suwito Kusuwitodo, Secretary-General of the Department of Foreign Affairs; and Mr. Sarief, Head of the Directorate of the United Nations and International Organizations' Activities of the Ministry of Foreign Affairs.

Mrs. Santoso said that the Cabinet had received the proposal from MIPI for participation and for offering of hospitality and that she felt that the action would be favorable. She pointed out that we should see Navy and Sea Communications people and that the Finance Ministry would also be involved. In regard to the matter of various features of hospitality for ships, she urged that the notification be made well in advance of arrival of ships to the Ministry of Foreign Affairs as noted above. She indicated that she would recommend approval to the First Minister. Admiral Martadinata said that there would be no problem of hospitality if adequate advance notice was given. He

also said that it would be perfectly possible for Expedition vessels to work in Indonesian waters again if adequate advance notice were given. For working in territorial waters, the Navy has the final decision. Such notifications should be made or a request for permission directed to the Minister of External Affairs with a copy to the Navy Department and to MIPI. Navy's Hydrographic Department has two survey vessels, at least one of which may participate in the Expedition. The Navy's Hydrographer, Major Wardiman was present at the interview with Admiral Martadinata and both agreed that the tide gauge network and the tidal observations for the southern and western shores of Java and Sumatra would be perfectly possible.

Discussions at the Ministry of Sea Communications which runs the Indonesian Merchant Marine and the Harbors and Ports revealed that they saw no problems on hospitality providing adequate advance notification was given. It was agreed that the Chief of the Harbor Department of the Sea Communications Ministry would be notified by MIPI as soon as MIPI received cruise plans indicating arrival at any of the Indonesian ports. It was also pointed out that it is very important for ships to supply the names of their local agents to the governmental bodies who will be receiving information on arrivals. These agents should be advised to get in touch with the appropriate governmental ministries and MIPI and should be also advised that there have been special arrangements promised by Government for the reception of these ships. The point was again made that the various Indonesia governmental agencies and MIPI should be kept advised of late changes in arrival date and these should be sent by dispatch as quickly as the changes are known. The problem of the visits in the out ports was discussed. There are no agents in most of them and there is also obviously a language problem. Special detailed arrangements would have to be made at such ports and even more advance notice would be required. Ordinarily the Harbor Master would make local arrangements having been notified by the Ministry of Sea Communications and in many instances no doubt he would have some English. In general, however, visits to out ports should be the subject of special correspondence with MIPI who will be the coordinating body with the Expedition.

Talks with Mr. Suwito and Mr. Sarief of the Department of Foreign Affairs revealed both a familiarity on their part with the plans for MIPI's participation in the Expedition and the Expedition itself and also a willingness to endorse with the Minister of Foreign Affairs the idea of hospitality and of active participation by Indonesia. Both individuals are reported to be influential.

I had general discussions with Mr. John Henderson, Counselor to the Embassy and with Dr. Raymond Allen, Chief of the U. S. Operations Mission as well as with someother members of the U. S. Embassy staff. These discussions dealt largely with the possible financial assistance programs available through U. S. channels which might provide some assistance where necessary to the Indonesian effort. These were all reported to Indonesian oceanographic committee.

At a meeting of the Oceanographic Working Group of MIPI of which Dr. Koesnoto is Chairman and which has been up to now the National Committee on Oceanography, I met a number of people whom I had met on my previous trip incldiuing not only Dr. Koesnoto, Dr. Gatot Rahardjo, the Meteorologist of Indonesia, Major Wardiman the Hydrographer from the Navy, Mr. J. P. Manlohy who designed the new oceanographic ship, and severl others whose names I will add later.

