POIUT'S OF CALL and MAILING ADDRESSES
for R/V TE VEGA

All mail and/or shipments should be sent to the agent's address.
Address should include the name of the person, name of the ship,
agent and agent's address. Mark all mail "PLEASE HOLD FOR ARRIVAL
OF R/V TE VEGA".

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<th>CABLE ADDRESS</th>
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<td>MAJUNGA, MADAGASCAR</td>
<td>July 21 - 22</td>
<td>Compagnie des Messageries</td>
<td>MESSAGERIE</td>
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<td></td>
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<td>Maritime</td>
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<tr>
<td>MAJUNGA, MADAGASCAR</td>
<td>August 10-11</td>
<td>(Same as above)</td>
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<td>MOMBASA, KENYA</td>
<td>August 28th to</td>
<td>Smith, Mackenzie &amp; Co. Ltd.</td>
<td>MACKENZIES</td>
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<td>September 28th</td>
<td>Kilindini Road</td>
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A SPECIAL REMINDER

Send all letters via AIR MAIL. You should allow at least fourteen days (14) for the mail to reach its destination as air service to these points is infrequent.
Cruise C

July 21-22, 1964 Majunga, Madagascar
August 10-11, 1964 Majunga, Madagascar
August 29 - Sept 28, 1964 Mombasa, Kenya
On August 15th we reached Mayotte, the easternmost island of the Comoro group. This is almost entirely surrounded by a barrier reef and, from its appearance on the chart and from verbal reports, promised to provide spectacular coral gardens and excellent fish-collecting sites.

As we approached, the wind, which had deserted us during the crossing, sprang up fresh and strong just when we did not welcome it. By mid-morning we were off the northern end of the island, where the western limit of a long line of breakers indicated the position of the narrow entrance of the Passe M'Zambourou. Once inside the reef, the chart showed a maze of coral heads and shallow patches, but buoys and range markers made the channel easy to follow. A little before lunch time we were safely at anchor in the Baie de Langoni, but by then the wind was heavy and kicking up a nasty whitecapped chop within a couple of hundred yards of the lee shore. A little scouting with a glass-bottomed box from one of the Boston whalers showed nice development of coral on the fringing reef, but the water was murky and the waves and strong current made conditions unsuitable for work. Attack on the outer barrier reef about five miles off shore was out of the question because of the heavy breakers. The time remaining for our second attempt to catch a coelacanth was running short, and we could ill afford to wait for conditions to improve. Consequently, with considerable regret we gave up the Mayotte venture that we had all looked forward to as an interesting break in our routine program, and early that same afternoon we left again without having set foot on the island.

By one o'clock in the morning of Sunday, August 16th, we were once more in our old stamping ground off the northern coast of Anjouan, with the Tucker trawl over for the first of two hauls. The catches were as expected, and by the time we dropped anchor off Mutsamudu in the predawn darkness, the respiration of deep-water shrimps was under investigation and samples of Chauliodus muscle were being prepared for biochemical analysis. Just after breakfast the deep-water traps were prepared and set, and the routine established on our earlier visit was under way.

Although we are only about twelve degrees from the equator, there is an appreciable seasonal temperature change. With the approach of the southern hemisphere spring, the temperature is appreciably warmer than when we left, and the saloon tends to become unbearably hot during the evening seminars. As an experiment we decided to try holding the meetings on the after deck. A piece of plywood made an acceptable substitute for the blackboard. A spotlight was rigged so that it was visible to all, and the speaker could refer to his notes without difficulty. In spite of the interference of rigging and the difficulty of finding a good place
for everyone to sit down, it was much more comfortable than the saloon. The little brightly illuminated academic patch in the velvety blackness of the tropical night, with gentle sea breezes providing satisfactory air conditioning, was appreciated by all concerned. It was literally a case of "no sweat" and it will probably be continued whenever weather and sea conditions permit.

We have modified our previous procedure somewhat. Instead of trawling during the daytime we have been trying it at night when the organisms of the deep scattering layer have migrated closer to the surface. The ship has therefore been riding at anchor during the daylight hours, which makes most of the laboratory work more comfortable and provides an opportunity for shore excursions or for different activities on board.

Sometimes the water at our anchorage is greenish and murky. At other times it is the clear deep blue that one associates with the open ocean far from shore, and then, unless the surface is broken by waves, one can spot a succession of small, almost invisible wraiths drifting past in the upper layers—equally spaced brownish spheres in long rows that turn out to be the stomachs of the otherwise invisible pelagic tunicate Cyclosalpa, linked together in brotherly chains; slight hints of pulsing movements in the water itself that betoken small medusae (Aequoria, Liriope, etc., or their close relatives); flashes of iridescence that can only be the ciliary bands of ctenophores; vague impressions of something unknown that demand investigation.

We have dipnetted a number of these and brought in a succession of weird and marvelous animals, most of them too fragile for preservation. The siphonophore Diphyes (or possibly Galeolaria) is a small jet-propelled double torpedo of glass trailing a long whip-like tail which, when the animal ceases its pulsing spurts, expands into a beautiful diaphanous plume made up of hundreds of astonishingly elongating tentacles from the feeding individuals of the colony. The ctenophore Cestum veneris, commonly known as Venus' girdle, has the form of a narrow ribbon-like band, visible only because the yellow or reddish gut extends as a transverse streak across the middle of the ribbon and the ciliated bands trace rose-colored iridescent double lines around the margin of the body. The largest one we caught was almost three feet in length; the smaller ones, less than a foot long, hardly merit the term girdle and they have become known on board as 'Venus' garter-belts.' They are all surprisingly active, swimming by serpentine movements of the entire body, rather than by ciliary action. We have also taken numbers of the sack-like ctenophores Beroa cucumis and B. forskalii and watched them swim with their mouths wide open, apparently hunting for prey. The latter species is one of the most brightly luminescent of all marine organisms,
and we kept a number in plastic pans until nightfall in order to observe this phenomenon. On agitation they put on a gorgeous display, with flashes and waves of brilliant green fire lighting up the entire containers and illuminating the faces of the observers.

