

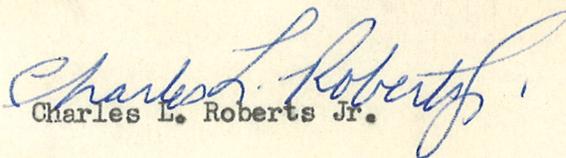
CAPE HALLETT, ANTARCTICA

January 1959

MONTHLY METEOROLOGICAL REPORTS

These reports are extracted from notes, communications, and my diary. They are objective and critical and are not intended to convey anything more than a reporting of the things considered reportable for the months work. The reports are not intended to supplant the final report that will be made at the end of the years work. Nor are the various things I intend to put into the monthly reports ~~xxx~~ to be regarded as suitable material for a final report.

Please excuse the typing and spelling errors. These are only rough notes and little attempt is made to keep them in perfect form. Besides, I'm not a good typist or speller.


Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

February 1959

METEOROLOGICAL REPORT FOR JANUARY 1959

1. GENERAL.

We arrived at midnight 11 January 1959 and were met by Norm Benes and the 3 Aerographers who had wintered over. All were extremely cooperative in turning the meteorological and aerological programs. There was a 5 day turn-over period. This was considered sufficient time to accomplish the various tasks required in effecting the turn-over. It was much better than the previous turn-over. In general most items of the routine were covered and all of us new ones were carried thru the specific routine of learning to charge the hydrogen generator by a member of the old group. Also shown tricks of the trade in the rest of the radiosonde program. This was very much appreciated since the 4 of us had to relearn many things were were taught some 6 months earlier. By the 16th of January, we were in full charge.

During the rest of January, sorting of supplies, planning the catches, and storing of equipment was accomplished. The observation routine gradually shook down into a 1 in 3 watch for the aerographers, while I stood all the midnight soundings and assisted on each day sounding. We were having our problems getting successful flights due to a variety of reasons. For some reason, the quality of the 600 gram balloon was poor resulting in low altitude bursts. Several flights had to be completed with second or third releases due this reason. The conditioning method in use was non existent, simply what heat the balloon gathered from the temperature of the inflation shelter. This was resolved by the construction and installation of an electric conditioner in the Jet heater building supplying heat for the inflation shelter. Higher burst were immediately secured. Additional improvements were noted when the new balloons were broken out of their packing cases and used. The 800 gram general purpose balloon was found to be much superior to the 600 night balloons in use when we arrived and to the new 600 gram night balloons. No 600 general purpose balloons were sent to the station.

The use of 800 gram balloon immediately presented new problems for release. The inflation room was originally designed to accommodate 500 gram balloons used during DF-II. During DF-III, 600 gram balloons were used in the same room. However, it was touch and go as there was seldom more than 8 ~~xxx~~ inches clearance on the sides of the room when the balloon was inflated. Release was difficult and even more so whenever the winds were blowing. The room was 8 by 10 feet and 12 feet high. Many balloons were lost while exiting thru the walk-out doors, which added greatly to the time required by all hands for radiosonde observations. Inflation of the 800 gram balloon was nearly impossible in this room. Accordingly plans were made to enlarge the room in early February.

Another cause of poor results in radiosonde flights was due to the

batteries . For one reason or another, most flights if extending to a good altitude would be lost due to fading signals. ~~When~~ When the new batteries were broken out, flights began to be followed to burst. The remainder of the old batteries were placed aside to be used with flights during limiting angle conditions that occur later in the year.

A third cause of poor results in flights lies in the GMD set itself. Norm assured me that the set is in good working order and I haven't considered the problem further. But continual loss of balloons due to fading signal indicates the sensitivity of the GMD receiver may be low. I hope that I will have time to correct or look into this in February. The set itself is only 50% effective, ie: only 1 receiver and 1 antennal control ~~unit~~ unit are operational. The control unit can be placed into operation without too much difficulty but the receiver must have extensive work by ~~me~~ the electronics engineer or technician (the New Zealander or the Navy man.)

In spite of the difficulties encountered, no flights were missed. At first the heights of terminations were low. As each improvement was incorporated heights ~~increased~~ increased until we were getting them above 25 KM. We were quite proud of the fact that we broke the station record before the month was out. Previous high of 14 mbs was exceeded by 2 mbs and altitude of 100,561 feet recorded. I feel that this is a prelude to better things to come.

Fortunately, the surface program presented few problems. The major one was getting use to the Antarctic code. This required a bit of thinking on the part of all of us. The thermoscreen was repainted and guyed down. The wind deflectors were installed around the snow gage. They had not been use for some time and were found laying about the area, probably blown down at some time during a storm.

The radiation program was carried on essentially as Norm Benes had it set up with the exception that the radiometer was turned to the prevailing downwind direction. This was accomplished by rotating the supporting board on which the instrument and the pyrheliometers were mounted 180 degrees. The radiometer was pointed directly upwind when I arrived and reoriented downwind per the directive received in January.

The Navy support group did quite a bit of blasting near the buildings in order to erect the new communications building and set poles for the new antenna farm. These blasts disrupted the radiation program and the sunshine switch. Consequently, the continuous records became discontinuous for some periods during January.

Weatherwise, January was rather good to us. The climate was generally mild for this area which aided in outdoor work. Winds were light for the most part and almost no snow fell after our arrival.

2. PERSONNEL

Those who work directly or indirectly in the meteorological program are:

Bill Slagle, AG2, senior aerographers mate.
Ken Lawson, AG2, and Frank Davis, AG3 both aerographers

Hap Loveless ET1 Electronics man responsible for maintenance of GMD.

2. The others who are wintering over this year:

Lou Jones, Seismology and Geomagnetism, Deputy Scientific Leader
Alex Black, Ionosphere and Electronics
Brian Reid, Biologist and Aurora

Dr. Albert Bridgman, O-I-C
Chief Bronston Beavers, mechanic
Smitty, cook
Al Spangler, Electrician
John Hendricks, Utilities
Charles Wilson and John Chedister, radio

3. SPECIFICS

SURFACE PROGRAMS. Temperatures averaged -0.9°C with 8.3°C and -8.3°C the high and lows recorded. 4.7 inches of snow fell although it didn't last very long. Surface winds were predominately SSW and averaged 9 knots.

UPPER AIR PROGRAMS. 61 flights averaged 20358 meters with the 1200Z sounding of 31 Jan reaching 12 mbs, 30639 meters. Reflecting the use of new expendables is the fact that the latter half of the months average was nearly 4 km higher than the first half. However, 50% of the flights terminated due fading signal. The best slant range was 44 ~~kilometers~~ nautical miles on a flight reaching 26 mbs, 83,081 feet. 1 sounding lost due station power failure.

EQUIPMENT EXPENDED.

101 batteries
70 600 gram balloons
72 modulators
72 transmitters

4. REMARKS.

The wintering over group as a whole has a good spirit and most willing to accomplish their tasks. Apparently no potential trouble makers. We all want to clean up the base and make it a better place to live in. It is evident that I will have to keep rather firm control over the ~~meteorological~~ meteorological program as there isn't any apparent outstanding leadership qualities evident among the aerographers. They will require pushing to keep their enthusiasm for the work at hand. The Navy electronics man as me worried as he is free to admit that he has no interest in the GMD gear. I'll probably have to do a lot of maintenance work myself in order to keep the upper air program going.

I've been unable to locate the modified radiosondes to be used in the airborne net radiation program.

Charles L. Roberts Jr.
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CAPE HALLETT, ANTARCTICA

March 1959

METEOROLOGICAL REPORT FOR FEBRUARY

1. GENERAL

The weather continued generally good thru the month although the skies were mostly cloudy. 1 storm passed the station giving us a sample of the winds we may expect later on. Gusts to 92MPH were recorded.

The meteorological personnel continue to work long hours each day in order to accomplish all tasks. The aerographers continued a 1 in 3 watch and I continued to take each evening sounding and assist with every day sounding. My work day continues at the 18 to 22 hours per day pace from January. The aerographers work load was reduced when a number of duplications of records were discontinued. Permission was sought from and granted by COMNAVSUPFOR ANTARCTICA to duplicate certain required navy records with the USARP KODAK MICROFILE COPY CAMERA.

A large number of repairs to various ~~pieces~~ ^{pieces} of equipment were required and I found myself frequently either repairing or taking a sounding. There was little time for any other jobs. For the most part all programs continued with but short interruptions.

UPPER AIR PROGRAM.

The inflation room was enlarged to accomodate inflation of 800 gram balloons. The room was widened to 11 feet. Unfortunately, the ceiling couldn't be raised as this was beyond the abilities of myself. The work was done largely by myself with some assistance by the aerographers. The support group was busy with other station work and couldn't spare the time to accomplish this task. 3 days were required but no soundings were lost. The room is now large enough to inflate the balloons without fear of bursting on the walls. It began to pay off when we released in a fairly stron wind and got out and away safely. However, at above 25 knots balloons continued to be broken on release. Something more was required.

To further increase the chances of success of rãlease, I perfected a technique of releasẽing with a shroud. The release is made with only 1 man handling the shroud, balloon, and modulator. A second or third man opens the inflation room drawers. This shroud releasing of hydrodgen balloons proved safe and very effective. Some releases were made in winds above 50MPH. Generally, we could get out of the inflation room with the balloon in the shroud in most any strength of wind. However, at rather strong winds (around 50 knots or higher) the balloon would be ripped to sãhreds after release by the surface turbulnce. A separate paper describing this technique will be submitted with the final meteorological report.