I outlined the extent of participation of other nations and went into some detail on the meteorological program and the tide gauge program. Also, made available the draft document in my set of working papers so that members of the group would have an opportunity to study these for an hour or so. The bulk of the discussion not elsewhere reported (see new ship) dealt with the Indonesian meteorological program both on the shore and on the ship and with certain aspects of the training program. The Meteorologist said that their shore stations would be able to participate in the program although there might have to be an appreciably increased amount of activity. In discussing the possible need for additional funds for equipment to carry this out particularly expendable radiosonde and rawinsonde gear, several sources of funds such as Colombo Plan and the various U. S. sources were mentioned. It was agreed that the Indonesian National Committee when finally established would work a full national plan which would present as a project, the activities which they proposed in the various disciplines in the Indian Ocean Expedition and would indicate those things which were at the present time within their capacity for which they were funded and also those things for which they had no immediate equipment and required funds from Indonesian government sources and second, through other sources. It is, of course, recognized that the requests made for funds from outside Indonesian Minister of Finance's immediate sources would have to go through appropriate channels and adequate priorities established within Indonesian government before presentations could be made to external sources. Details of the meteorology program as well as the biological oceanography, physical and chemical oceanography and for Indonesia will be forth coming. They are eager to receive other national plans to get guidance on the approach that other nations have and also to fit their programs into those of other nations.

One particular problem in regard to shipboard meteorology is the matter of the gas to be used for balloons. They recognize that helium will be difficult to obtain and they are concerned about carrying one hundred bottles of hydrogen probably because of the necessary deck space and weight which would be utilized this way and they estimate that this would be the number for a cruise. They do have an old meteorology lab, deck space and analytical space on the new ship. One of their meteorologists proposed that they make hydrogen on board and wished to know what the procedure in U.K., Japan and possibly in India and Pakistan would be in this respect. Any safety and any general arrangements for making hydrogen as opposed to carrying it would be quite important for them to have prior to the time they freeze their shipplans which will certainly be no later than the middle of 1961. A question was also raised about the pyroheliometer which is recommended in the Fleagle report and the problem of calibration.

Training was discussed as noted above in brief and they agreed to write to the Secretary of the Japanese National Committee about the details of the training program. I also agreed to talk to Dr. Uda and the Chairman of the Japanese National Committee when I was there. The Indonesians plan to send several members of their Oceanographic Working Group to represent various disciplines and who have had considerable amount of training and experience to Japan for the specialized training prior to the commissioning of their ship.

The various members of the Working Group were interested in the possibility of specialized instrument development in Japan and special manufacture of equipment and new instruments such as are mentioned in some of the U. S. Working Group reports which might be adapted to their use in the new vessel.

It was also agreed in a concluding discussion that the new oceanographic research vessel for Indonesia presents a special problem for Indonesia particularly with regard to her permanent berthing space and the opportunity to have a regular place for stores along side this berthing space on a pier.

The people present at the meeting of the Oceanographic Working Group of MIPI were Major Wardiman who is the Navy Hydrographer and is at the Navy Hydrographic Institute; Mr. Tardana Soerahardja of the Department of Sea Communications; Dr. Gatot Rahardjo who is now the Director of the Marine Research Institute and Mr. J. T. Manlohy he is a naval architect and is the man who designed the new vessel and is at the Marine Research Institute; Dr. Roestam Singgih, he is from the Directorate of Sea Fisheries of the Department of Agriculture;

Mr. Tansoe Ibrahim of the Sea Fisheries Service; Mr. Soekanto of the Meteorological Institute and Mr. Fatah of the Meteorological Institute. Also present were: Dr. Koesnoto, Mr. Masinambow and Miss Sudiarti Rachmat. Miss Sudiarti is a lawyer attached to the staff of MIPI and it is she who will be handling the actual details of all of the Indonesian participation in the Indian Ocean Expedition. She accompanied me on all of my visits.

At the Department of Sea Communications, the people I saw were: Mr. Ismojo who is the Assistant Principal Assistant of the Minister of Sea Communications; Mr. Ir Ong, Head of the Harbor Service; and Mr. Tardana Soerahardja of the Shipping Department.

