31 May 1962

TO: Warren S. Wooster, Secretary, IOC

FROM: R. G. Snider

The attached rough notes are things that have come to my mind without reference to any particular document or to any of my notes on my last two trips. They are, therefore, only as a running statement to show some of the things I recalled at the moment were in medias res.

In addition, a few of the broad issues which cut across national boundaries come to mind and I list them purely for the record. These should be the subjects for discussion and for agreement on distribution of responsibility. This is not in any way an exclusive list but I have had very little time since my return to dig into this deeply.

1 - TRANSIT satellite; its availability, distribution and use.

2 - Training -
   a.) Individual training of scientists in various disciplines outside their own country.
   b.) Non-nationals riding vessels of Indian Ocean nations.
   c.) Indonesian vessel as possible training ship.

3 - Publicity -
   a.) Beginning of constant news flow of activities, developments and discoveries.
   b.) Preparation and distribution of local language translations of brief summary of objects and activities of Expedition.

4 - Arrangements with various individuals, laboratories and scientific publications for publication of at least some articles in the local journals in the country where the work is carried out (e.g. Madagascar).
5 - Rapid exchange of information on notable observations and discoveries (e.g. HCS OMEN's discovery of a magnetic anomaly near the Seychelles of 10% of the earth's field, etc).

6 - Formal arrangement for announcement of the movement of ships to various ports in order to have proper arrangements made.

7 - Possibilities of limited use of Cua as an equipment and personnel center.

8 - Meteorology - arrangement for replacing prospective DMC trainees in countries with limited technical talent by qualified individuals from other countries during the training period.

9 - Tide gauge network and its establishment and coordination.

10 - Relationship between Expedition program and International Quiet Sun Year (IQSY) program.

11 - Numerous profound scientific problems.

12 - Other issues.
ROUGH NOTES OF THINGS TO BE
DONE AS OF 1 JUNE 1962

SOUTH AFRICA

A proposal by Professor Ahrens at the University of Cape Town to make a complete systematic analysis of segments of all cores taken in the Expedition is still awaiting some action. Some funds will be required to assist in this. The proposal has gotten a mixed reception. Some geologists feel this would be most useful but others are reluctant to give up even wedge segments. The logistics of getting cores to Cape Town is also a problem.

South Africa stated early this year that they wish to have all arrangements for ship arrivals, etc. cleared through the Coordinator's office. No action was taken by the SCOR Executive Committee on this matter. Until South Africa joins IOC or rejoins UNESCO, there may be some difficulties in regard to such arrangements after this office ceases to function.

South Africa is concerned, as were some other countries represented at Lourenço Marques about splitting plankton hauls as well as about the cost of sending plankton to Cochin. These matters need clarification.

South Africa having started its Expedition effort earlier than a number of other countries, will have completed a substantial amount of her scheduled work before the Cochin center opens. It appears that its effort will be continued in subsequent years but encouragement should be given to get the necessary financing from government.

South Africa's future program should be linked closely with work of major vessels from outside the Indian Ocean, particularly Vema and Conrad; Chain, Atlantis II and Williamsburg; Discovery III and possibly Owen.
PORTUGAL

Some additional equipment may be needed for ALMIRANTE LACERDA and it might be useful to obtain one or more experienced oceanographers to ride on her first few cruises. The physical facilities for marine biological work at Inhaca (an island off Lourenço Marques) should be taken advantage of.

The Portuguese government will probably require some encouragement in Lisbon to provide adequate funds for a substantial effort.

The possibility of repairing the submarine cable between Mozambique and Madagascar for continuous monitoring of currents by changes in electrical potential should be investigated. No definite action has yet been taken by Portugal on customs assistance and similar courtesy items although it is under consideration. This should be followed up.

MADAGASCAR

Full advantage should be taken on the excellent laboratory and station facilities at Nosy-Bé. Ryther's program is doing this in part. Additional facilities exist at Tuléar. The Madagascar government in particular will require some type of assistance to send trainees out of the country, as for instance to Bombay.