From the very surface we dipped small Portuguese men-of-war (Physalia) and, placing them in trays of seawater, were able to observe the occasional slow rolling to right or left by means of which these animals manage to keep their floatation bladders moist, even on calm days under a tropical sun. Many of us, while snorkeling during the last few days, have had the unenviable experience of testing the potency of the stinging cells in the dark blue tentacles of these beautiful nuisances and have learned to respect them. We have also taken several specimens of the pelagic hydroid Porpita, a flat circular disk with a dense circlet of radiating tentacles. Floating on the surface this form looks for all the world like an elaborate stylized diagram of the sun done in blue ink. All of these marvelous pelagic organisms, variously transparent, blue or luminescent, came on board two days following our seminar on pelagic adaptation and the day after our discussion of coloration and bioluminescence. There could have been no more graphic illustration of a number of points made in the lectures.

The next day a number of new forms were added to our riches--blue by-the-wind sailors (Velella); blue pelagic snails (Janthina), with reversed countershading, hanging upside down from their frothy bubble-rafts; pale bluish-white gooseneck barnacles (Lepas) suspended from the snail shells; and finally the lovely light and dark blue nudibranch Glaucus, a real gem of feathery design. We now had an adequate sample of a complex surface community similar to the one that had engaged the attention of staff and students off the California coast, half a world away, on the first cruise of TE VEGA. We have noted an interesting fact concerning Velella. When oriented with the long axis pointing toward the north all of the specimens collected more than a year ago off America had the sail extending from NW to SE; all of the individuals collected here have it extending from NE to SW. Is this simply due to wind-sorting of randomly varying individuals, or could it possibly be that in some obscure way Corioli's force may have differentiated the populations of the northern and southern hemispheres? We rather doubt the latter possibility, but we shall continue to note the orientation of the sails in whatever geographical area we encounter these animals.

On the last day of our stay at Anjouan, while waiting for the deep-water traps to surface, we made a final fish collection. Scouting on previous days had revealed the presence of a room-like pit in the fringing reef near our anchorage. Its dimensions were roughly thirty by thirty feet, and it was also about thirty feet deep with vertical walls of coral rising to within two or three feet of the surface. Three narrow corridors led into the chamber, which had a flat sand floor. Although the fish population seemed to be
rather meager, it was an ideally protected situation in which the rotenone would not be dissipated too quickly, so we decided to give it a try.

Dr. Lasiewski and I donned SCUBA gear and, each armed with a plastic bottle of Noxfish, we were soon shooting dense brownish-grey smoke rings into the water. We first paid attention to the exits, cutting them off with curtains of rotenone, and then squirted the main chamber until it was so cloudy that visibility was cut down to about six feet. As soon as we returned our bottles to the whaleboat and exchanged them for short-handled dipnets we were joined by three other divers and a couple of snorkelers. We kept at the task of collecting until we ran out of air in our tanks and fishes from adjacent areas were moving in to compete with us for our catch. From the surface, the midwater and the bottom we scooped up bright crimson soldier fishes and black or gaudily striped surgeon fishes with scimitars on their caudal peduncles to make us beware, curious dragonettes and depressed flatheads, colorful butterfly fishes and long slender worm eels, beautiful but venomous lion fishes and long-snouted wrasses, bearded goat fishes and electric rays, viciously toothed lizard fishes and grotesque bulbous anglers. The prize was a one-and-a-half inch Solenostomus that Larry Oglesby almost passed up as a small piece of drifting seaweed until he noticed that it had an eye—a most unusual alga, or, for that matter, a most unusual fish! We filled our containers to overflowing, and when, some days later, the collection was preserved, sorted and packed for shipment home, we discovered that the apparently meager fish fauna of the small habitat sampled had yielded well over one hundred species belonging to more than thirty families.

On Saturday, August 22nd, we hoisted the anchor and headed NNW for Mombasa. The trip was uneventful and toward noon on Tuesday, the 25th, we began to encounter traffic and the low hills of the African coast loomed out of the haze. As we proceeded up the harbor under the guidance of the pilot, everyone was impressed by the evidences of civilization. We had become accustomed during the last couple of months to considering Bellville and Mutsamudu to be typical communities in this part of the world, and probably we all presumed that Mombasa would be a somewhat larger replica. To our surprise, instead of a squalid and decaying town we found Mombasa to be a modern city of one hundred eighty thousand with good stores, hotels, and facilities of all kinds, populated by an alert and business-like citizenry. Aside from mass-produced primitive wood carvings, lion-claw cuff-links, zebra-hide handbags and similar items beckoning the tourist's dollars from shop windows, there was little evidence at first that we had invaded darkest Africa. However, exploration away from the center of the city soon revealed native African sections with wattled huts and an Arabian quarter—ample evidence that we are not in America.
Plans for sight-seeing expeditions in this interesting country, for visits to the convenient game reserves, for climbing Kilamanjaro, for stopping at various places in Europe or Asia on the way back to the United States, or simply for a quick and direct flight home, were soon under way. By Wednesday evening the first two students had departed and the cruise was considered over.