MALAYA

I saw the following people at a meeting held at the request of the Permanent Secretary of the Ministry of External Affairs. I had written to that Ministry and also to each of the other agencies represented at the suggestion of Professor Hendrickson of the Department of Zoology at the University of Malaya in Kuala Lumpur and the Permanent Secretary arranged to have the visit under the joint auspices of the Ministry of Education and the University: Mr. Ho Tong Yuen of the Meteorology Department at Kuala Lumpur; LCDR. J. Matthew, RAN Naval Branch, Ministry of Defense; Dr. Robert Ho, Department of Geography, University of Malaya, K-L; Mr. W. L. Dale, Department of Geography, University of Malaya, K-L; Inche Abdullah Bin Ali, Ministry of External Affairs, K-L; Dr. Soong Min Kong, Director, Department of Fisheries, Ministry of Agriculture and Cooperatives, Penang, Malaya; and Professor J. R. Hendrickson, Department of Zoology, University of Malaya, K-L. In addition to these individuals - Mr. Tan Joo Hin of the Ministry of Education who was my contact from the Ministry of Education who moved me around when necessary and was the liaison with the Ministry of Education which did not actually participate in the meeting. Furthermore, I was met at airport in Singapore by LT. Robert A. Shaid, the Assistant Naval Liaison Officer at the Consulate General of the U.S.A. in Singapore who represented Commander Blee, the Naval Attaché who was based at Singapore. In K-L I also talked with COL. R. W. Allen, the Military Attaché to the American Embassy at K-L and the Deputy Chief of Mission at the U. S. Embassy, Mr. J. L. O'Sullivan.

I outlined the purpose of my visit to Mr. O'Sullivan and COL. Allen and told them that I just wanted to keep them informed about the progress and they in turn urged me to make sure that any commitments undertaken by Malaya be followed up and carried out.

At the meeting of the designated Malayan representatives, I gave a quick outline of the scope, purpose and extent of participation in the Expedition. All individuals present had had copies of the Preliminary Prospectus, the report of the Indian Ocean Working Group from the Copenhagen-Helsinki meetings and the Coordinator's report of the summer 1960. I pointed out that there were at least five things which Malaya could do- (1.) Establish and mantain tide gauges. (2.) Participate in the meteorological network. (3.) Offer hospitality and facilities to ships outlined in the Deacon report. (4.) Nominate qualified trainees for training either overseas if adequately qualified, or on ships running in the Indian Ocean. and (5.) Develop their own program for participation. I pointed out that they needed the following things - (1.) A national commitment to participate with notification to the Secretary of SCOR. (2.) The establishment of a National Committee. and (3.) The development of a national program.

I pointed out the steps would be to advise SCOR when such action had been taken and in the discussion it developed that a committee should be set up under one of the Executive Departments of the government since there is no Academy of Science and the Malayan Association for the Advancement of Sciences is largely a paper organization in the hands of Professor Hendrickson. It was agreed that the following departments and agencies should probably be included - (1.) The Ministry of External Affairs. (2.) Meteorological Department. (3.) The Navy within the Defense Department. (4.) The Fisheries Department in the Ministry of Agriculture and Cooperatives. (5.) The Railways and Harbors Agency. (6.) The Ministry of Education, particularly with regard to trainees. (7.) The university. and (8.) The Ministry of Finance.

In a discussion of the specific elements of participation in Malaya, it appeared that the actual distribution of tide gauges was unknown by the individuals present. However, it seemed likely that there was a tide gauge at Penang and another at Singapore, and there might be tide gauges at Port Swettenham and Port Dickson. Tide forecasts are available at all of these ports. Dr. Soong pointed out that the Fisheries Department has a shore staff at Penang, at Port Swettenham and Port Dickson who could operate and maintain tide gauges.

Radiosonde observations are taken at Singapore by the Meteorological Department and by the Royal Air Force at Butterworth Air Base which is a major air base in northern Malayan near the Thailand border opposite Penang. Singapore is reported to take soundings every six to twelve hours and is a twenty-four hour station.

Fisheries Department has surface salinities for the whole of the Straits of Malacca. The Fisheries fleet go out to about 70 miles which is close to the Sumatra coast but they do not have a full understanding of the biology of the region. The Malayan Budget Year begins on 1 January. This means that any planning for Malaya's participation can be included in next year's budget.