The upper air program was discontinued twicethis month due trouble with the GMD set. Thes stoppages could have been avoided if both ~~the~~ receivers

and antennal control units were operational as I desired. However, they were not and as a consequence, when the oscillator tube in the operational receiver failed, the program terminated until the electronics man could effect repairs. This was his first time replacing this type of tube and tuning this type of high frequency oscillator. 3 soundings were lost before the receiver was operational again. Prior to this, soundings were terminating at lower and lower altitudes due fading signal. This was of course due lost of sensitivity of the receiver. After repair, only 1 flight lost due fading signal, and we were following the modulators to burst.

The second interruption was due to repair of the operational antennal control unit as the tracking had become erratic. Principal fault was found in the trytron or ~~me~~ driving tubes for both elevation and azimuth control. Other tubes were at fault also. At this time, I checked and tuned the second antennal control unit and returned it to operational basis.

During this period, the new Control recorder was installed. Maintenance was also required of the TMQ*5 and the baseline check box. Trouble shooting of the L&N Recorders and the control pannel for the sunshine switch and Esterline Angus Recorders was done.

Comparative Rawin-Theodolite observations were attempted twice but without success, due shortness of the flights. Skycover and time prevented a 3rd attempt.

The question of classifying winds doubtful when tracking within 12 degrees of obstructions or horizon was raised by Herb Hansen. The problem was resolved when the problem was presented the ~~the~~ POP staff.

Limiting angles entered into 6 flights this month. These flights were terminated when limiting angles were encountered and as a consequence the monthly average was lowered. It was noted that the rasonde portion of the flight appears satisfactory even after the angles have been reached. However, the recorder record wasn't evaluated.

SURFACE PROGRAMS

There were no particular problems in surface observations. Snow was collected in measurable amounts this month and for the first time since our arrival. I feel that this is due in part to the deflectors set up as mentioned in last months report. Since snow is blown away soon after it falls here at Hallett, I decided not to install snow stakes. From what I got from Benes, snow doesn't accumulate to any great extent here at Hallett.

RADIATION PROGRAMS

The plate of the B&W Hemispheric Radiometer was repainted with Parsons black. It is also noted that since reointation of the instrument, the traces of temperature in steady during winds whereas before the trace became unsteady.

Unfortunately, the thermopyke of one of the pyrheliometers was found broken and reported to POP. Damage was probably due blasting although

the instrument was working perfectly when I removed protective covers. Someone may have jarred the mounting also. The instrument was returned to the Central Office aboard the USS Staten Island in March.

The modified radiosondes used for special airborne net radiation flights were discovered. However, only 10 were received instead of the 20 that I thought were coming. Although Mr Kuhn said that 20 were being sent, I believe he may be mistaken. Originally only 10 were to be sent. Suspecting this and not being able to locate the remaining 10, I sent a query to Posey at Pole station. He received only 20 vice 30 instruments. Consequently, I suggested a modified release schedule which was approved with the exception of the first release at the pole.

Considerable amounts of time were required to scale the radiation records, time which I found hard to spare. However, with a bit of practice and experience I was able to keep up with the minimum requirements for these programs. I have a lot of back records to do but these will get done as March progresses.

2. SPECIFICS.

Surface. A total of 12.6 inches of snow recorded. Skies generally overcast with either a low stratus or mid altocumulus predominate. 27 of 28 days were classified as either cloudy or partly cloudy. Temperatures averaged -3.9°C with 2.2°C and -6.7°C as highs and lows. Winds were predominately SSW and averaged 15.8 knots.

UPPER AIR. 48 flights averaged 19092 meters. Of these 48, 16 terminated due fading signals and 6 due limiting angles. Otherwise the average was 23493 meters. 5 Observations cancelled due ground equipment failure and 2 due high surface winds. The best slant range was 34.4 nautical miles on a flight reaching 14 mbs, 95,377 feet.

EQUIPMENT EXPENDED.

58 Batteries
36-600 gram balloons and 22 800 gram balloons
63 modulators
62 transmitters

3. REMARKS.

This month I found that I had to push and push and push the aerographers in order to keep their interest up in the job at hand. Many solutions to this problem were tried, mainly in obtaining more time off for them at the expense of time off for myself. However, to insure that each sounding is carried out I find that I must be present. Otherwise, I don't feel that every effort may have been made to get the very most out of each flight. The problem is not solved and I may resort to taking each sounding, thus permitting more off time for the aerographers. I also find a lax attitude about getting observations off on scheduled times. This extends to surface observations as well. I find I must do much more than I would normally expect in order to keep the observations ~~factual~~ honest and accurate. I have never experienced this attitude with aerographers before in my Naval career so I'll have to find my own solutions.

Charles L. Roberts Jr.
Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

April, 1959

METEOROLOGICAL REPORT FOR MARCH

1. GENERAL

The Staten Island arrived on the 6th and after 4 hours departed. John Hauser, driver, joined our group to winter over. He had been at McMurdo since the previous October. Mail and provisions were delivered. With the ships departure, we entered our long isolation period.

Aerological supplies were inventoried and the resupply message submitted.

3 major storms passed the station this month. During the storm of the 27th to 29th, the meteorological tower was very nearly blown down. Only its own weight and a single guy wire were holding it up. Both the totalizing anemometers and wind vanes mounted on the tower were damaged. Also, the Bendix aerovane and tower were nearly blown down. The tower for the Bendix was bent. On the 30th, I began the job of repairing all instruments and realigning the towers, completing the job in early April.

Hours for aerological and meteorological work continue to be long and arduous, with the strain telling on the aerographers. The strain is reflected in their work and desire to do the observations in a proper spirit. The watch bill was modified and altered but remained essentially a 1 in 3 for the aerographers and myself taking all night soundings plus assisting the day sounding. These observations are in addition to my other jobs and the sum total constitute a work day exceeding 16 hours every day of the week.

The operational receiver in the GMD set lost its ability to receive signals below 18 CPS and required extensive repair. During the repairing, an idea was kicked around by myself, the New Zealand technician, and the Navy technician about the possibility mounting 2 thermistors in parallel on the modulator. The effect is to shift the temperature up scale about 10 to 15 ordinate values, without effecting the humidity trace. This will permit a more accurate recording of the low temperatures that will soon be recorded. A ground test was conducted and the temperatures recorded accurately over a range of 40 C. A flight test was made by releasing a modified instrument immediately after the official observation had terminated. Temperatures at various levels compared very favorably, with the small differences at the lower side attributed to changes at these levels which occurred between flights. However, an accurate and close controlled test couldn't be carried out at this station to determine exactly how accurately temperatures were being recorded. But, encouraged by these preliminary results, I submitted the proposal of twin thermistors for military modulators to POP for evaluation. No further tests were made.

Considerable electronics troubles were experienced with the GMD set during the first half of the month. The trouble noted above couldn't be

corrected by the Navy technician without extensive repairs and time consuming delays. Therefore, the spare receiver (unused since it was not operational) was reconditioned. The oscillator assembly was transferred from one receiver to the other. The response of the receiver to low CPS was as it should be. In addition, I tuned all other components of the GMD set. Finally, the set was in excellent condition. Fading signal terminations no longer occurred. The set could follow a modulator to extreme slant ranges as it was designed for.

Noting the above, I came to the conclusion that the fading signal problem that had been experienced here at Hallett for some time before I arrived and while we have been here was in fact due to the rather poor condition of the set. Apparently only the absolute necessary maintenance was done previously. Therefore, I have established a routine of checking and tuning the gear at least once a month. This will be done by myself as the Navy technician will not take the time to keep the gear in tip top shape. Checking consists mainly of testing and replacing tubes and adjusting various controls to insure that the sensitivity is correct. I believe that this will obviate future ground equipment failures except major ones which require the services of someone more experienced than myself. However, if the troubles lie in the receiver, a sounding will be missed, since the spare receiver isn't and probably won't be repaired.

Some difficulty was experienced with the new control recorder. Adjustments of the micro-switches was required and also adjustments to the azimuth and elevation units were required. The baseline check box was replaced due to electrical leakage in the old one. This leakage couldn't be eliminated. The pen lifter circuit in the TMQ-5 was overhauled. The safety valve on the hydrogen generator was also overhauled.

The 800 gram balloon was used for the majority of flights. These are superior to the 600 gram night balloons in that higher bursts result. However, the 800 gram balloon will reach the ceiling of the inflation room. To obviate loss due to breaks resulting from this, the balloons were inflated into a shroud. The shroud was allowed to drape over the balloon and hold it down while exiting. It was then permitted to slip off by its own accord and the balloon released. Between 500 and 600 grams were allowed for the shroud weight. The 800 gram balloon was found easier to release in high winds than the 600 gram balloon since it would not rip off at the neck. The 600 gram balloon would frequently rip off without any apparent reason. The 800 gram general purpose balloon would never do this.

A comparative Rawin-Theodolite observation was taken, but the results were disappointing. This was probably due to the fact that it was taken before the set was tuned (noted above) and the theodolite. There is a small amount of 'play' in the theodolite which may introduce errors. Also, the platform for taking the observation isn't too stable. However, it is the best place I could use. The results were shown to the technician but no action was taken on his part.

Extensive servicing and repairs to 2 of the L&N Recorders was required. Tuning the converter amplifier, and replacing gears to secure proper speeds of advance was the difficulty. The recorders were checked for full scale deflection as per POP directive. The thermocouples were checked with the

potentiometer. The B & W plate was repainted again.