In retrospect, this has been the best cruise so far. Our program was not hampered nor curtailed by serious mechanical troubles. We did not catch the coelacanth that we were after, but we were content to investigate other interesting organisms instead. An excellent and cooperative group of senior scientists and students worked together effectively, learned much about the sea and its inhabitants, accomplished a great deal of worthwhile physiological research, saw strange places, met new and interesting people, and had a busy, stimulating and good time. It is the first cruise with which I am fully satisfied, and it indicates that our fumbling period of trial and error is over. We should have smooth sailing from now on.
Cruise 4.

TE VEGA EXPEDITIONS
STANFORD UNIVERSITY

Sta. No. 139 Date JUNE 5, 1944 Time __________ Field No. __________
Lat. 20°35'S Long. 57°35' E Chart US H. No. 5440

Locality ABOUT 8 MILES SSE OF MAURITIUS

ONE TRIGLID CAUGHT ON HOOK & LINE BY MR. PHILIP SCOTT, FUEL, FLACQ, MAURITIUS, INDIAN OCEAN, AND PRESENTED TO "TE VEGA" BY HIM. ALTHOUGH THERE IS CONSIDERABLE DEEP-WATER FISHING DONE HERE, THIS SPECIES WAS ENTIRELY UNKNOWN TO THE LOCAL FISHERMEN.

INFORM MR. SCOTT OF ITS IDENTITY WHEN IT IS DETERMINED.

THE FISH WAS ROSY PINK DORSALLY AND VERY PALE FINISH PINKISH WHITE BELOW WHEN RECEIVED FROZEN PRESERVATIVE: FORMALIN IN SEA WATER.

Collector PHILIP SCOTT Recorder Ralph Balin
Sta. No. 135  Date 3 JULY, 1964  Time 1030  Field No.
Lat. 12° 28' 30" S  Long. 48° 00' 00" E  Chart BRITISH ADMIRALTY 706
Locality BAIE D'AMBAVATOBÉ, ENTRANCE TO NOSSI BE, NORTH-EASTERN MADAGASCAR, CAUGHT WHILE TROLLING AT 8 KNOTS ON SURFACE OVER WATER 17 FATHOMS DEEP

Collector ___________________________________ Recorder __________________________
A Small freshwater stream. The water rather opaque supporting a rather heavy green algal growth on bottom. The area of collection is about 200-250 yards long and consists of three pools separated by two small riffles. Surface water flow around 200 gal per minute. Water temperature 22.8°C. The stream is in shade morning and afternoon but break in tree cover will allow for several hours direct sunlight around midday. Substrata composed of gravel, cobbles and a soft "muddy" sandstone. Depth of pools range from 1-5 feet with average depth around 2-3 feet. Flow in large upper pool about 3 ft/min.

2 PORTUNIDS (TAKEN BY CROSS)

1 FRESH-WATER SHRIMP, (PRACTICALLY BLACK WHEN ALIVE)

**SYNGNATHIDAE**

**ONE SERIES**

**1 SPECIMEN**

CATCH: ANGUILLA MARMORATA (?) **F**

**CICHLIDAE**

**MANY**

**KUHLIIDAE**

**3**

**LUTIANIDAE**

**MANY**

**GODIIIDAE**

**MANY**

**ELECTRIDAE**

**MANY**

**SCATOPHAGIDAE**

**SEVERAL**

Collector: **BOLIN & PARTY**  
Recorder: **BOLIN**
Sta. No. 137  Date 11/VII/64  Time 2030 - 2400  Field No. 

Lat. 12°10'S  Long. 49°23'30"E  Chart BRITISH ADMIRALTY 2066 (ED. 1962)

Locality OFF MUTSAMUDU, ANJOUAN ISLAND, COMORES.

AT ANCHOR IN 15 FMS.

DIP NET UNDER NIGHT LIGHT

CATCH. HEMIRHAMPHUS sp.; AHERINA AFRA; DACTYLOPTERUS ORIENTALIS;
SYMBOLOPHORUS sp.; (with PARASITIC COPEPODS); CERATOSCOPEUS; DIAPHUS

SQUIDS, STOMATOPOD LARVAE; ZOÉAE.)
Sta. No. 138  Date 12/7/64  Time 2030-2230  Field No.  
Lat. 12°10'S  Long. 44°23'30" E  Chart British Admiralty 2066 (Ed. 1956)  
Locality off Mutsamudu, Anjouan, Comores  
AT ANCHOR IN 19 FMS.  
DID NOT UNDERWATER LIGHT  

Dactylopterus orientalis; Hemitrichins; Fistularia;  
Mullidae; Tetraodontidae; Atherinidae; Clupeidae;  
Engraulidae; Heterosomate; Diaphus sp.; etc.  

Squid, Octopus (Photographed—D.H.E.)  

Polycheates  

Many small shrimps & holobates around the light  

10% formalin in sea water  

Collector DAVID H. EVANS  Recorder DAVID H. EVANS
Sta. No. 139    Date 13/11/64    Time 1930-1930    Field No. 

Lat. 12°07'S    Long. 44°20'E    Chart U.S.N.O. 3826 (1st ed)

Locality NORTH SIDE OF ANJOUAN ISLAND, COMORES. DEPTH 1600 M

DSL INDICATED AT CA. 300 & 500M, THE LATTER THE STRONG ONE. 

DISTANCE TO SHORE CA. 4 MILES. SEA CALM, WAVES CA 1 FT.

SUNNY. SURFACE TEMP. 25.6°C.

TUCKER TRAWL. ESTIMATED 900 M. WIRE OUT. (METER READER BROKEN)

WIRE 1. ESTIMATED DEPTH OF HAUL 500M.