Efforts will have to be continued to get the Malagasy Government to endorse the Indian proposal to the Special Fund for the IMC and also to obtain at least a token contribution to the IMC from them.
MAURITIUS

Arrangements will have to be worked out to set up the upper atmospheric meteorological station at Diego Garcia which is to be financed by the U.S. A change of ownership of the coconut plantations there will probably result in the elimination of the present monthly supply ship service from Mauritius to its dependency the Chagos Archipelago. This would also affect the ease of getting Mauritius' Meteorological Service personnel to Diego Garcia.

New ownership is centered in the Seychelles which are themselves not easily accessible. One alternative to be explored for the utilisation of Gan and the assistance of the RAF Transport Command to move equipment and personnel at least as far as Gan and possibly on down from there by air or sea. Special mention of the Gan situation will be made subsequently.

It may be desirable to treat Diego Garcia as an operating arm of the East African Meteorological Service with staff coming from Nairobi from whence new Seychelles station (British financed) will come.

Some assistance to local agencies such as Fisheries Department should be given by visiting ships which have received and will receive excellent hospitality at Port Louis. Preliminary discussion of investigation of various banks in the Mauritius area has already been undertaken by Miller of Woods Hole.

TANGANYIKA

Although not at present participating independently, Tanganyika's Meteorological Service (a part of the East African Meteorological Service) will make important contributions. The possibility of a relationship between the Dar-es-Salaam branch (Mr. R. C. Pratt principal) of the University of East Africa and the Zanzibar laboratory of the East African Marine Fisheries Research Organization warrants consideration of training indigenous East
Africans at an early date to play a part in teaching and research on biological oceanography at these two institutions. Present professional staff at Zanzibar are all Europeans.

An effort should be made to obtain Tanganyika’s formal participation in the Expedition.

ZANZIBAR

With the recently obtained assurance that the Zanzibar station will not be deactivitated, full advantage should be taken of this facility and every assistance in terms of equipment and personnel should be given to facilitate the development of the institution and the subsequent increase in knowledge of oceanic processes and fisheries resources along Africa’s tropical east coast.

KENYA

Consideration should be given to the possibility of the gradual or rapid withdrawal from the Meteorological Service of Europeans in the light of various political developments. The stimulation of training of non-Europeans at a rapid rate should be undertaken.
**Somalia**

An effort should be made to obtain Somalia's formal participation in the Expedition. There is little evidence that it can be used much beside a site for an equatorial tide gauge, a tide gauge near the Straits of Bab el Mandeb and some meteorological observations at Mogadiscie. Arrangements for these activities must be made and this will be easier if Somalia is a participant.

**Ethiopia**

Although Ethiopia has offered port courtesies, etc., it is not as yet a formal participant nor is it on Humphrey's master mailing list. Therefore, it seems unlikely that the agencies who are to be notified in the event of use of any of the Ethiopian ports, or for that matter any territory along the Red Sea, will actually know anything about the Expedition or ship movements.

**Red Sea, Persian Gulf & Arabian Peninsula**

No particular effort has been made to elicit participation of the countries in this area although some early formal communications were directed to Egypt of the U.A.R. and to Iran. No responses have been forthcoming but effort on the part of Israel, U.S., U.K., France and Germany in the two bodies of water associated with the Indian Ocean, suggest that at least some attention will be given to them. Contacts for operational facilities on the Arabian Peninsula have been made through U.K. agencies. This involves particularly the meteorological facilities on the Arabian Peninsula bordering the Indian Ocean.
PAKISTAN

I have made no visit to Pakistan for the last fifteen
months but an exchange of cables in January '62 indicated no
particular problems on which assistance was needed.

It should be noted, however, that as originally scheduled
Pakistan planned to have at least two and possibly more vessels
involved in the Expedition. No definite proposals have been
forthcoming except for FNS ZULFIQUAR. It seems likely that outside
effort will have to be continued to get Government to provide
funds for operation of MADAMAR and of the Fisheries Research
vessel.

In addition, some effort will probably have to be made
to get Pakistani meteorological officers to participate in the
IMC training at Bombay. Furthermore, some relationship between
East Pakistan and Burma should be developed particularly with
regard to seaborne research.