During the month a tide gage was developed and put into operation. The gage employed a thermograph as the recording apparatus. Modification was necessary but it was finally tied into the arrangement of pullies and wheels necessary to permit the float mechanism to rise and fall. The wave action was also recorded and so the trend of the broad band trace was used to measure the high and low marks. The gage was mounted on a 'bridge' of girders placed over large ice covered rocks along the shore. The float hung down in a column of barrels set on the bottom. The rise and fall of the tide was measured at 18 inches for one day. Unfortunately, a severe storm rose suddenly and the large waves in ice free Hallett Inlet washed the bridge gage and barrels away. During this storm, waves washed up on the beach to within 10 yards of the inflation shelter. The lessons learned in the construction of the gage are being applied to a second gage which will be installed next December when the ice breaks up.

By careful arrangement, enough expendables were moved inside of the inflation building to last for about 2 months. The catch of supplies appears to be correctly planned as all snow is blown past the various items without too much accumulation.

2. SPECIFICS

4 High winds and 2 GEF occurred
56 Radiosonde observations averaged 19696 meters. 9 of these were terminated due to limiting angles. Several others terminated low due fading signals during the first part of the month. The flight on 12 March reach 10 mbs, 31008 meters. These are records for the station both for mbs reached and altitude. Best slant range 42.8 nautical miles on a flight reaching 19 mbs, 87,634 feet.

Equipment Expended

62 Batteries
54 800 gram and 8 600 gram balloons
62 Modulators and transmitters

Temperatures averaged -7.9°C with high of 2.2°C and low -17.4°C
prevailing winds were S at 10.5 knots. Peak gust of 89MPH recorded.
During one period sustained winds for over 36 hours averaged over 53 MPH.

3. REMARKS

At Posey' suggestion, a message was sent to Byrd station describing my technique of shroud releases. Apparently Weiss and company have had difficulty getting balloons out of the shelter. Weiss reply indicated his problem was not the ability to get the balloon away but to contend with drifts.

It is increasing apparent that I will not secure all the help I need from the aerographers. They are reluctant to assist in work beyond that required to take surface and upper air observations. On several occasions I have had to directly order them to assist me when I was doing various jobs. This was true when I was repairing the met tower and Bendix tower. Also during the remodeling of the office. This especially true when moving supplies. I find that unless I do the work myself, I cannot expect it to be done by the aerographers.

I also note that these men do not plan very far ahead in their work. Frequently they will use up to the last modulator before bringing in another box, inspite of my pleas and orders. This also true concerning keeping the litter and mess clean up in the inflation room.

I find that I must spend more and more time with each sounding and in the met office to insure that things are done correctly. One item that is particularly disturbing is the fact that observations will not be taken at specified times, such as 30 minutes late. The observation is then logged at the standard time. These delays are due to not getting up for the 9 o'clock observation or just staying out of the aero shack on something else without considering the observation. Quite a few 'discussions' were held on these subjects, but I donot feel that the problem is licked. I have modified the routine in order to obviate some of this and I hope that in time the men will take inough pride in their work to do as is required.

It is increasingly evident that I will not secure all the electronics assistance I desire. The navy man has quite a work load this year in that he must install a new communications center, and take care of all other electronic trouble shooting. This doesn't always leave him time to do maintenance on aerological equipment. However, he has express himself to the extent that he has very little inclination to want to work on GMD and associated equipments. Consequently, I must do the work, and I have to learn much before I can get what jobs done that need be done. If I don't do the work, then many interruptions will occur in the various programs in the meteorological program.

The above led to making several recommendations concerning next years crew which were forwarded to POP. Namely, in order to have an efficient and all around meteorological program at Hallett, the Weather Bureau should consider placing a second man who is a electronics technician. This man will be able to keep all equipment in operation and assist in upper air observations. This will greatly relieve the present work load that the MIC must bear and permit him to carry out a better overall program. In the past, the Navy has been asked to provide a 4th aerographer. However, this wouldn't souolve the problem as he would only lesson the observational load and not any other load.

If this isn't feasible, I suggested that the MIC receive some training in GMD electronics such as given at Columbia Missouri. He should also receive more training in the maintenance of L & N recorders and Esterline Angus Recorders. And a greater emphasis should be placed training in the radiation programs. All of these suggestions would have greatly eased my work load if I had received this additional training. As it is I still find myself either taking a sounding or repairing equipment or trying to catch up on back records.


Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

May 1959

METEOROLOGICAL REPORT FOR APRIL

1. GENERAL

Very fine weather prevailed thru the month. No major storms pass the station. Temperatures gradually lowered and the bay or inlet froze over. Ice growth measurements were taken which indicated that the rate of growth was about $\frac{1}{2}$ inch per day. The sea ice retained a smooth appearance and was not broken up by swell action or wind.

The aircraft beacon light was reconditioned and installed 800 feet from the rear entrance of the aerology shack. This permitted the observer to spot the light without any undue inconvenience. It has limited use due to the fact that the spot of light is dim and the clouds around are well lighted due to low elevation angle of the sun. However, some observations can be taken and it will serve very well during the dark period. The work was accomplished by myself, including the laying of new wire and electrical hook-up. The station electrician wouldn't spare the time for this work.

Improvement in the number required for launching the radiosonde balloons was noted by the installation of a slave talk-a-phone in the inflation room. The angles are called into the phone by the man who releases the balloon directly to the TMQ-5 operator, who positions the scope by the elevation and drive controls of the Control Recorder. This reduces to 2 men the number required for normal launches.

There has been some difficulty maintaining the quality and accuracy of the upper air observations of the aerographers. It was resolved when I placed them on a 1 in 4 watch with myself standing every sounding. This permitted me to check the quality of each observation. Also permitted more time off for the aerographers which nearly approached the time off the rest of the Navy crew enjoyed. Aerographers hours are now about 44 hours per week. My hours continue to be excessive but with close attention to time allotments, I can accomplish all my tasks.

A problem arose in connection with the 2 radiomen concerning the delivery of synoptic and temp-pilot reports to the communications center for transmission. The aerographers had gotten very lax in this and as a consequence delays were experienced in receipt of messages at McMurdo. The solution was found whereby weather messages would be delivered 5 times daily for transmission. I couldn't at this time enforce a delivery of each weather message at the time the observation was taken as the aerographers virtually refused to do this. The reason for this was the fact that only certain specified transmissions were maintained while the observations were at other times.

The first airborne net radiation flight in the Antarctic was launched on 27 April. It was accomplished after much difficulty, in fact I was up the whole night getting prepared for it. The principle difficulty was the fact that I did not have the proper batteries for the Weather Bureau type modulator. This required some modification in order that the Weather Bureau modulator would accept the military battery. The first modulator was damaged to some extent in the circuitry of the transmitter. However, I feel that it can be ~~XXXX~~ salvaged for use on a later flight. The second modulator was finally made ready and the launch was successful.

The second fault was discovered after the flight. I used the military type of temperature-humidity evaluator to evaluate the sounding. I discovered that the temperatures were too high and found out that I should have used a Weather Bureau type evaluator. However, none were on the base so I reproduced one from the photograph in the Manual for Upper Air Observations. I feel that it is accurate to .2 C.

Only one major breakdown occurred with the GMD set. The elevation drive motor shorted out and was replaced. One sounding was lost but couldn't be avoided due to this difficulty. Pen lifter circuit in the TMQ-5 required adjustments and other adjustments were made in the TMQ.

Radiosonde modulators AMT-4 were used for the first time and found to be quite satisfactory. Previously we had used the 4B model. The traces from the AMT-4 appear more stable and there is less adjusting for 95 ordinates required. However, the calibration chart isn't as easy to use as the 4B charts.

Both of the adding machines were repaired this month. However they will eventually have to be gone over by experts. I did what I could to get them operating again. Repairs were also made to the Azar recorders. The B&W plate was repainted again.

One of the local hazards to releases is the camp dog. He likes to eat any and all objects and if he can't eat them he plays or tears things up. On the 17th, he got the modulator that was setting outside prior to release and ate up the thermistor.

Difficulty was experienced with the sunshine switch and the control panel and it was secured about mid-month. Very little sunshine could be recorded at the time although the sun wouldn't set for another 20 to 30 days.

Certain stocks of punch cards became exhausted this month and the whole program was secured after advising POP and receiving a directive to discontinue.

On the 30th, the pyrheliometers were taken inside for the dark period. At that time very little radiation was being recorded.

A short in the power supply for the B&W blower caused the instrument to malfunction. Repairs were made to the motor and the wiring. About a days records were lost.

2. SPECIFICS

58 Radiosonde flights averaged 21975 meters. 24% of these were terminated

due limiting angles. Otherwise, the average was 25830 meters. A flight on 6 April reached 6 mbs 111,190 feet, a new record for mbs reached and altitude recorded. There were 6 flights that reached the 10 mb surface. The best slant range was 71.2 nautical miles on a flight reaching 24 mbs, 81518 feet. 2 soundings were lost to ground equipment failure.

EQUIPMENT EXPENDED

67 Batteries
57 800 gram balloons and 2 600 gram balloons
63 modulators
62 transmitters

SURFACE

Temperatures averaged -17.2 C with a high of -5.6 C and low of -28.9 C. A little less than 1 inch of snow fell during the month. Prevailing winds were from the SW and averaged 4.9 knots. The month was colder than April of 1958.

ICE MEASUREMENTS

1st—0, 7th—11.5 in, 14th—15 in, 22nd—19 in, 30th—23 in.

3. REMARKS

I was very disturbed when I continued to find out that the aerographers were not being faithful to the observations. Numerous instances where a man would not get up to take the 9:00 am observation. The observation would then be completed from the autographic traces. I didn't approve of this procedure which led to several disagreements. However, my will prevailed. I also began to suspect that the aerographers were not exerting every effort to attain the most from radiosonde observations, being content if the observation got off by 1200 o'clock at reaching 225 mbs. I suspected that 1 or 2 flights were terminated while the balloon was still carrying the modulator abft. To ease my doubts and put more reliance into these observations, I decided upon the ordeal of taking every observation.