HAUL VERY POOR, PROBABLY DID NOT REACH SCATTERING LAYER.

SIPHONOPHORES; MEDUSAE; ANPHIPODS (PHRONIMA + OTHERS); STOMATOPOD

LARVAE; POLYCHAETS; HETEROPODS; PTEROPODS; CHAETOGRAPHS;

CEPHALOPODS, ETC.
Sta. No. 140  Date  14/11/64  Time  ___________  Field No. ___________  

Lat. 12°09' S  Long. 44°28'E  Chart  U.S.G.S. 3826  

Locality  OFF ANJOU, MATSUMUDA, ANJOUAN, COMORES,  Purchased from local fisherman.  

THYRSITOIDES MARLEYI FOWLER. (Reported in Smith's "Sea Fishes of Southern Africa" to be known from only three specimens)
Sta. No. 141          Date 15/VII/44          Time 1330-1500          Field No. __________

Lat. 12°07'N          Long. 44°20'E.          Chart USNO. 3826 (1ST ED)

Locality NORTH SIDE OF ANJOUAN ISLAND, COMORES, DEPTH 1600 M.
CA. 4 MILES FROM SHORE, SUNNY, SEAS CA 1 FT.

TUCKER TRAWL, 1700 M. WIRE OUT; ESTIMATED DEPTH 700 M.

CATCH

STOMIAS; CHAULIODUS; GONOSTOMA; CYCLOTHONE; STERNOPTYX; LAMPANYCTUS;
PYROSOMA; CYSTOSOMA; MYCIDS; EUPHAUSIDS; SHRIMPS; CHAETOGRAPHS
HETEROPOD; MEDUSAE; SYMPHONOPHORES.
TE VEGA EXPEDITIONS  
STANFORD UNIVERSITY

Sta. No. 142  Date 16/VII/64  Time 1015 - 1145  Field No. 

Lat. 12°07'S  Long. 44°15'E  Chart U.S. No. 3826 (1st Ed)

Locality NORTH OF ANJOUAN ISLAND, COMORES. CA 3 MILES FROM  
SHORE. SEA CALM. SCATTERED CLOUDS. DEPTH 1670 M  
TUCKER TRAWL, CA. 1350 M. WIRE. ESTIMATED DEPTH  
600 M.

CATCH:

OPISTHOPROCTUS (BROKEN); ARGYROPELECUS (A. VERY LARGE ONE); STERNOPTYX;  
GONOSTOMA; DIPLOPHOS (?); MELANOSTOMIATIDAE; ASTRONESTHIDAE; SYLLOTHONE;  
CHAULIODUS; MYCTOPHIDAE (SEVERAL SPECIES); ETC.

PYROSOMES; PHRONIMA; PHYLLOSOME LARVA; SHRIMPS; MEDUSAE.

Collector ________________________  Recorder ________________________
Sta. No. 143  Date  16/VI/64  Time  1415-1530  Field No. ...

Lat.  12°08'S  Long.  44°22'E  Chart  U.S.N.O. 3826 (1st Ed)

Locality  NORTH SIDE OF ANJOUAN ISLAND, COMORES, 2 MILES OFF

SHORE.  DEPTH. 1350 M.  SEA CALM. SCATTERED CLOUDS.

TUCKER TRAWL. CA 1350 M WIRE OUT. ESTIMATED DEPTH

600 M.

CATCH:

CHAULIODUS; CYCLOTHONE; MYCTOPHIDS; LEPTOCEPHALUS;
PYROSOMES, ETC. (CHAULIODUS USED FOR MUSCLE SAMPLE)

Collector ____________________________  Recorder ____________________________
Sta. No. 144       Date 16/VII/64        Time       Field No.       
Lat. 12° 08'S     Long. 44° 22'E       Chart  U.S. H.O. 3826 (1st Ed.)
Locality NORTH SIDE OF ANJOUAN ISLAND, COMORES.

FISH TRAP SET 12.30 on 15/VII/64 in 1300m; PICKED UP
AT 0945 on 17/VII/64 OVER 1200 M DEPTH. BOTTOM OF
TRAP WITH A LARGE HOLE.

CATCH: ONE LARGE RED SHRIMP ONLY.

Collector ___________________________________ Recorder ________________________________
Sta. No. 145  Date 8/VII/64  Time 1800-1930  Field No. 

Lat. 12°08' S  Long. 44°22' E  Chart U.S.H.O. 3826 (1st Ed.)

Locality NORTH SIDE OF ANJOUAN ISLAND, COMORES.

SEA CALM, AFTER DARK.

TUCKER TRAWL - 1000 M WIRE OUT. ESTIMATED DEPTH 600 M.

CATCH:

RATHER POOR CATCH - GONOSTOMA, MYCOTOPHIDS, ETC

(GONOSTOMA USED FOR MUSCLE SAMPLE)

Collector ___________________________ Recorder ___________________________
Sta. No. 146  Date 18/VII/64  Time  Field No. __________

Lat. 12°09'S  Long. 44°23'E  Chart U.S.H.O 3826

Locality MUTSAMUDU, ANJOUAN ISLAND, COMOROS

PURCHASED FROM LOCAL FISHERMAN (ZEMA)

Collector ___________________________ Recorder ___________________________
Sta. No. 147   Date 18/VII/1969   Time 1245-1430   Field No. 

Lat. 12°08'S.   Long. 49°21'E   Chart U.S.N.O 3826 (1st ED)

Locality NORTH SIDE OF ANJOUAN ISLAND COMORES

SEA CALM - SCATTERED CLOUDS.