There are various small sized vessels available from two agencies. The Navy has one coastal mine-sweeper with a range of six days of operation, 150 feet overall with magnetic and acoustic sweeping gear. She might be fitted to do some oceanographic work. They also have one dispatch vessel 150 feet long which could be used for survey work but it has no equipment. There are also two in-shore mine-sweepers with wire and other sweeping gear, 110 feet long. The Fisheries Department has one Fisheries research vessel 75 feet long which takes plankton samples and does surface salinities. There are also five Marine Police vessels working within the three mile limit which have done and could do some water sampling. None of the vessels have any bathythermographs and they want some. The Fisheries' ship is fitted with two echo sounders.

In an effort to estimate the probability of Malaya's participation in the Expedition, I asked the representative of the Ministry of External Affairs how they would propose to go about the organization of Malay's participation. He said that his Ministry would call on the other ministries to form a committee with the make-up roughly as indicated above. They would get the reaction of the technical ministries and then make the policy decision on Malaya's participation. A poll of the representatives of the other agencies revealed the following - The Ministry of Defense is interested in participation. The Ministry of Agriculture as represented by the Fisheries Department, had been waiting for something like this for a long time and it is extremely interested. It is probable that the Fisheries Department would be the executive agency of the Malayan national committee. The Transportation Ministry in which the Meteorological Department falls, is very interested but they would need some staff to increase their activities. The University is eager to participate and it has been hoping to develop both oceanography and meteorology. Mr. Dale is the individual most immediately involved in everything except the zoological side where Professor Hendrickson would be involved along with Dr. Soong. It was also pointed out the Commonwealth Advisory

on Defense Science Research will have a 1961 meeting on Indian Ocean problems.

CEYLON

On my arrival in Ceylon I was unable to get in touch for the first twenty-four hours with my previous contact, Dr. D. T. E. A. de Fonseka, Director of Fisheries. When it became apparent that he might be unavailable, I took steps to arrange things so that I would be able to see people since my time was limited. I got in touch with Dr. N. G. Baptist of the Faculty of Medicine, Department of Biochemistry of the University whom I had met in Karachi in November 1960 and Dr. Mahadeva of the Department of Fisheries who had been my guide around the government departments in Ceylon on my previous visit a year ago. de Fonseka had reported in a letter that during the past year he hadnot been able to get any governmental action on participation in the Expedition. Through Dr. Baptist it was possible to get an appointment on about two hours notice, with Mr. C. P. De Silva, Minister of Agriculture, Fisheries, Power and Irrigation within whose Ministry Mr. de Fonseka's department falls. Mr. De Silva is also Leader of the House in Parliament.

Together with Professor C. C. de Silva, the President of the Ceylon Association for the Advancement of Science and professor of pediatrics at the University, and Dr. V. Basmayake, Secretary of the Ceylon Association for the Advancement of Science and a member of the Department of Physiology of the Faculty of Medicine of the University of Ceylon and Dr. Baptist, I visited Mr. De Silva at his offices in Parliament. We talked for about forty-five minutes with Mr. M. Tennekoon Parliamentary Secretary to the Minister and Junior Minister of the Ministry of Agriculture, Fisheries, Power and Irrigation, and then for about twenty minutes with Mr. C. P. De Silva, the Minister. I explained the background of the Expedition and of my previous contact and both the Minister and the Parliamentary Secretary were extremely interested and wanted to find out more about the Expedition and also felt that Ceylon could make a decision favorably for participation in a relatively short time. I outlined as minimum requirements for Ceylon's participation the need for a governmental decision on formal participation with notification to the Secretary of SCOR and then an agreement to provide at least the information from their one existing tide gauge at Colombo harbor maintained by the Master Attendant of the Harbor and the feeding in of information from their Meteorological Station at the Colombo airport into the meteorological network. I also suggested that