The Navy support group isn't very considerate of some of the meteorological programs. They have been careless around various instruments and in the case of the ceiling light, one of them cut the newly laid power lines when he ran over it with a ~~vehicle~~ vehicle. This occurred twice shortly after I had installed the light, much to my dismay. Each time I replaced or repaired the line.

Charles L. Roberts Jr.
Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

June 1959

METEOROLOGICAL REPORT FOR MAY

1. GENERAL

The fine weather that prevailed during April continued for the first 20 days in May. Temperatures gradually lowering and a low of -33 F was recorded on the 11th. A sudden storm came up on the 20th which changed the weather pattern completely. With the rise in winds, the temperatures rose rapidly, 20 degrees F in 1 hour and thereafter remained near the zero mark. A high of 20 deg F was recorded on the 23rd. Avg temperatures first 20 days -17 F and for remainder of month 3 F.

The storm that struck the station at the end of the month had sustained winds above 45 MPH for the final 36 hours of the month. A peak gust of 91 MPH was recorded. Snows drifted quite badly, nearly engulfing parts of the station. At one time snows drifted completely over vehicles and stood 7 feet deep. Fortunately, the winds remained strong enough for a long enough time after the supply of snow was exhausted to blow much of the drifting snow away. Digging out was much easier, than if the drifts hadn't been blown away. At one time during this storm, the snow gage was completely drifted over.

The storms this month introduced the winter weather and indicated the problems arising to taking good observations. Snow continually clogged the thermoscreen. In each case the hydrothermograph was brought inside as it was too filled with snow to record representative data. During the storms, snow would pack both the dry and wet thermometers. We would clean off the snow before observations and get a reading before they became packed again. No surface observations were missed although there were some trying moments during the severe winds.

The mercury thermometers were replaced with the alcohol thermometers when the temperatures dropped to the -15 to -20 range. However, good depressions were hard to obtain as the temperatures lowered and we often had to spend up to 5 minutes waiting for the thermometer to read less than the dry. Surface humidities are one of the most difficult items of the observation to obtain as they quite often don't appear at all representative. Generally, they are too high in comparison with the humidities recorded by the radiosonde 10 to 20 mbs above the surface. I do not feel too keen about humidity readings here, although every effort has been made to secure good ones.

The sun set on 14 May. However, twilight lasted a number of hours each day and outside work could be carried on. Flight lights were used on all radiosonde observations towards the last of the month. However, these do not last for any length of time when airborne and negate any attempts to take comparative rawin-theodolite observations. The observation taken this month will be the last until the return of the sun. It was learned that Posey at

the Pole Station tried many methods to carry out satisfactory comparative observations using flight lights but couldn't find a suitable method to keep them lit long enough to secure sufficient data.

Again, the problem of delivery of messages to the communications center came up and much heated discussion between the radiomen aerographers and myself occurred. In analysing the problem, I suggested that the best solution until flight operations began was to limit transmissions to 2 per day, thus permitting delivery of messages only twice each day. Permission was secured from McMurdo for a 2 per day radio schedule and the problem was cleared up. The problem of delivery of messages is aggravated somewhat by 2 factors. The communications center is not in a different building about 200 feet from aerology. A man must bundle up each time he goes outside, and an observer doesn't like to bundle up twice in a short time. He usually comes in from the observation and removes his outer clothing ~~while~~ while completing the observation. This takes perhaps 10 minutes. Then to put the clothing back on and go to the communications center to deliver the message appears to be too much. Therefore messages are not delivered until a later time. If an observer should forget his messages when going off watch, they can be delayed excessively as the new observer may have the same quams about going outside again so soon after an observation.

The second part of this problem was due to radiomen themselves. Frequently, they would not hold a scheduled transmission and just let the messages stack up. Then when the aerographer would deliver his messages for transmission he would notice that traffic wasn't being delivered anyway, so why get out and deliver a message when it may not go out soon anyway. ~~XXXXXXXX~~

Both the radiomens and aerographers thinking are incorrect in this matter as weather messages should be delivered shortly after the observation is taken, and transmitted as soon as schedules permit. Otherwise the observation loses its value for immediate purposes. However, a compromise ~~XXXXX~~ solution suggested by me as noted above was the only satisfactory one which satisfied all concerned at this time. Later, messages will have to be delivered shortly after the observation is taken, come hell or high water.

Frank Davis passed his examinations for AG2 and will be advanced on the 16th of June. All 3 men are now AG2. With the present watch bill (detailed in last month report) the work of these men is improving and the quality of observations as it should be. However, each must be pushed at times to do his job. One man is not too dependable in his work and it must constantly be checked for errors. His drawing is sloppy and at times inaccurate. Part of the reason for this is the fact that he has weak eyes which require quite a bit of correction by the glasses he wears. I'm sure that his glasses need changing now, but this is impossible. So the rest of us look over his work closely to insure that it is correct. The rest of the reason for his poor work is his attitude. It is quite evident that he shouldn't have come here for the inters work. He is indifferent to the task and looks for reason not to do his work rather than do it. On one or two occasions I have relieved him of his duty and taken him to the Officer in Charge to straighten him out. In each instance, this has done the trick for a while afterwards. I would replace the man if I could.

Measurements of the growth of sea ice continued until 18 May. At that time they were discontinued as the Biologists was maintaining a fishing hole and reporting the thickness to me. Measurements were taken by coring.

The meteorological supplies and requirements for 1960 were submitted. Several recommendations were made particularly for the training of my relief. I also recommended that I remain until the station is relieved by ship rather than go by air in November when the support force is to be relieved. The reasons for this are to permit the 2 weather bureau men to set up the coming program properly, recondition all equipment, and get the new crew properly and thoroughly trained. Also, I hope to carry out some sort of summer program or any specific program that may be required. Other reasons include the fact that the New Zealand personnel will not be relieved until the ship arrives and I prefer to complete my year with them.

No major breakdowns occurred with the GMD equipment. A minor explosion occurred in the condenser unit leading from the hydrogen generator.

The filter ~~was~~ was cracked and burned. Causes of the explosion are not definitely known but I feel that carelessness played the major role. I checked over all the grounds and revised the inflation procedures.

Towards the end of the month, the upper atmosphere cooled down to around -70 C with some dropping in burst heights resulting. However, diesel ~~conditioning~~ conditioning wasn't started until early June. The large number of limiting angle flights continue to hold the average heights down. This month 44% of the flights terminated due to limiting angles.

2 Airborne net radiation flights were flown. 1 was delayed 1½ days to avoid limiting conditions. Data on the first 3 flights was analyzed after I perfected a method of solving the equations. A number of levels must be selected from each flight and data from them evaluated through an involved equation. I was able to set up a system and run a flight through the equations by using the calculator and adding machine. However, the process took some time to complete (several hours). No conclusions were drawn from the analysis.

Again, the power lines for the B&W radiometer shorted out and I had to do extensive repairs before it was operational.

2. SPECIFICS

57 Radiosonde flights averaged 18818 meters. Average less limiting angles was 25,200 meters. The highest reached 7 mbs 104,330 feet. 3 flights reached the 10 mb surface. The best slant range was 89½ nautical miles on a flight reaching 7 mbs 104,321 feet.

EQUIPMENT EXPENDED

61 batteries 60 balloons 61 modulators 63 transmitters
(all balloons used were 800 gram general purpose)

SURFACE

Average temperature -23.2 C with high -6.7 C and low -36.1 C. 4.32 inches

of snow was recorded. Prevailing winds were SSW and averaged 8.5 knots
On the 31st a fastest ~~1~~ mile of 89 MPH was recorded

ICE MEASUREMENTS

23 inches 30 April, 27 inches 7 May, ²⁹~~21~~ inches 13 May, and
31 inches on 18 May.

3 REMARKS

Although I have commented about the aerographers in a manner that doesn't reflect whole endorsement of them, I feel that the program is shaping up quite well. Work is being done and we are getting quite efficient. For myself, I have to be efficient or I don't get all the jobs done that I should. I think the years work will be satisfactory and feel that the men working for me will do their work, although some pushing on my part will be required to keep them up for the job.

My relations with the communicators (radiomen) are not the best. However, this is due their doings as both are rather difficult men to deal with. The senior man is extremely hard to associate with. Consequently, any reason he finds to cause a little disention, he does, particularly towards me. As a result, the difficulty over messages was exaggerated all out of portion. I took the matter to the officer in charge with a suggested ~~XXXX~~ solution and the problem was resolved by him.

Charles L. Roberts Jr.
Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

July 1959

METEOROLOGICAL REPORT FOR JUNE

1. GENERAL

June was rather a stormy month with a major storm passing the station weekly. Considerable drifting of snow resulted within the station area. Strenuous efforts were necessary to keep these drifts under control and to clear areas between buildings.

All the meteorological programs progress satisfactorily and without major maintenance problems. This is the first month that hasn't required some sort of major repairs to equipment. This perhaps reflects the preventative maintenance that I have been doing.

A noticeable lowering of ~~xxxxxx~~ heights of radiosondes reflects the extremely cold troposphere. Diesel conditioning of balloons was begun and indicates that burst will occur 20-30 mbs lower than unconditioned or normally conditioned balloons. The technique of ~~XXXX~~ diesel conditioning is essentially the same used at the Pole during DF-II. Balloons are immersed in room temperature arctic diesel about 30 minutes prior to inflation. During the time the balloon is conditioning, the other preparations for inflation are carried out. Balloons were conditioned with diesel outside only, inside only, and both inside and outside. Not significant difference was noted between these 3 methods. It was noted that if balloons were left too long in diesel (more than 40 minutes) the necks stretched considerably and the neoprene rotted.