TUCKER TRAWL, 1300 M WIRE OUT ESTIMATED DEPTH 600 M.

STERNOPTYCHIDS; CYCLOTHONE; MYCTOPHIDS; ONE SMALL
IDIACANTHUS; FEW SHRIMPS & ISOPODS; PYROSOMES

Collector __________________________  Recorder ______________________
Sta. No. 148  Date 18/VII/64  Time 1500-1630  Field No.  

Lat. 12°07'S.  Long. 44°20'E  Chart U.S.H.O. 3826 (1st Ed)

Locality NORTH SIDE OF ANJOUAN ISLAND, COMOROS.

SEA CALM, SCATTERED CLOUD.

TUCKER TRAWL 1300 M. WIRE OUT. ESTIMATED DEPTH 600 M.

SEVERAL DEEP SEA FISHES IN FINE CONDITION: LARGE
CHAULIODUS; LARGE DIACANTHUS; OPISTHOPROCTUS; MALACOSTEUS
BATHYDILLA; GONOSTOMA; MYCOPHIDS; CYCLOTHONE; SQUID
STERNOPTYX; MEDUSA (?ATOLLA); Ctenophores (?BOLINIA)
SHRIMPS; AMPHIPODS; PYROSUME; HETEROPOD, ETC.

ONE MONACANTHID (CAUGHT ON WAY UP NEAR SURFACE)

Collector  Recorder
Sta. No. 149  Date 18 VII 64  Time 1900 - 2100  Field No. 

Lat. 12° 10' S  Long. 44° 23' 30" E  Chart British Admiralty 2066 (Ed. 1955)

Locality at anchor off Mataramuda, Anjouan, the Comoro, using dipnet under night light, brilliant moonlight from half moon.
Collection: 2 species of squid

- Hyloteuthis
- megalepopus
- small shrimps
- assorted fish - all small

Collector ______________________  Recorder Larry C. Oglesby
Sta. No. 150  
Date 18/11/64  
Time  
Field No.  

Lat. 12°08'9  
Long. 49°22' E  
Chart U.S.H.O 3826 (reduced)  

Locality NORTH OF ANJOUAAN ISLAND, COMOROS. DEPTH 1300 M.  

FISH TRAP SET 1630 HRS/17/11/64 - RETRIEVED 0900 HRS. 19/11/64  
ENTRANCE FUNNEL REVERSED WHEN IT SURFACED.  

CATCH: 1 SHARK (EUPROTOMICUS)  
4 LARGE SHRIMP  
SEVERAL AMPHIPODS ON BAIT.  

Collector  
Recorder
Sta. No. 151  Date 19/VII/64  Time 1300-1500  Field No. 

Lat. 12° 10'30" S.  Long. 44° 21'E.  Chart U.S.H.O. 3826 (1st Ed.)

Locality: JUST WEST OF ABANDANI, NORTH COAST OF ANJOUAN ISLAND, COMORES,

CORAL REEF CA 100 YARDS OFF SHORE; REEF FLAT CA. 2 M DEEP, DROPPING OFF ABRUPTLY FROM LIP. CUT BY SHEER-WALLED SURGE CHANNELS CA 10 M WIDE AND TAPERING IN TO NOTHING. THESE WITH FLAT BOTTOMS OF BLACK BASALTIC SAND AT ABOUT 6 OR 7 M. LIGHT SWELL, VERY LITTLE CURRENT, VISIBILITY CA 20 FT. POISONED, 10% FORMALIN IN SEA WATER.

FELID (2); PLOTONIDAE (1); SYNODONTIDAE (1); FISTULARIIDAE (1);
HOLOCENTRIDA (4); APOGONIDAE (CA 6); POMACENTRIDA (CA 5);
HOLACANTHIDAE (1); MULLIDAE (CA 3); SERRANIDAE (CA 3); LABRIDAE (1); ACANTHRIDAE (3); MONACANTHIDAE (2); CIRRHITIDAE (9);
SCORPAENIDAE (CA 5); PLATYCEPHALIDAE (1); ZANGLIDAE (1);
TETRAODONTIDAE (1); CANTHIGASTERIDAE (2); BROTULIDAE (1);
BLENNIIDAE (CA 4); TRIPTYERIIDAE (1); GOBIIDAE (1); ANTEMARIIDAE (1). TOTAL SPECIES CA. 55

Collector Bolin & PARTY  Recorder Ralph Bolin
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<th>Depth</th>
<th>Catch</th>
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<td>152</td>
<td>19/11/64</td>
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<td>NORTH OF ANJOUAN ISLAND, COMOROS</td>
<td>800 M. DEPT</td>
<td>1 CONGER EEL.</td>
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Sta. No. 153  Date 20/11/64  Time 1200-1315  Field No. 

Lat. 12°08' S  Long. 44°22' E  Chart U.S.N.O. 3826 (1st ed.)

Locality NORTH OF ANJOVAIN ISLAND, COMORES; DEPTH OF WATER 1300 M.

TUCKER TRAWL. 1300 M WIRE OUT. ESTIMATED DEPTH 600 M.

Collector ___________________________ Recorder ___________________
Sta. No. 154. Date 20/11/64 Time 1400 - 1515. Field No. 12°08'N Long. 44°20'E Chart U.S. H.O. 3826 (1st Ed)

Locality NORTH OF ANJOON ANNEND COMORES, WATER 1300 M DEEP. TUCKER TRAWL, 1300 M WIRE OUT. ESTIMATED DEPTH 600 M.

