

us by name as we stepped aground, and when we expressed our astonishment at his uncanny powers of recognition, he explained that he had been forewarned of our arrival by "muk-luk telegraph", an Eskimo method of spreading news. It was at Shishmaref, also, that we first witnessed an Eskimo funeral. Our most impressive memory of this ceremony is the gay colors of the "special-event" parkas worn.

Our next trip took us to the Class C station at Point Hope, which has one schedule a day. Again, I used weather bureau facilities during the station's idle periods. Here, too, I assisted in an inventory to complete the National Guard form 32 for Eskimos of the platoon. Membership in the National Guard is considered a "must" in small Eskimo villages for several reasons. Membership entitles the native to pay, free clothing and weapons. In addition, he enjoys a certain amount of local prestige.

With our testing at Nome completed on 20 April, we departed for Fairbanks, and in due time received instructions to report to Fort Lewis, Washington. While awaiting orders, Major Vinson and Sgt Lowery of MS7 joined Sgt Ryan and I for a day of fishing for greylings in Shaw Creek. We fished from a huge cake of ice, using single salmon eggs as bait. After about three hours, we had caught 56 greylings ranging in length from 15 to 21 inches. Four others,



Typical dwelling in Gambell. Small opening is the door, not a window.

including two of our TRRS team, had previously caught 77 greylings of approximately the same size in the same waters.

Now, months later, I enjoy reminiscing of the trip. I am certain that it will be long remembered by each of us who served as members of the survey team. And it is gratifying to know that, because of our work, an \$8,000,000 installation is now under construction at Kenai, and a Comm Recon Co has been sent to various locations in Western Alaska.



Frozen lake serves as landing field. Here a dog team meets a mail plane.

The War in the Ether:

POLYPS AND PENKALAS

~~(Confidential)~~

By a Polyp we understand in zoology a marine animal which catches its victim in its outstretched tentacles in order to eat it. What a "Penkala" is, that probably few people know today. Therefore, it may be mentioned that this was the name of a firm which before and during the First World War was producing the first mechanical lead pencils. In its advertising this firm used a head with an enormous ear behind which was stuck such a mechanical pencil. Beneath was simply the word "Penkala." This big ear of the Penkala poster and the tentacles of the Polyp served the Austrian and the German intercept services respectively from early 1916 on as the symbolic designation for a new branch of this service which will be described below.

In the summer of 1915 German engineers near Verdun had captured instruments by the aid of which the French had been intercepting German telephone lines. These instruments had been improved in Germany by the then Postal Councilor Arendt, and they had been used in the war of position first by the German and then by the Austrian Army to intercept telephone conversations of the enemy. These devices were installed in a dug-out in the front line, and from here insulated wires radiated out which ended in the so-called "search grounds"; these search grounds consisted of metal stakes which were driven into the ground as close as possible to the enemy's system of trenches. Where a single telephone wire was used the currents passing through the soil would encounter one or more of these search grounds, and after being amplified by the attached apparatus were rendered audible. Thus, as if with a magnet, conversations carried over the telephone net of the enemy were attracted, and, by using a switchboard, any number of search grounds could be thrown in selectively to eavesdrop on a definite sector of the front. In the German Army these lis-

tening posts, which by the beginning of 1916, were installed everywhere along the front, were called "Arendt Stations" or "Polyps"; the Austrians called them "Penkalas" (big ears!).

Since at that time the Russians at the front used almost exclusively so-called single wires, and even in the west single wires were still used to a great extent, the German and Austrian listening stations generally had very good results. While the radio listening service gave the connections, orders, and reports of the higher staffs, the Arendt service supplemented the picture with respect to small units and the front line. The results during 1916 -- especially in the east -- were so abundant that one Arendt station was supplying on the average 15 to 20 pages a day of significant information regarding the enemy. Excellent results were achieved by the Austrians with their Penkalas on the Italian front, where they were always very exactly informed of the situation on the Italian side.

When several such stations fell into the enemy's hands during the summer of 1916, and the listening in on telephone conversations became known, people began to use two wire connections everywhere. It was much more difficult (often impossible) to intercept these. Nevertheless, it took a very long time to make the change and to safeguard telephone traffic on the front -- particularly for the Russians -- to such an extent that listening in became virtually impossible. In any case, the German and Austrian Arendt services were able from early 1916 till about the middle of 1917 to hear most of the telephone conversations of the Russians up to five kilometers behind the front, and to utilize their content for shaping their own measures. The Russian telephone operators were very lo-

quacious when seated at their instruments. When a Russian telephone operator took over either by day or by night, he began by "testing" all his connections by calling up the correspondent stations. Generally he knew the men at the other end of the wire, and a conversation ensued in the course of which the two exchanged experiences, impressions, and observations. Very often they spoke also of official matters. They discussed impending or accomplished reliefs, the question of supply, the spirit of the troops, extension of positions, losses suffered, changes in command, reinforcements received, and the like.

Aside from these bits of private information, very good information, could sometimes be obtained from the conversations of the officers, particularly when patrol undertakings were impending, attacks were planned, etc. Precise information was obtained regarding the locations of staffs, batteries, depots, and the like. Artillery observers could generally be heard well because they were stationed well forward with their telephones. They gave firing directions; by observing where missiles struck and comparing the figures transmitted, one could soon get the exact location of the hostile battery. From now on it was impossible to prepare for any major military action without its being noted by the Arendt service, since, if an order was given to stop all telephone traffic and this was done, this very measure was enough to attract attention and to indicate that the enemy was making preparations.

Since the telephone lines of the staffs further to the rear were attached to the same switchboards in which lines from the front terminated, induction often made it possible to listen to these wires as well, over which extremely informative conversations were carried.