The balloon was ~~XXXX~~ handled carefully usually with rubber gloves. After conditioning, it was drained and placed on wax paper covering the inflation room floor. Inflation continues in a normal manner although 200 grams extra are added to the weights. When the balloon raised off the floor and was $\frac{1}{2}$ or $\frac{3}{4}$ full, the gass is turned off to permit the excess diesel to drain and allow the surface to dry somewhat. About 10 minutes allowed for this. If a shroud release was required, this interval was enough to permit the shroud to lay on the balloon without sticking to it.

The 600 gram night balloon was used for most flights. It performed better with diesel conditioning than the 800 gram general purpose balloon. Diesel conditioning was used on most flights except those flown during limiting angle conditions and when releases made in strong surface winds where diesel wasn't used. The conditioning process is somewhat messy so I conditioned all the balloons myself.

Recording of snowfall proves most difficult during the blizzards that strike the station due the blowing snow. Although the Weather Bureau type metal freely swinging deflectors are in place around the snow gage, blowing snow enters the gage and adversely affects the recording. We have indicated on the surface observations sheets those totals which were affected by an *

and a note identifying the total snow recorded might be in error due blowing snow entering the gage. Some of the totals were much too high.

The mid-winter party was held on the 8th but wasn't too much of a success. No one seemed in a party mood. The party of 4 July was much better and more nearly represented our mid-winter passing point in spirit. A large number of mid-winter greetings were received including a message from the President and one from the Chief of the Bureau. We also received a communication from the Queen of England.

The lack of sunlight doesn't effect our work very much. ~~XXXXXXXXXXXX~~ Twilight occurs for a number of hours each day permitting outside work as required. Flight lights are used for all flights but these do not stay lit for more than 5 to 10 minutes.

2. SPECIFICS

55 Radisonde flights averaged 17859 meters. 5 flights were cancelled due strong surface winds. In most cases, the release was lost after the balloon was gotten out of the inflation shelter due extreme turbulence and blowing snow. Only 21 flights reached the 50 mb surface. Highest reached 25 mbs 23569 meters. A slant range of $55\frac{1}{2}$ miles on a flight reaching 39 mbs, 66621 feet was recorded. Limiting angles were not a problem this month.

Surface temperatures averaged -22.8 C with -11.7 C and -33.9 C as high and low. 3.9 inches was recorded exclusive of the blowing snow logged. Winds were from the S and averaged 9.3 knots. A peak gust of 72 knots was recorded.

3. REMARKS.

The months work went very well without any disagreements mar~~ing~~ the scene. The aerographers seem to be taking a much greater interest in their work, especially since I work with one of them for each sounding. Their work day covers 10 hours part of which they are not required to be in the aerological ~~work~~ office. We carry out a program of 8 surface observations per day plus 2 upper air observations. Between observations I do not require the observer to stay in the office as long as he takes the scheduled observations on time. This has eased the work load on them to the extent that I can rely on their work without ~~misgivings~~ misgivings. This is much more preferable than in the past.

Equipment used:

57 Batteries
58 Balloons
57 Modulators
59 Transmitters

Charles L. Roberts Jr.
Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

August 1959

METEOROLOGICAL REPORT FOR JULY

1. GENERAL

Blizzards continued to pass the station at the June frequency until mid-month. The rest of the month was relatively quiet weatherwise. The ~~XXX~~ blizzard occurring in Mid-July raised a snow drift about 14 feet high near the stand for the radiation instruments and the thermoscreen. It very effectively cancelled the 2 meter wind program due to the venturi effect it created by its proximity to the meteorological tower. It also covered the 10 cm and 50 cm soil temperature thermocouples.

The sun returned briefly on the last day of July. Several days previously we had been enjoying brilliant sun rises or sets which would last for hours on end since the sun wouldn't actually rise. On the 25th there occurred a day long brilliant display of noculucent and narceous clouds. A large number of photographs were taken by all hands.

A major overhaul job was required to put the UMQ-5 wind recorder back into operation after it had shorted out. One of the aerographers crossed ~~xxx~~ two of the contact arms with a screw driver. Contact points and arms burned off and other damage was sustained. After inspecting the damage, the Navy technician suggested that the instrument be secured for the remainder of the year. He made no attempts to repair it. This was totally unacceptable to me since this would deprive us of an autographic record of surface winds. I began repairs and with assistance from Lew Jones and Alex Black was able to put the instrument back into operation. It has operated satisfactorily since although it will require replacement for the 1960 season. The Navy was notified of this for resupply.

The control pannel for the 2 and 10 meter qind recorders and the sunshine switch became inoperational when the transformer burned out. A substitute transformer was installed and gave partial performance until near the end of the month when the dry metal rectifier burned out. A sutible rectifier wasn't found in the spare parts and these programs were discontinued. However, on 5 August a substitue rectifier was located among the spare parts for the Collins radio parts and installed. The pannel is now in good operating condition. Replacement parts were requested from POP for 1960.

No major breakdowns in the GMD gear were experienced. Preventative maintenance was carried out which obviated most problems that could have become serious.

The problem of recording extreme low temperatures continues with us. Temperatures near -80 C are difficult to record since the print at 5 or less ordinate values. The military modulator and thermistor are not ~~designed~~ designed to record temperatures that low. What is needed is the cold weather type of thermistor. The twin thermistor technique described in a previous report isn't sutible for the military type modulator. At present, it is

difficult to interpret the temperature trace below 5 ordinate values as the vibration of the pen point leaves a broad trace. Since a considerable thickness of the atmosphere lies in a temperature range below -75 C we couldn't ignore the temperature by classifying the data as missing. We therefore, made every effort to interpret the signal and pick off temperature ordinate values that were classified as reliable data. However, I doubt if the temperatures are recording accurately as we don't know if the trace would come in below 3.5 ordinate values or not. At this value, the minimum temperature that can be recorded here is -82 C or thereabouts. I feel that the atmosphere may be colder than this temperature but will not record with the military type thermistor. Fortunately, the cold temperature thermistors will be sent to Hallett for the 1960 season by the Weather Bureau.

Modification of the aerological spaces was carried out when the old communication spaces adjacent to aerology were finally evacuated. That space was made into a science room and I moved a desk from aerology into it. By rearranging the remaining space in aerology, a more efficient working area was established.

2 more airborne net radiation flights were flown this month although 3 instruments were used. The antics of the camp dog resulted in the loss of one instrument. To replace this instrument and the one damaged earlier I succeeded in modifying a military type modulator. The circuitry was modified to carry the signals of the 3 temperature recording thermistors and fed to the sequencing switch. The switch fit inside the modulator. The radiometers fastened to the modulator without too much difficulty. The whole job was checked against a weather bureau job and found to record temperatures correctly. The airthermistor used was a Weather Bureau type. This then provided me with an instrument for flight number 9.

The success of the modification led me to modify a second military modulator. I had brought a spare sequence timer with me from the States. With this modified military modulator, I could complete flight #10. However, I had to make a radiometer. I did this from the materials that I brought along from the States that Kuhn had given me. I followed the directions and when completed checked it against the weather bureau modulator and radiometer. Both instruments recorded temperatures correctly. The modified job was fitted with military thermistors. This instrument will be used for flight #10, final flight for the series.

2. SPECIFICS

56 Radiosonde flights averaged 15957 meters. 15 of these terminated low due limiting angles. 6 scheduled flights were cancelled due strong surface winds. Only 36 flights terminated due bursting and these averaged 18314 meters. This low figure represents the extreme temperatures encountered which lower burst heights. The highest flight reached 24 mbs 23137 meters. Diesel conditioning was used except during limiting angle conditions. The best slant range was 55 nautical miles on a flight reaching 48 mbs, 62219 feet.

EQUIPMENT EXPENDED

69 batteries 63 balloons (600 gram night) 61 modulators, 64 transmitters.

only 17 flights reached the 50 mbs surface

Surface temperatures averaged -23.1 C with a high of -10.6 C and low of -39.5 C recorded. Snow fall amounted to 48 inches although some of this total represents blowing snow that entered the snow gage. Surface winds were southerly and averaged 10.9 knots. The peak gust recorded was 68 knots.

3. REMARKS

I had to exert rather strong pressure on Ken Lawson to take the sloppiness out of his work. This has been a continuing problem thru this year. He has the ability to do satisfactory work but easily strays into sloppiness which cannot be tolerated. In spite of supervision or the lack of it, he continues to be only a marginal worker. The problem was taken to the officer in charge and fortunately, some improvement was noted.

I have never been able to impress upon the aerographers the ideals of honesty and accuracy of observations. Late observations, careless work, and indifferent approach to the job of observing all are not acceptable to me. Yet in spite of instruction and direction and supervision, these continue. Reasons for this approach are basis. ~~None~~ The Navy aerographers are not professional meteorologists, consequently their assignments are usually temporary. When they leave the service, they do not continue in meteorology as a rule. Therefore there is no incentive to do good work. When the men leave this duty they may or may not continue as observers. In a year or so they will leave the service. This lends itself to an attitude of 'close enough is good enough' or 'why sweat it' or 'so I'm late, what's the difference?' or 'as long as I get the flight off before 1200 and reach 225 mbs, I'm not going to sweat it'. 2 of the men will exert themselves to take accurate observations but require some pushing. The third requires more than pushing.