CHAULIODUS (USED FOR MUSCLE); BATHYLYLLA (USED FOR MUSCLE SAMPLE);
OTHER SMALL MELANOSTOMIATIDS; ARGYROPELEUS; CYCLOTHONE; SAGITA;
HETEROPODS; SQUID; PYROSOMA; EUPHAUSIDS; ETC.
Sta. No. 155      Date 20/11/64      Time  ___________  Field No. ___________  

Lat. 12°08'S  Long. 44°22' E  Chart U.S.H.O. 3826 (1st Ed)  

Locality  NORTH OF ANJOUAN ISLAND, COMOROS. 700 M.  

FISH TRAP SET 1150 HRS. 20/11/64 RETRIEVED 1100 HRS 21/11/64.  

CATCH:  1 CONGER EEL  
4 RED SHRIMPS.  

Collector  ___________________________________ Recorder  ___________________________________  

Ralph P. Behn
Sta. No. 156  Date 21/11/64  Time 1115-1230  Field No. 

Lat. 12°08'S  Long. 44°22'E  Chart U.S.H.O. 3826 (1st ED)

Locality NORTH SIDE OF ANJOUAN ISLAND, COMOROS. SUNNY. TUCKER TRAWL, 1300 M WIRE OUT. ESTIMATED DEPTH OF NET 600 M.

POOR HAUL. 2 LARGE ARGYROPELECUS (USED FOR MUSCLE SAMPLES) AND SEVERAL SMALL ONES; A FEW MYCTOPHIDS; SMALL CYCLOTHONE; PYROSOMA; EUPHAUSIDS; CHAETOGRAPHES, ETC.
Sta. No. 157  Date 21/11/64  Time 1400-1530  Field No. ____________

Lat. 12°08' S  Long. 44°20' E  Chart U.S.N.O. 3826 (STED)

Locality NORTH OF ANJOUAN ISLAND, COMOROS, SUNNY.

TUCKER TRAWL, 1500 M. WIRE OUT  ESTIMATED DEPTH OF NET 750 M.

CATCH. OPISTHOPROCTUS (2 SPECIMENS USED FOR MUSCLE SAMPLES AND VISCERA EXAMINED FOR HELMINTH PARASITES); GONOSTOMA (ONE EXAMINED FOR HELMINTHS); (?) DANAPHOS; MYCTOPHIDS; ARGYROPELEUS; EUPHAUSIDS; PHRONIMAI; SIPHONOPHORES, ETC.

Collector ___________________________ Recorder ________________________
Sta. No. 158  Date 21/VII/64  Time  Field No. 

Lat. 12°08' S  Long. 44°21' E  Chart U.S.H.O. 3826 (1st Ed)

Locality NORTH OF ANJOUAN ISLAND, COMOROS.  750 M.

FISH TRAP SET AT 1545 HRS. 20/VII/64, RETRIEVED AT 1600 HRS. 21/VII/64.

TOTAL CATCH. 9 RED PRAWNS

Collector _________________________ Recorder _________________________
Sta. No. 559  Date 22/11/64  Time 1000 - 1130  Field No. 

Lat. 12°08'N  Long. 44°22'E  Chart U.S.N.O. 3826 (1st Ed)

Locality NORTH OF ANJOUAN ISLAND, COMOROS.

TUCKER TRAWL - 1500 M WIRE OUT  ESTIMATED DEPTH OF NET 750 M.

RATHER POOR CATCH: 1 OPISTHOPROCTUS (USED FOR MUSCLE SAMPLE & HELMINTHS); CYCLOTHONE; MYCTOPHIDS; RED SHRIMPS; MEDUSAE; CHAETOGRATHS, ETC.
Sta. No. 160  Date 23/11/64  Time ___________________  Field No. ___________________

Lat. 12°09' S.  Long. 44°23' E  Chart U.S.H.O. 3826

Locality MUTSAMUDU, ANJOUAN, COMORE ISLANDS.

3 SPECIMENS OF (? )RUVEITUS

PURCHASED FROM ZEMA (LOCAL FISHERMAN), CAUGHT ON HOOK & LINE

Collector ZEMA  Recorder  (Signature)
Sta. No. 161  Date JULY 31, 1964  Time 0900  Field No. 

Lat. 13°24'30"S.  Long. 48°18'30"E.  Chart BRITISH ADMIRALTY 706 1960 ED. IN BAIE D'AMBANORO.

Locality  AT ANCHOR, NOSSI BE, MADAGASCAR.  DEPTH OF WATER 15 FMS.

ECHENEIS NAUCRATES, ATTACHED TO CARCHARHINUS LEUCAS

Collector __________________________  Recorder __________________________
Sta. No. 162  Date 5/VII/69 Time 1100-1230  Field No. 

Lat. 13°41'22"S. Long. 48°10'27"E. Chart BRITISH ADMIRALTY 706, 1960 Ed. 

Locality SMALL STREAM ENTERING DAIE D'AMPASIDAVA, MADAGASCAR (NEAR MAROKIBAHI) 

A POOL CA. 80 M. LONG X 8 M. WIDE WITH A MAXIMUM DEPTH OF ABOUT 1 M. AT THE UPPER LIMIT OF TIDAL INFLUENCE. BOTTOM OF SAND AND MUD. PROBABLY A LAYER OF SALT WATER UNDER A SURFACE FRESH-WATER LAYER POISONED 

CATCH: HEMIRHAMPHIDAE (XENARCHOPTERUS); AThERINIDAE; PliTOSIDAE; SYNGNATHIDAE; AMBASSIDAE; GERRIDAE (3 SPECIES); POMACENTRIDAE; LUTJIANIDAE; SERRANIDAE; ELEOTRIDAE (CA. 3 SPECIES); GOBIIDAE (CA. 6 SPECIES); TALNIO-GOBIIDAE; PERIOPTHALMIDAE; BLENNIIDAE. CA. 23 SPECIES OF FISHES PLUS VARIOUS SHRIMPS AND CRABS. 