The introduction of the "Polyps and Penkalas" in the armies of the Central Powers signified from the military point of view an unparalleled factor. Since from the summer of 1916 on these stations were located at intervals of about 10 kilometers along the entire front, it was possible to monitor the entire enemy telephone traffic at the front almost without a break. In the east this one-sided superiority continued down to the end of the war; in the west it was equalized since the French and English used similar apparatus to intercept German conversations.

In the eastern theater the practical result of this superiority was that a large part of the troops of the Central Powers could be withdrawn without a risk since there was now no danger of a surprise movement by the enemy. It would never have been possible for the armies of the Central Powers to keep the eastern front stabilized if they had not had such extensive insight into the enemy situation, due to the results of the radio intercept and the Arendt services, since the strength ratio on the eastern front was in many sectors ten to one against the Central Powers.

**Translated from original
German materials by
DR. RAY W. PETTENGILL**

USE OF THE BOEHME 5-C AS A DOUBLE FREQUENCY SHIFT MODULATOR

(Continued from Page 12)

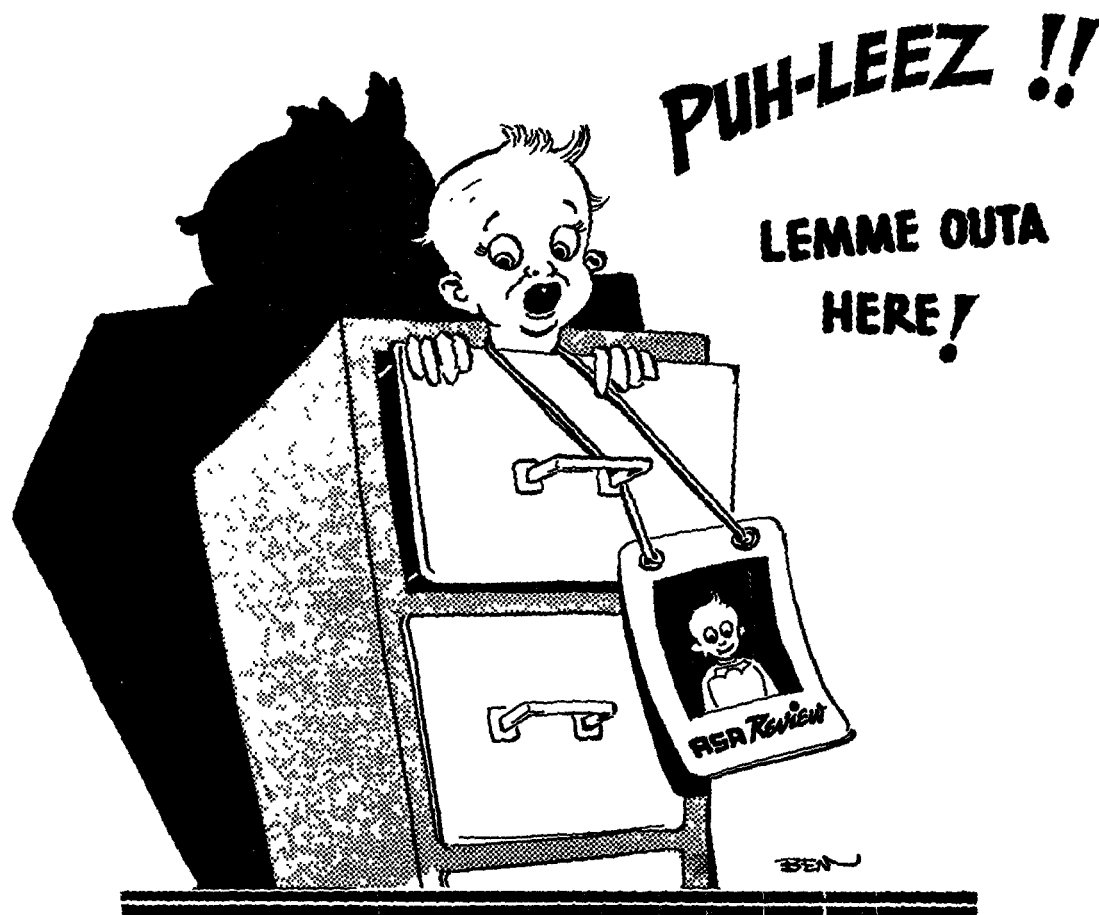
NEL II of the DFS signal will now appear in the output of the Boehme.

8. To change to CHANNEL I, leave the setting of the first receiver where it is, watching the scope pattern of the first receiver, rotate the Boehme tuning control further to the right until the next pattern appears in the vertical (fig 5).

9. Change the scope pattern to the second receiver. There will be no pattern

in the vertical (fig 6a). Tune the receiver back toward the high frequency side of the signal until the first pattern appears in the vertical (fig 6b). There will now be a complete pattern on the scope, and CHANNEL I of the DFS signal will appear in the output of the Boehme.

10. In the demodulation of either of the channels, it may be necessary to adjust the "signal balance" control for best results. The "output reverse" switch is used to correct an inverted signal.

~~CONFIDENTIAL~~

I'm just a youngster, but I like to get around

And I don't like to be locked up in file-cabinets except when necessary.

I'm not supposed to stay in the file-cabinets.

During working hours I'm supposed to be left around on tables and desks so that people can spend their coffee breaks and their other odd moments with me.

I won't take up much of anybody's time -- just an hour or so in two months. Besides, I'm supposed to be read while you're working.

So please

LET ME GET AROUND!

~~CONFIDENTIAL~~