As indicate in this report and previous ones, the Navy technician isn't of much help ~~to~~ to the aerological program. His attitude is reflected by the fact that he has neither the desire nor the inclination to work on aerological equipment. I do most of the maintenance work and call on him when I run into ~~some~~ a major breakdown which is beyond my abilities. Frequently, I am assisted by Alex Black the New Zealand technician in my maintenance and repairs. However, I'm very disappointed in this Navy technicians attitude towards this program. When he does work his work is good. But its foolish to think that I will get the unused receiver into service or even get the modifications to the GMG1A set accomplished this year. Perhaps the new technician will have a better approach to this job. If not then the aerological and meteorological programs will continue to operate at less than 100% of what they are intended to do.

Charles L. Roberts Jr.
Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

September 1959

METEOROLOGICAL REPORT FOR AUGUST

1. GENERAL

August was the coldest month on record for Hallett. The average temperature was -24 F and a low of -54 F was set. Both these temperatures exceeded existing records by 7 to 10 degs. Characteristically the weather could be summed ~~XXX~~ as clear to scattered cloudiness with cold temperatures and light and variable winds. Only 2 storms passed the station and these were not at all severe.

Surface programs progress satisfactorily with two exceptions. The 14 foot high snow drift that passes close to the meteorological tower continues to influence the 2 meter winds program. Until the drift begins to melt and evaporate, this program will not be representative of the winds at the 2 meter level. The 10 ~~cm~~ soil temperature program discontinued for a while due to a break in the line. For a while I thought it was located under this snow drift. I located the break near the junction box and made the necessary repairs, thus restoring this program to operation.

On the 24th I installed a 50 junction and a 10 junction pyrheliometer on the stand in their former locations. The 50 junction instrument measures solar radiation and the 10 junction measures the albedo. Both were operation on the 25th.

On the 25th I placed the sunshine switch back in operation in its former location. I installed the new instrument as the other instruments appear to be low in sensitivity.

The GMD-1A required replacement of the oscillator tube. This was accomplished by the Navy technician without the loss of a flight. No other troubles were experienced.

The upper air program was satisfactory but a bit disheartening for averages. The very cold troposphere very effectively cuts into burst heights in spite of deisel conditioning. Burst usually occur near the 60 mb surface. A large number of flights were terminated due to limiting angles

2 airborne net radiation flights were flown and the final flight was flown on 1 September. A 36 hour delay was required for flight #10 due to weather conditions. The ~~XXXX~~ two flights used the modified military modulators described in last months report (in August). The final flight was flown with the remaining Weather Bureau modulator and radiometer.

On the 19th, I left the station as a member of a party of 6 who attempted to reach Coulman Island. The purpose of the trip was to study the emperor penguins during the early hatching season. During my absence the meteorological program as well as the aerological programs were under the supervision of Bill Slagle. Unfortunately, the trip lasted only 2 days. One of the vehicles broke thru the ice and sank. No one was injured and the party returned safely to Hallett. During the stay away from the station, temperatures of -50 were recorded although I'm sure it was much colder than that at times. During the trip it was planned to take meteorological observations. ~~XXXXXXXXXXXXXXXXXXXX~~

2. SPECIFICS

58 radiosonde flights averaged 14803 meters. 23 of these were terminated due to limiting angles. 3 flights were cancelled due to weather conditions and 1 due to ground equipment failure. 16 flights reached the 50 mb level. The highest reached 17 mbs 24791 meters. A slant range of 75 nautical miles was recorded.

EQUIPMENT EXPENDED

62 Batteries, 62 Balloons (600 gram night) 62 modulators, and 74 transmitters.

Surface temperature averaged -26.3 C with a high of -9.4 and low of -47.8 C. Prevailing winds were SW and averaged 3.2 knots. The average sky cover was only 4.9 tenths. 10 days were clear and 9 were partly cloudy.

3. REMARKS

Everything seemed to work well this month. Cooperation was enjoyed thru the month and no major disagreements occurred. Since the sun has returned, a lifting of spirits in the camp is evident.


Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

October 1959

METEOROLOGICAL REPORT FOR SEPTEMBER

1. GENERAL

Favorable weather during September permitted completion of the landing strip on the ice in Hallett Inlet. The runway is positioned 2 miles bearing 240 True from the dome enclosing the GMD. It is oriented generally NNE-SSW with true heading of 210. Snow was cleared from the ice to form a level strip 5000 feet long. There is 1000 feet of level snow on the south end for over-run if required. The strip was completed before the first flight from Christchurch to McMurdo was flown. The 4 storms passing the station despoited just enough snow to provide a proper cover for the ice for ski landings. Drifting snow did not menace the strip although it covered the roadway leading to the strip with each passing ~~SNOW-storm~~ STORM.

On 14th Chief Beavers, station mechanic, turned into sick bay and his difficulty diagnosed as acute appendicitis. Dr Bridgman discussed the case with McMurdo and asked assistance if that were ~~possible~~ possible. He did not have trained help to assist him in a major operation. McMurdo said that a flight was not possible at that time. Dr Bridgman set up the operation and assisted by several of the men decided to operate. Unfortunately, the anesthesia did not take and the operation was delayed until the following morning. McMurdo was notified of this development.

Early in the morning, McMurdo conferred with Dr Bridgman and decided that an attempt would be made to fly to Hallett. Dr Potter and a corpsman would assist in the operation. They would bring ether along also so that the chief could be put under for the operation. The aircraft arrived over the station early in the afternoon just after a low broken deck of ~~WINDY~~ clouds moved in. The aircraft let down at sea and flew in under the 700 foot ceiling and headed for the partially completed landing strip. I was on the strip and attempted to wave the craft off from landing there and point the way to an emergency strip that the men and set up. This strip was on ice and located about 3 miles further south than the landing strip being constructed. The aircraft did not land on the strip but did land on the snow adjacent to the strip. While rolling out the right landing gear collapsed, causing a ground loop. The wing was damaged and propeller blades bent. No one was hurt but the aircraft was lost for further operations this year. It will eventually reside in the rookery. The Dr and corpsman were rushed into the station for the operation. The operation was extremely difficult and the chief owes his life to the assistance given Dr Bridgman by Dr Potter and the corpsman. He may have had a very difficult time if this assistance hadn't been possible.

With the 8 visitors, Hallett population stood at 24. They assisted in various jobs about the station and in construction of the landing strip. On 2 October, A P2V landed and picked them up and returned them to McMurdo.

I received word that I could remain until the relief ship arrived in January. My relief would arrive in November. Word was also received that Frank Davis AG2 was permitted to remain at Hallett to assist the New Zealand biological program.

The supply of water was extremely limited due to the fact that surface temperatures had gotten so low that the sea ice was too thick to blow a hole thru to pump water. To help alleviate the situation, we melted snow in the inflation shelter for each sounding. This was begun just after the ~~BOX~~ Coulman Island group returned last month. Several large GI cans filled with snow were kept in the shelter at all times. The melt from them provided enough water for inflations. This water shortage will probably continue thru this month as it has been very difficult to get ahead on the water for the rest of the station.

On the 21st, the thermopile in the 50 junction pyrheliometer was found broken off. I don't know how this occurred except that someone may have jarred the stand that it was mounted on. The 10 junction instrument mounted below it and used to measure Albedo was not damaged. The instrument was replaced with a 10 junction instrument and will be returned to POP when I depart the station.

The troposphere began to warm to above -70°C and diesel conditioning was discontinued. During the latter part of the month burst heights were higher. One flight reached 10 mbs, something we haven't gotten in a long time. 31 flights were terminated due limiting angles. 2 flights were lost due weather.

The GMD operated satisfactory with but 1 major difficulty. The stud pin in the print hammer group sheared off thus preventing printing of the angles. No spare was available but repairs was effected by replacing the entire print hammer group with the one in the spare control recorder. The winds for 2 flights were lost.

Near the end of the month flight operations began. To support these operations between Christchurch and McMurdo, I proposed that Hallett take hourly observations and send AERO reports in addition to the scheduled SYNOPS. Also, that McMurdo send their ~~KNOWIX~~ AEROS AND SYNOPS for relay to aircraft if required. This was agreed upon. However, the aerographers offered considerable opposition to taking hourly observations since it involves more work than they had been doing. Discussion became rather heated at times. However, they were begun in support of aircraft operations.

On the 29th, Dr Bridgman set up to operate on my left wrist to remove a cyst. The cyst had grown to such a size that it bothered me all the time. It hindered the use of the left hand to some extent and if not removed may have resulted in permanent damage. The first attempts to administer anesthesia were unsuccessful but on 1 October, locals were used and the operation was performed.

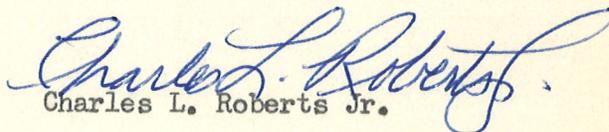
2. SPECIFICS

58 radiosonde flights averaged 16146 meters, with 21 of these terminated due limiting angles. 18 flights reached the 50 mb surface. Highest reached 10 mbs, 28561 meters. However, the average burst heights was only 18557 meters. A slant range of 64 nautical miles was recorded. EQUIPMENT expended was 59 each batteries, balloons, modulators, and reels. Some 800 gram general purpose balloons were flown although the majority were still 600 gram night.

Surface temperatures averaged -25.8 C with a high -14.4 C and low of -36.7 C. Prevailing winds were southerly at an average of 5.6 knots. Snow fall was 11.1 in. there was 55% possible sunshine.