Collector BOLIN & PARTY  Recorder RALF BOLIN
Sta. No. 163  Date  5/VIII/64  Time  1245-1330  Field No.  
Lat. 13° 41' 24" S  Long. 48° 10' 28" E  Chart  BRITISH ADMIRALTY 706 ED. 1960  (NEAR MAROKIBAN)  
Locality SMALL STREAM ENTERING BAIE D'AMPASINDAVA, MADAGASCAR (MAROKIBAN)  
A pool ca. 60 cm x 60 cm with a maximum depth of 1 m, definitely above tidal influence. Bottom rocky and sandy, area shaded by overhanging trees. Flow of water very slow. Poisoned.  
CATCH: ANGUILLIDAE; AMBASSIDAE; ELECTRIDAE (ca. 4 species); Gobiidae (ca. 7 species of fishes) + 1 species of fresh water shrimp.  

Collector BOLIN & PARTY  Recorder Bolin
Sta. No. 164  Date 7/11/64  Time 0630-0730  Field No. 

Lat. 13°20'50"S  Long. 48°19'50"E  Chart BRITISH ADMIRALTY 706, 1960 ED.

Locality BAIE D'AMBATOZAVAVI, NOSSI BE, MADAGASCAR.

VERY SOFT MUD FLATS OUTSIDE OF MANGROVES, WATER CA 1 FT DEEP, LOW TIDE, DISTANCE TO SHORE 200 YARDS.

TAKEN IN MINNOW SEINE WHILE FISHING FOR SHRIMPS.
Sta. No. 165 Date 7/11/64 Time 1400-1515 Field No. 

Lat. 13°29'00"S Long. 48°14'45"E Chart BRITISH ADMIRALTY 706 1960 ED.

Locality TANIKELY, A SMALL ISLAND SOUTH OF NOSSI BE, MADAGASCAR

CORAL PATCHES ON SAND BOTTOM, DEPTH 1-6 M, CA. 200 M FROM SHORE. TIDE RISING, CURRENT RATHER STRONG - DISSIPATED THE POISON USED SO RAPIDLY THAT IT HAD LITTLE EFFECT. SURFACE SO CHOPPY THAT FISHES THAT DID FLOAT COULD NOT BE SPOTTED. STATION ALMOST A PERFECT FLOP

POMACENTRIDAE (6); APACONIDAE; SYNODONTIDAE; SERRANIDAE (2);

LABRIDA (CA. 4); PSEUDOCROMIDAE; TRIPETRYGIIDAE; BLENNIIDAE (CA. 5)

CA 20 SPECIES; VERY FEW SPECIMENS

Collector BOLIN & PARTY Recorder ROLPH BOLIN
Sta. No. 166  Date 11/06/64  Time 0940  Field No. 

Lat. 13° 26' 00"S  Long. 48° 17' 06"E  Chart BRITISH ADMIRALTY 706 1960.E0 

Locality 150 METERS OFF OF POINT LOKOBE, NOSSI-BE, MADAGASCAR; BOTTOM SPOTTY CORAL; DEPTH 4-6 M; CAUGHT ON FEATHERED JIG: ONE CHIROCENTRUS DORAB, LENGTH 63 CM.

Collector D. J. RAIDT  Recorder D. J. RAIDT
TE VEGA EXPEDITIONS
STANFORD UNIVERSITY

Sta. No. 167 Date 16/VIII/64 Time 0040 - 0105 Field No. ____________

Lat. 12°03' S Long. 44°25' E Chart USHO 3826

Locality NORTH OF ANJOUAN ISLAND, COMOROS

TUCKER TRAWL, 600 M. WIRE OUT, ESTIMATE DEPTH 300 M.

GONOSTOMATIDAE; STERNOPTYCHIDAE; CHAULIODONTIDAE; MYCTOPHIDAE;
PYROSOMES; SHRIMPS; CTENOPHORES; SIFONOPHORES

Collector ________________________________ Recorder ____________________
Sta. No. 168  Date 16/IV/64  Time 0115-0210  Field No.  __________

Lat. 12° 04' S.  Long. 44° 23' E  Chart USNO 3826

Locality  NORTH OF ANJOVAN ISLAND, COMOROS

TUCKER TRAWL, 900 M WIRE OUT, ESTIMATED DEPTH OF NET  400 M.

GONOSTMATIDS; CHAULIODONTIDS; STERNOPTYCHIDS; MYCTOPHIDS; PYROZOMES
CTEOPHORES; SHRIMPS ETC.

Collector __________________________________ Recorder ____________________
Sta. No. 169  Date Aug 16, 1964  Time 15:30  Field No. 

Lat. 12°10' S  Long. 44°24'31" E  Chart ANJOUAN ISLAND, COMOROS

Locality 100 Yds E of MUTSAMUDU DOCK 10 METERS DEEP

Specimen shot by R.C. LASIEWSKI, with SPEAR GUN

COLOR PHOTOS TAKEN UNDER WATER BY D. EVANS

SCORPAENID (SCORPAENOPSIS SP.)
Sta. No. 170  Date 16/VIII/64  Time 2325-2400  Field No.  

Lat. 12°08'S  Long. 44°23'W  Chart U.S. N.O. 3826

Locality NORTH OF ANJOVAN ISLAND COMOROS, TUCKER TRAWL, 100 M WIRE OUT. ESTIMATED DEPTH OF NET 50 M. 