INDIA

Actual action by India with regard to liberal customs
treatment, port and similar courtesies has been slow in developing.
This becomes a critical situation with early advent of Scripp's
and other vessels into the Indian Ocean as well as the prospective
operation of the IMC and Cochin center. It is expected that stencils
for the IOC symbol will be distributed to laboratories and/or
National Committees in the near future. Arrangements need to be
made for the symbol's recognition and acceptance both at the centers
of government and on the waterfronts. Designated official contact
points for the Expedition should be made at the key ports of India
as well as elsewhere.

An immediate attempt to establish an adequate priority
for the IMC among its numerous current requests to the U.N. Special
Fund. This will require highest level contacts both official and
unofficial in India to obtain appropriate GOI action within the
limited time available. Furthermore, although a request reached
Special Fund from GOI for assistance on the IMC it does not yet
meet all of the requirements for acceptance. Only three months
at the very maximum remain until the Special Fund makes up its final
agenda for its January meeting.
It would probably be desirable to obtain the assistance of experienced seagoing oceanographers to ride INS KISTNA on some of her early cruises. It would also be useful to know the actual activities and extent of participation by various Indian scientists in the Expedition as well as the extent of their knowledge about plans.

CEYLON

A recent letter from the Director of the Meteorological Service indicates a prospective further reduction of upper atmospheric soundings unless financial assistance from external sources is forthcoming. Since meteorology was the chief contribution expected of Ceylon, it seems evident that anything done there will have to be done with other people's funds.

BURMA

Efforts over some sixteen months to obtain formal participation by Burma have so far been unavailing. On my last visit in February 1963 an ad hoc national committee was set up with the Director of meteorology as its chairman. Further effort thus must be made to obtain formal participation.

Aside from meteorological observations and tide gauge observations, there is little of major import which Burma will be able to contribute. There is, however, some interest in marine biology and if a participant, Burma and Thailand could contribute along with Malaya to a reasonably thorough coverage of the continental shelf along the east side of the Bay of Bengal.
THAILAND

The extent of Thailand's participation in any seagoing efforts in the Expedition depends in large part on obtaining a deep-sea winch for their prospective 350 ton vessel. Efforts to obtain one reported in excess in Denmark have been initiated with the proposal that Thailand follow-up directly. No information is available on the status of this.

A major effort in Meteorology by Thailand, together with the contribution of at least $50,000 (reportedly twice that) to the overall costs of the UNC will depend on the extent to which several other Indian Ocean nations make similar contributions.

As originally contemplated, the UNC was to be a Government of India request to the Special Fund with endorsement by several other countries (i.e. Madagascar, Thailand and Indonesia). Thailand has come through conditionally, there seems a good prospect for a Malagasy token contribution and approach must be made to Indonesia. It would be most desirable to have these governments act before 1 September and it would be useless if they fail to act formally before 1 January 1963.

MALAYA

Malaya has advised this office through its Mission to the United Nations that it has formally agreed to participate in the Expedition. A National Committee chaired by a representative of the Ministry of External Affairs was established during my last visit in February. Cooperation between Malaya, Thailand and Burma will have to be stimulated if Thailand's tentative proposal to use its ship or ships for study of continental shelf and adjoining waters of their three countries is to be taken advantage of. Thailand will want financial participation by the other countries for studies off their shores and offers to carry other nationals on their vessels.

Considerable interest exists in Malaya for geological and geophysical studies in the Malacca Strait as well as for fisheries research and meteorological studies.
SINGAPORE

Although not a formal participant, Singapore has offered generous port courtesies and the Headquarters Far East Air Force of the RAF and C-in-C Far East, RN have expressed very considerable interest in the meteorological program.

INDONESIA

I have not been in Indonesia for fifteen or sixteen months and have had virtually no communication from them although they reported no problems in replying to a cable request in January 1962. Since Humphrey has maintained close contact with Indonesia, everything must be in fine shape.