3. REMARKS.

I was very disheartened over the opposition to the hourly observations that I wished to install in support of air operations. Except of isolated areas or other reasons, Hourly observations are the minimum required. Here the Navy only desires observations every 3 hours. Therefore my proposals didn't go too well with the aerographers ~~even~~ though they were approved by the Navy at McMurdo. The main reason for the objection was the increase in the work required during a watch. I couldn't agree with this as the observations do not take that much time. However, I wasn't able to convince them and resorted to the ~~XXXXXX~~ direct order method to accomplish the work. I never was able to convince them of the need for these observations to support aircraft operations either.


Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

November 1959

METEOROLOGICAL REPORT FOR OCTOBER

1. GENERAL

Aircraft operations this month were supported by hourly observations and AERO reports sent to McMurdo. We received McMurdo weather for possible relay to aircraft if the occasion arose. Some modification to hourly observations routine was required due to the work load that the aerographers felt had been placed on them. Whenever McMurdo didn't require weather for a few days due storms for other reasons, we discontinued hourly observations.

The first mail arrived 15th of October and was most welcome by all hands. A summer scientist joined our group on this date also. He is Don Douglass and will work with penguins. The first penguin arrived on the 13th, same date as in 1957.

By the 24th my wrist had recovered to the extent that I was able to resume full use of it. Until this date I had been doing the lighter jobs of observations, such as working the recorder records for each flight. I had to be particularly careful not to injure the wrist permanently and so wore a half cast on my left arm.

The Navy relief support group for Hallett arrived in McMurdo on the 23rd and the first 5 men landed here on the 27th. Kittel, AG2 was among the 5 and he began indoctrinating into the aerology program. 3 of the DF-4 men left on the 27th. On the first of November, the remaining Navy men for DF-60 with exception of Dr Towles arrived. The rest of the DF-4 group with the exception of Dr Bridgman departed on the same plane. Dr Towles arrived on the 6th and Dr Bridgman left on the 14th.

There was no trouble with any of the equipment this month. Routine maintenance was accomplished. The control pannel for the sunshine switch was repaired to facilitate its use. No flights were lost. The surface programs operated without difficulties.

On the 12th I talked with Posey discussing the limiting angle flights. He indicated that perhaps the rasonde portion was still good after limiting angles were reached. I agreeded that the records looked good. I requested assistance from POP and the Navy and began following balloons to terminations after limiting angles had been reached, terminating only the rawins. We were advised that our policy had been incorrect, and from that time we have followed the flights until the very end. Some decesnd below the horizon to the east.

REASONS FOR THE POLICY OF TERMINATIONS WERE:

Previous practice at this station before our arrival.

Message from POP indicating that RAWINSONDE would terminate then the signal passed 6 degs or less of obstructions. The Hallett Bluffs to the east ~~were~~ are close enough that they are considered as ~~obstructions~~ obstructions.

One of the terminating reasons listed in circular "P" is limiting angles.

What the 4 of thought were correct interpretations of instructions on this subject received during our training the previous year.

2. SPECIFICS

62 Radisones averaged 18975 meters. 19 of these terminated low due either limiting angles or when the balloon carried below the horizon (fading signals) The average since the limiting angle situation was clarified was 21531 meters. 17 flights reached 20 mbs, 12 reached 15 mb surface and 3 reached the 10 mb surface. There was a marked increase in burst heights since mid-October. The highest burst at 10 mbs 29990 meters.

Surfact temperatures averaged -23.8 C with a high -10.0 C and low ~~-22~~ -38.3 C. Only 3.8 inches snow recorded. Only 4 small storms pass the station. Prevailing winds were SW and averaged 4.9 knots. 85 % possible sunshine recorded although this figure appears a bit high and may be due to the fact that the sensitivity of the sunshine switch is high.

3. REMARKS.

The question of hourly observations came up several times. All the aerographers objected to taking them continuously thru the month. Also, the radioman in charge joined the cry against taking these observations as it made more work for him. Therefore, at various times thru the month I took steps to ease the load rather than bear the brunt of the bitching as it was going on. Things turned out satisfactory I believe but not as I had hoped for.

The SNAFU on the termination of rasonde when limiting angles were reached must rest with me. I should have taken a more inquiring look into the situation way last spring when the first limiting angle flight was logged. As it is a whole lot of valuable data has been lost. Fortunately, many of the limiting angle flights decended below the horizon to the east of Hallett a few minutes after limiting angles were reached, and therefore on those flights not much data was lost.

The morale of the Navy crew dropped considerably after the first mail was received and the departure of the crew. Last minute wait was almost too much to bear.

Charles L. Roberts Jr.

Charles L. Roberts Jr.

*Equipment expended
62 Batteries, Balloons (800gram) and modulators
64 Transmitters*

CAPE HALLETT, ANTARCTICA

December 1959

METEOROLOGICAL REPORT FOR NOVEMBER

1. GENERAL

A complete change of Naval personnel was completed this month. The scientific staff remains the same as they will not be relieved until January. Several temporary scientists stayed at the station and 2 summer scientists are now on the station. They are Don Douglass and Matt Fryor. In addition, Charles Trainer is aboard and will be the MIC for DF-60. Working in or assisting the aerological program are:

Jack Hartzell AG1
Rudy Kittel and Ed Velie AG2's
Ted Schelin ET2

The balance of naval personnel for DF-60 are:

Dr Towels, O*IN*C
Backer, CM1 Mechanic
Laurin, CE2, electrician
Lindau, UTP2, utilities
Smith, CS2, cook
Reid, RM1 and McCall RM2, radiomen. White replaced Reid on the 25th.

The turn over of the Navy Aerographers was very unsatisfactory as the DF-4 men departed on the plane bringing in the DF-60 men. Consequently, there was no turnover between the leading men in charge. Kittel had arrived 4 days previous but was not completely checked out. The 2 men arriving were unfamiliar with the routine required here. Consequently, the burden of keeping the aerological program rested on my shoulders with some help from Kittel. We stood opposite watches in radiosonde observations and I indoctrinated. I had asked that one AG2 remain to assist in the indoctrination period. McMurdo did not provide for this as permission could only be granted if one volunteered. None did. I spoke of this matter to Cdr. Lanterman, staff Naval Weather Service officer.

Quite a number of mistakes and errors occurred during the first few days of the month and McMurdo was critical of them. However, these were the direct result of the turn-over this year and should have been expected. Eventually things ironed out. However, I strongly recommend that in future turnovers of aerological personnel at this station, a minimum of 4 days be permitted to overlap the two groups. It is particularly vital at this time of the year due to the airoperations and the need for the data in as quick a time as possible.

2 soundings were lost due to tube failures in the receiver of the GMD. The oscillator tube was replaced but at the cost on one sounding. The technician was new to the job and had not replaced this type of tube before. A tube in the IF strip was replaced but too much time was lost in tracking the defect down and so another sounding was lost. Both of these could have been avoided if the receiver for standby was in operating condition. However, it never was placed

in operating condition during DF-4. The repair requires a lot of work but can be done locally. It is beyond my capabilities electronics wise. The DF-4 man virtually refused to repair it and the present technician has stated that he has little time or inclination to repair the receiver. This is unfortunate as it means that some soundings will be lost that need not be. Also, the technician does have time to effect repairs. The receiver will probably not be repaired until strong pressure is brought to bear on him or during the coming winter.

The snows began to melt early in the month and by the end there was considerable amounts of standing water about the station. The rookery is almost entirely free of snow. Only a trace of snow fell during the month.

Some trouble was experienced with the residue valve of the hydrogen generator and on 1 occasion, Trainer and myself had to chip out the sodium from it. Plug occurred due improper flushing procedures that were part of indroctrination troubles. The baseline checkbox plug failed and was replaced. The control recorder required work on the micro-switches as they were not indicating the proper elapsed of time. The Azar recorder received from Little America in 1958 was reconditioned and placed into operation. A roller on the pen arm carriage is missing and a suitable substituted manufactured locally. Replacement part on order.

On the last day, the Azar wind recorders failed to record wind directions. Trouble was traced to breaks in the lines which were due to thawing out after the winter. To repair was impossible to accomplish so I undertook the job of rewiring. This time the wires were suspended. After 3 days work, the instruments were again operational. I believe that other wires will eventually fail due the same reason. If not this year then next year. Therefore, consideration should be given to replace all wiring and to suspend it rather than leave it on the ground. Fortunately, most wiring is available. The leaded cable isn't and should be sent for the 1961 season.

I was able to do some processing of the photographs that I had taken thru the year after Trainer arrived. I ~~xx~~ also prepared many photos and took many more for the final reports that I must submit. Trainer has indicated that many are desired of the stations this year and plans to take many more. He prefers to shoot a number in black and white using the station 120 Omega camera. Therefore, I requested that film be sent to him by Foster or airmailed to be delivered by the Arneb or the Ice Breaker later in the season.

On the 25th, Adm Tyree and Cdr Bertillego (ComAntarcticSuppacty) and George Toney visited the station. The landing of their aircraft was a bit 'hairy' due slickness of the ice. Also, the thickness of the ice on the runway was near the minimum required for aircraft. Therefore, the Adm. terminated aircraft operations into Hallett for this year. The following day, the AERO REPORTS WERE TERMINATED.

With the arrival of Trainer on the 14th, my work load began to ease a bit and I began to enjoy some leisure time. Trainer assisted me for the balance of the month and on the 1st took the job of MIC over. My participation continues as taking the evening sounding each day and assisting in repairs to equipment and eslewhere as the case may be. Trainer took over the radiation program about the 20th. There is considerable work to do in this field in order to prepare for the increased work load beginning January 1960. Trainer takes the day soundings and

is gradually getting acquainted with the many facets of the job. Every 3rd day he lets the aerographers take the day sounding and concentrates on his other jobs.