DEPTH OF WATER 700 M.

CATCH LARGELY LARGE SIFONOPHORES AND PYROSMES, A FEW SMALL MYCOTOPHIDS, LEPTOCEPHALID, ETC.
Sta. No. 171  Date 17/VIII/69  Time 0015-0115  Field No. 
Lat. 12°07' S  Long. 44°22'E  Chart U.S.N.C. 3826
Locality NORTH OF ANJOVAN ISLAND, COMOROS. TUCKER TRAWL
900 M. WIRE. ESTIMATED DEPTH OF NET 450 M.
GONOSTOMA (USED FOR MUSCLE SAMPLES) MYCTOPHIDS;
PYRODOMES; SIPHONODRACES; SHRIMPS
Sta. No. 172       Date 17/VIII/64       Time 0125-0210       Field No. _________
Lat. 12° 07'S    Long. 44° 23'E       Chart USNO 3882
Locality NORTH OF ANJOUAN ISLAND, COMOROS. TUCKER TRAWL, 900 M WIRE, ESTIMATED DEPTH 400 M.
Sta. No. 173  Date 18/VIII/69  Time 1030  Field No. 

Lat. 12°09'S  Long. 44°23'E  Chart USHO 3826

Locality AT ANCHOR OFF MUTSAMUDU, ANJOUAN ISLAND, COMOROS

DIP NETTED, EVIDENTLY ATTRACTED BY HULL OF SHIP

TWO SMALL BLENNIOIDS.

Collector  BROWNING  Recorder  ROGER B. COLE
Sta. No. 174 Date 18/VIII/64 Time 1900-2200 Field No. 

Lat. 12°07'S Long. 49°22'E Chart USHO 3826 

Locality NORTH OF ANJOUAN ISLAND, COMOROS, TUCKER TRAWL, 1000 M WIRE OUT. ESTIMATED DEPTH OF NET 500 M. (3 NET HAULS AT SAME PLACE COMBINED DUE TO SHORTAGE OF SUITABLE CONTAINERS)
Sta. No. 175       Date 19/viii/64       Time 1230 - 1530       Field No._______

Lat. 12°06'S       Long. 44°21'E       Chart USHC 3826

Locality NORTH OF ANJOUAN ISLAND, COMOROS.

TUCKER TRAWL, 1200 M. WIRE OUT. ESTIMATED DEPTH OF NET, 600 M. (4 NET HAULS AT SAME PLACE COMBINED DUE TO SHORTAGE OF SUITABLE CONTAINERS)

Collector ________________________ Recorder ________________________
Sta. No. 176  Date 19/VIII/44  Time 1300  Field No. 

Lat. 12° 11'S  Long. 44° 19'E  Chart YSIO 3826

Locality 5 sea miles west of Mutsamou, Anjouan, Comores; along north coast of island. Coral reef approximately 1/4th mile off shore. 3 meters depth.

1 Pteroïs sp. spotted

Photographed under water by P. Rudy + out of water by D. Evans.

Collector  David H. Evans  Recorder  David H. Evans
Sta. No. 177  Date 20/7/64  Time 1600-1930  Field No.  
Lat. 12°06'S  Long. 44°22'E  Chart USHO 3826  
Locality NORTH OF ANJOUAN ISLAND, COMOROS.  
TUCKER TRAWL, 1650 M WIRE. ESTIMATED MAXIMUM DEPTH 900 M. (3 NET HAULS AT SAME PLACE COMBINED DUE TO SHORTAGE OF SUITABLE CONTAINERS.)
Sta. No. 178  Date 21/VI/64  Time  Field No. 

Lat. 12°09'S  Long. 49°23'E  Chart U.S. H.O. 3824

Locality MUTSAMUDU, ANJOUAN ISLAND, COMOROS

PURCHASED FROM LOCAL FISHERMAN

Collector ___________________________ Recorder ___________________________
Sta. No. 179  Date 21/viii/04  Time 0900 -1030  Field No. 

Lat. 12° 10'S  Long. 44° 23'E  Chart U.S.H.O. 3826

Locality NORTH COAST OF ANJOVAN ISLAND, COMOROS.
"ROOM" OR POCKET IN CORAL REEF, ABOUT 10X10'M. AND
ABOUT 10 M DEEP WITH THREE NARROW OPENINGS, WALLS
VERTICAL AND EXTENDING TO WITHIN 1M. OF SURFACE.
BOTTOM OF SAND.

CATCH: NARCOBATIDAE; SYNODONTIDAE (2); AULOSTOMIDAE;
SOLENOSTOMIDAE; HOLOCENTRIDAE (5, INCLUDING MANY MYRIPRISTIS
PRALINIUS AND ONE M MURDIAN); AHERINIDAE; APAGONIDAE (CA. 5);
SERRANIDAE (CA. 7); PRIACANTHIDAE; MULLIDAE; PEMPHRIDAE;
POMACANTHIDAE (2); CHAETODONTIDAE (CA. 4); POMACENTRIDAE (CA
12); LABRIDAE (CA. 10); CIRRHITIDAE (2); SCORPAENIDAE (CA. 6); ZANCIDAE;
ACANTHURIDAE; BLENNIIDAE (CA 5); CLINIDAE; TRIPTYERYGIDAE;
BROTULIDAE (2); CALLIONYMIDAE; URANOSCOPIDAE; CANTHIGASTERIDAE
(3); OSTRACODONTIDAE (?2); ANTENNARIIDAE; FELS (CA. 6).

ABOUT 110 SPECIES TOTAL.

Collector BOLIN & PARTY  Recorder E. F. BOLIN