The prospective delivery of the new oceanographic vessel from Japan suggests many problems. If Indonesia could be prevailed upon to offer this vessel as a southeast Asia training vessel as well as research in appropriate areas within its sphere of interest, and provided that the necessary non-national oceanographers could be obtained to carry out such research and training, an important gap in coverage might be filled. This will require extended discussions no doubt with the Indonesian government.

Key meteorological and tide gauge observations in the equatorial region must rest on the Indonesian efforts. Lack of response by Indonesia makes it difficult to judge the success of their planning and funding.

AUSTRALIA

No specific information on advance plans for work by Australian vessels is available although a general 1959 commitment for work within a substantial area apparently still holds.

Although there have been four or five requests by individual Australians directed to this office for a opportunity to make geological studies, particularly to the west of Australia, there has been no indication that Australia would support any geological work.
Negotiations with Australia for the assumption of responsibility for tidal observations at Cocos-Keeling and Christmas should be undertaken.

NATIONALIST CHINA

After an early flurry of enthusiasm there has been little information forthcoming from Taiwan about plans for participation which were largely to ride other people's ships. Some negotiations have been conducted, I believe, with individual laboratories but further follow-up is needed to assist them in organising the program.

JAPAN

Every possible external encouragement and pressure is needed to get Japanese participation on a scale commensurate with its oceanographic and meteorological potential. At a meeting of Japanese and U.S. scientists in December '62 talk about Japanese oceanographic effort centered on joint Pacific studies and immediately thereafter there was no budgetary support for the proposed Indian Ocean effort. Subsequently it was announced that at least two Japanese vessels would operate in the current year in the Indian Ocean Expedition.

It is now reported that at recent similar discussions between scientists of the two nations at a meeting in the U.S. revealed that they could do very little in the Pacific Ocean because of their commitments in the Indian Ocean. Nevertheless reports received within the last week indicate that there is no firm financing for either 62-63 or for subsequent years.

The elimination of geology-geophysics and meteorology from even the proposals for the forthcoming northern winter suggest that substantial moral support at least is required to get a rounded and appropriately large Japanese program. Furthermore, the apparent willingness of the Japanese (as evidenced by my talks there in
February '62) to work well up into the Bay of Bengal in order to increase coverage there should be exploited.

U.S.S.R.

Complete lack of detailed information on the scheduled dates of ship movements, aspects of various disciplines involved, participating personnel, and identity of any participating ship except VITJAZ makes it virtually impossible to estimate what is to be done in coordinating the Russian effort to that of others.

Although the ALEXANDER KOVALEVSKY and OB have been reported as planning to work in parts of the Indian Ocean, no further information has been forthcoming. In discussions about twenty-six months ago in Russia their National Committee agreed that at least one and possibly two of the then-to-be-constructed new large research vessels would be in the Indian Ocean at least through 1964. No further reports on these vessels have been received.

No information is available on the extent to which they will participate in the shipborne upper atmospheric meteorological observations inspite of the vessels' large size and wide range.

WEST GERMANY

Little detailed information is available on German plans except for the general area of operation. There is reported to be some difference of opinion within the German committee about the most desirable area of operation. Since Germany is coming into the shipborne part of the Expedition at a late date it does seem unfortunate that they operate in an area already intensively covered by a number of other nations. Some effort might be made to get them to readjust their program.
FRANCE

Some details of the French program are gradually evolving but more definite information is required. This includes extent of meteorological effort in Creseta, Kerguelen, Amsterdam and/or St. Paul and the Comores, the extent to which biological and geological-geophysical observations will be taken by the French vessels not operating solely in a limited area out of Madagascar. Information on French maintained tide gauges is not precise.

UNITED KINGDOM

Efforts to encourage increased and more rapid support of U.K. Indian Ocean Expedition programs should be made with Ministry for Science and Treasury. Detailed negotiation for U.K. and British Colonial facilities for meteorology and tidal observations should be continued. Arrangements should be made through Commonwealth Relations Office for vessels' facilities and privileges in the Maldives.

Specific proposal must be made ultimately to the Air Ministry for not only meteorological efforts and assistance but also for certain air transport and logistic support for selected vessels from Gan.