Frank ~~XXXX~~ Davis, AG2 who wintered over during DF-4 was assigned to assist the New Zealand Biologist in his summer work. Davis ~~XXXX~~ volunteered for this duty and is the only remaining DF-4 navy person at Hallett.

2. SPECIFICS.

58 Radiosondes averaged 24837 meters. Of these, 34 reached 20 mbs or less, 17 reached 15 mbs or less 5 reached 10 mbs or less and one flight reached 9 mbs, 31702 meters. 6 flights exceeded 100,000 feet. Five flights descended below the eastern horizon. A slant range of 82.5 nautical miles was recorded.

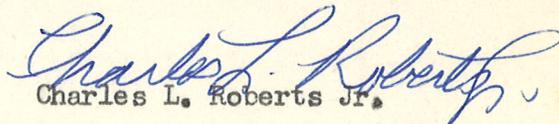
EQUIPMENT EXPENDED

64 batteries and balloons (800 gram)
66 Modulators
63 transmitters

Surface temperatures averaged -11.1 C with a high 1.1 and low -21.7 C recorded. Only a trace of snow was recorded. Winds were predominately from the SSW and averaged 8.4 knots. there was 73% possible sunshine.

3. REMARKS.

The new crew of aerographers appear to be a better group than the boys I started with. These men are more positive in their thinking and want to get in and do a job. This is normal for newly arriving people but as I remember, the boys I started with were unsure from the start about many things. It is fortunate that Trainer is going to work with a 1st class as his senior man. This man is 1 rate over the others and is willing to assume his responsibilities. Therefore, it should be easier for Trainer to get what he wants done. ~~XXXX~~


Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

January 1960

METEOROLOGICAL REPORT FOR DECEMBER

1. GENERAL

On the first of December Charles Trainer assumed the duties as Meteorologist in Charge, with Roberts assisting. This assistance was in the form of standing 1 rasonde observation daily and reconditioning and repair of various pieces of meteorological equipment. I also filled in for Trainer when he went on the 2 day hike in attempting to reach the mail bag lost on ~~HALLETT~~ Tucker glacier.

The weather was rather nice this month which permitted considerable outside work. Almost all of the snow has melted in the rookery and about the station. No storms of any consequence passed Hallett. The average temperature was 28.8 F with a high of 44 F and low of 11 F recorded. Prevailing winds were SSW and averaged 5.4 knots. There was 77% possible sunshine.

The 2 and 10 meter wind instruments were rewired and the cable suspended. The old cable had lain on the ground and absorbed moisture. With the thawing and freezing action, the wires had broken. The cable is now off the ground from the meteorological tower to the recorders.

The above results may indicate that the other cables will in time have to be replaced. The lines from the thermohms, radiation instruments, and the sunshine switch also lie on the ground. These probably should be replaced before the 1961 season and when they are, should be suspended in the air. This will require that replacement leaded cable be sent for the 1961 season as there isn't any on hand. Wiring for the sunshine switch is available.

The 2 new 50 junction pryheilometers that Trainer hand carried from POP were installed in place of the 10 junction instruments on 2 December. These had been checked against each other in the calibration box and reference data on performance established for future comparisons. The replaced 10 junction instruments were also checked in the calibration box. They checked within 1% of each other as did the 50 junction instruments.

The repairs on the Azar recorder received from Little America was completed and the instrument placed on the line. Only 1 part was missing and it was ordered for delivery on the ice breaker comin in March. A part was fabricated locally which will serve until then. The part in question is a ~~FOOTER~~ roller wheel which supports the pen carriage on the slide bar.

Two sunshine switches were reconditioned from parts of 3 switches that were low in sensitivity. Both switches are balanced and record sunshine ~~accurately~~ correctly. The parts of the 3rd switch will be returned to POP. Hallett now has 3 switches in good working order.

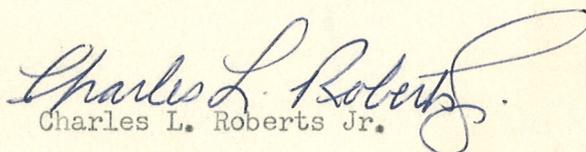
On the 9th a fire started in the UT's storage lean-to located at the south end of the garage area. Cause was from sparks from the welding torch that the UT was using in that area. The fire very nearly got out of hand but fortunately we were able to prevent its spread into the garage area.

On the 23rd a Navy P2V aircraft from McMurdo air dropped Xmas mail. Unfortunately, 1 bag was lost over Tucker Glacier accidentally when the bay doors were opened in preparation to the drop at Hallett. 3 bags were dropped at Hallett although 1 was dropped in the ocean waters just short of the rookery. However, there was plenty of wet and dry mail for everyone. On the 26th 4 men attempted to reach the lost bag but were stopped by cravases.

On 2 occasions this month the senior aerographer got intoxicated and couldn't stand his watches. This is very exasperating. This man has a history of drinking which should have eliminated him from coming here. The example to others isn't good. The other men were required to fill in his place to prevent disruption of the routine. I very seriously considered requesting the Navy at McMurdo to relieve him as I feel that this tendency will cause trouble at this base later on. However, I deferred to Dr. Towels. The man has still continued to drink but so far hasn't failed to stand his watches.

The month was a good one for radiosonde flights. 62 were flown for an average of 26165 meters, highest monthly average in the stations history. One flight reached 7 mbs, 111269 feet, new altitude record for Hallett, although not the lowest pressure recorded. 9 ascensions exceeded 100000 feet. There was no major difficulties with the GMD set although the control recorded has developed an annoying habit of printing an incorrect time with each elapsed minute. It will print either .9 0.0 or 0.1 although only 1 minute has elapsed. The trouble has not been remedied. However, the winds have been used since only 1 minute ~~is~~ elapses between printings.

Charles Trainer reconditioned and installed the snow caught in the south end of the rookery. It is ready for use when the bird life leaves the area. Right now the Skuas find it a fine place to perch. Consequently, snow samples that could be taken now will be representative of the skuas and not the snowfall. Sample bottles are being hunted down and some have been ordered.


Charles L. Roberts Jr.

CAPE HALLETT, ANTARCTICA

February 1960

METEOROLOGICAL REPORT FOR JANUARY

1. During the month I continued working a similiar schedule that I worked in December; taking every evening sounding and doing repair work as necessary. However, for the most part I stayed out of the meteorological dicipline to permit Charles Trainer and the aerographers to run the program as they wished. They have made the preparations for receiving equipment that will be delivered by the Arneb.

There were 3 stormy periods which extended over most of the month. The month wasn't too nice weatherwise. Generally cloudy with snow and wind. There was a 2 week period of rather strong winds. Only 26% possible sunshine was recorded. $18\frac{1}{2}$ inches of snow fell. Temperatures averaged 28 deg F with a high of 37 F and low of 15 F recorded. Prevaling winds were from the SSW and averaged 10.1 knots.

The upper air program was hindered a bit for 2 reasons; the balloons appear to be deteoriating after a years storage, and the control recorder required quite a bit of repair. Burst heights are generally lower than in previous months. Several flights were flown without the rawind portion recording the elevation and azmiuth angles recording. It has now bee repaired. New expendables should restore the high bursts were getting. 62 flights averaged 23120 meters. 4 reached 100,000.

The hydrodgen generator continues to act up and give trouble when the charge uses the fine grain aluminium chips. Most of the trouble is from the 'clinkers' that form which can't be broken up and flushed out. They have to be removed with a long pair of probing prongs. We had some of this difficulty during the 1959 season but not nearly as much as we are presently experiencing. The small chip size used by earlier deep freezes was much superior in this respect than the fine aluminium chips.

More preparatory work was completed for the expansion of the radiation program. As a result of exchanges of messages with the South Pole station, a net radiometer and aspirator therohm will be delivered by the Arneb for use in the radiation program. These instruments will greatly aid Charles Trainer.

It was discovered that the transducer temperature during my tour as MIC had been evaluated with a plastic scale that was constructed for a linear temperature range. However, B&W Radiometer #218 apparently is non linear. The plastic scale used was sent to Hallett to replace the ones that Norm Benes had been using. On the occassions when I had checked the calibration, I didn't notice any discrepancy in the temperature. My records and perhaps tohse scaled by Benes will have to be reevaluated to secure the correct temperature. This will be time comsuming but not difficult.

It was also discovered that the wrong measuring cup has been used to determinte precipitation totals. The graduated scale used is for the 4 inch rain gage. We have been using the 8 inch rain gage without its top to catch the snow fall. The gage and the measuring cup are not in proper relationship and a large error in totals has been recorded. The totals are 4 times too much and all previous precipitation figures (Deep Freeze IV and perhaps before) should be reduced by 75%.

With the discovery above a question was raised about the validity of the snow depths and total snow fall. These may be in error as they were not determined as perhaps they should have been. For the most part, the depth of the accumulated snow in the 8 inch gage was used as the figure for total fall of snow. If the snow had melted down, then a 10 to 1 ratio was applied.

2. Remarks. I'm still concerned about the drinking habits of Jack Hartzell. Although this month he hasn't failed to stand his watches, he continues to indulge at frequent intervals and thereby reduces his effectiveness. He cannot handle his liquor. I have my doubts about how he will come thru the winter at this base.

This is the final monthly report that I will submit. Hallett is in good hands and should have a good year. Due to a long turn over period, many problems were resolved before they became too big to handle. The crew is well indoctrinated and should go thru the resupply without too much difficulty and without getting behind in the work of the discipline.

A handwritten signature in blue ink that reads "Charles L. Roberts". The signature is written in a cursive style with a large initial "C".

Charles Roberts