additional tide gauges Galle and at Trinchomalee would be helpful and that more frequent meteorological readings would be useful. Added participation would be the offering of hospitality by the Ceylon government to visiting ships. Minister De Silva and Mr. Tennekoon felt that all of these would be perfectly possible and that a decision could be reached in about a month at the minimum. I indicated as I had in Malaya that once they had agreed to participate, they could nominate trainees who could ride ships in the area and in other parts of the world and also they might develop their own program for participation. The Minister of Agriculture and Fisheries was particularly interested in the fisheries problems from the point of view of increased fish yields and asked several questions about productivity. The reception was extremely favorable. As a consequence of this meeting de Fonseka drew up a revised proposal the next morning which he forwarded at that time to the Minister. Dr. Baptist agreed to follow through on this to see that arrangements were made. It also came out in the discussions that the Fiscal Year for Ceylon begins on the 1st of October.

There was some talk in my meeting with the Minister of Agriculture and Fisheries, and also later about the possibility of naval vessels from Ceylon participating but due to a serious shake up in the naval high command, it was not possible to talk to anybody with senior responsibility in the Navy. In a subsequent talk with Mr. de Fonseka and Dr. Mahadeva, de Fonseka expressed an interest in finding out what information other nations would like about the Ceylon near-by waters. They would be prepared to fit investigations which would provide such information into their overall program if it were within their capacity to obtain this information. This would apply particularly to the biological oceanographers.

Ceylon has two forty-five foot experimental fishing vessels from which they carry out research out to a maximum of 100 miles from the coast. The Continental Shelf extends, as I recall it, to something in the order of thirty miles to the west of Ceylon and less than half of that on the eastern side. They have an oceanographic winch obtained from Canada which has been uncrated and then recrated and is lying in a warehouse. With this winch fitted on one of the ships they might do oceanographic stations to about 500 meters, although they have only about 150 meters of wire at the present time. Naval vessels would be able to work at a greater range and the winch might be fitted onto them when it was not on the Fisheries vessels. There is also a remote possibility of obtaining a small Fisheries research vessel with appropriate fittings for biological oceanography and some physical oceanography. This possibility, however, is remote at the present

time because of the serious budgetary and physical problems confronting Ceylon.

I visited the Meteorological Office and met the Director , Mr. D. J. Jayasinghe and the Deputy Director, Mr. L. A. D. I. Ekanayake, Mr. U. Rath of the ~~the~~ International Civil Aviation Organization Regional Office at Bangkok was also present talking with the meteorological people when I arrived. This agency is also confronted with serious budgetary limitations. As a matter of fact, at the Colombo airport where they are supposed to make daily radiosonde soundings, they have now had to change to make one every other day. This sounding is made at 1200 G.M.T. every other day but radio wind observations are made daily at 1200 G.M.T. In addition, there are four pilot balloon stations ~~xxxxxx~~ in the island which also make surface observations.

The Director and Deputy Director indicated that they would be very glad to cooperate with the Expedition and they will work closely with Mr. de Fonseka if the government decides to participate and designates the Fisheries Department as the coordinating body of the government which is most likely. The Ceylon Association for the Advancement of Science is the only island-wide scientific body and up until very recently it has not had much influence. However, the new officers are taking considerable interest on a broad scale and they may develop although there is still a big gap between the government departments and the other scientists in the university. The Meteorological Department is facing further cuts and they will need outside assistance in all probability if we expect to get any additional information from Ceylon.

Mr. Rath pointed out that in the region from the middle part of the Arabian Sea eastward, not one meteorological station receives a single synoptic observation reliably and regularly from outside its own country. He urged that ~~xxxx~~ it be emphasized that the International Indian Ocean Expedition meteorological research program have the same requirements as the WMO synoptic forecasting so far as shore station basic observations go and also the same requirement as the International Civil Aviation Organization especially for basic observations from all three organizations would help the countries now doing inadequate jobs to meet their needs because they would supply three demands from the same basic bit of information.

I also met CDR. Robert Llewellyn, USN Naval Attaché and LT. Robert Hoen, USN Assistant Naval Attaché.