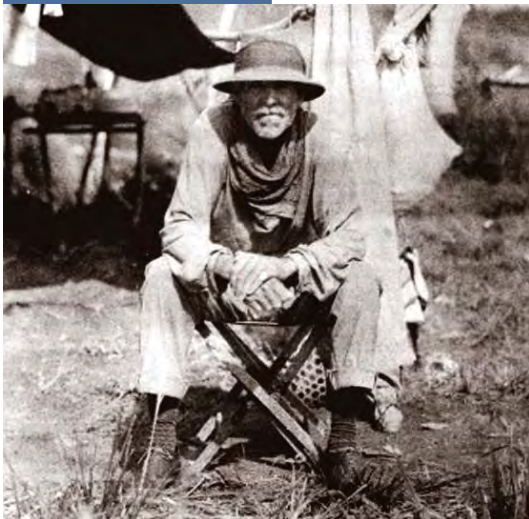


K9YA Telegraph

Robert F. Heytow Memorial Radio Club

Volume 10, Issue 9, September 2013



The Hamilton Rice Expedition

Part II: Shortwave in the Tropics 1924-1925

Philip Cala-Lazar, K9PL

The radio gear soon proved its worth between the base and remote camps and to the outside world. McCaleb with the advance party using the 25-watt set called Swanson at Boa Vista for needed and soon dispatched supplies.

Radio signals which traveled 5,000 miles from the ship of Dr. Alexander Hamilton Rice, the explorer, on the Rio Branco or Parima River, 400 miles north of Manaus on the Amazon River, which already have been received in New York and in London have now been heard by a radio amateur of Philadelphia -- E.J. Eckert of Station 3GK.

"To the American amateur is due a large share of the credit of the success of the Rice Expedition's employment of radio in the Amazon valley." Some of the U.S. hams worked: 2AG (C.R. Runyon, Yon-

kers, N.Y.), 2BR (A.C. Lopes and J.W. Baldwin), 2CVS (Ellison Thompson, N.Y.C.); 1COT (Braintree, Mass.); 3ATE (Baltimore, Md.); 4DO (M.M. Burns, Atlanta, Ga.); 5SK (Fort Worth, Texas); 6CHL (San Francisco, Calif.); 6OI (Stanford University, Calif.); 8ES (Akron, Ohio); and 9ZT (Minneapolis, Minn.).

*"... 'amateur
radio men over
half the civilized
world'"*

In the summer of 1924, coincidentally as amateurs moved to their newly opened shortwave bands, the 400-watt transmitter started blowing its 50-watt vacuum tubes with dismaying regularity. So WJS migrated to HF and was daily passing traffic to U.S. hams. This was followed by messages passed to hams in the U.K., Buenos Aires, and SJ, the United Fruit Company station at San Jose, Costa Rica.

Once modified for HF operation the expedition's radio gear far exceeded its 200-mile estimated long wave range, and now on shortwave, "...the Rice Expedition's transmitters night after night, months on end, laughed at the 3000-odd miles of space between upper Brazil and the United States... the operators whispered into the ears of amateur radio men over half the civilized world."

Unfortunately, loss of the long wave transmitter meant a break in the Boa Vista to Manaus link necessitating a circuitous route for messages to Manaus, 400 miles away. They were sent via shortwave to the U.S., 3,000 miles distant, and from the U.S. via cable to Para and from there 850 miles by radio to Manaus.

New York Times

May 29, 1925

DR. RICE ON AMAZON, RADIOS 5,000 MILES;
Philadelphia Amateur Picks Up Messages and Talks
With Explorer.

Messages were exchanged with U.K. amateurs 2NM (Gerald Marcuse, Caterham, Eng.) and 2OD ([possibly] E.D. Simmonds, Ascot); 1AB (Rio de Janeiro); 2AP (Wellington, N.Z.); CB8 in the "Argentine"; and SJ, the "United Fruit Company's efficient station in San Jose, Costa Rica." Both John W. Swanson and C.R. Runyon were members of the venerable Radio Club of America.

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The Secret Listeners

A Review

John Swartz, WA9AQN



The Secret Listeners

The title of this book got my immediate attention. I was certain that I was not the only kid who huddled under the covers with a crystal set built into a plastic rocket. But, was that a serious and widespread enough phenomenon to merit a book? Not quite!

I then noticed the smaller type of the subtitle: "How the Y Service Intercepted German Codes for Bletchley Park." I knew those listeners hadn't had the plastic rocket radios

for that one.

The Secret Listeners is foremost a tribute to the thousands of men and women who found themselves in front of radio receivers for thousands upon thousands of hours listening to endless QRM and QRN covering a good portion of the short wave radio spectrum searching for signals to be copied. What they copied was then reported to others who would decrypt the messages and determine what, if any, use they may be to the Allied prosecution of World War II. The listeners included those who served at home and in the far flung reaches of the Empire. And, it included those who were posted near the fronts to intercept enemy operational traffic.

The title refers to the fact that all were sworn to secrecy, whether civilian or enlisted military. What they did, when they did it and where they did it were all secret. As for the "why" they did it, they only knew they were doing it to contribute to the Allied effort to prosecute the war to a conclusion that defeated the Axis powers. It was no idle oath; all were required to sign declarations under the U.K. Official Secrets Act, which imposed severe criminal penalties for violations. The stories of these men and women affirm the near universal adherence to that oath, even in response to inquiries from their spouses, parents and loved ones.

The power of the Act and the oath was so strong that virtually no mention was made of the activities of these men and women until years after Group Captain H. Winterbotham obtained clearance for his famous publication of *The Ultra Secret* in 1972. Winterbotham's book opened the door to the fascinating revelations that piqued the inquisitive minds of those around the world intrigued by the mysteries and miracles of Bletchley Park. It was the English country mansion and outstation at which the German Enigma codes were actually deciphered. The role which it and the estimated 14,000 people who worked there played in cutting years off the war has been the subject of many articles, books, documentaries and fictionalized accounts since then. It is generally recognized they not only shortened the war, but that countless lives were saved on both sides in doing so.

One very important group of Secret Listeners was the civilian amateur radio operators who became Voluntary Interceptors. Through the "old boy" network, the then president of the Radio Society of Great Britain, the U.K. national amateur radio society, put into action a plan to mobilize the receiving skills and capabilities of British amateurs in combing the airwaves searching for the transmissions of possible spies and agents who might have been planted on British soil. Having had to relinquish all their transmitting

equipment, these amateurs had been thrown off the air in 1939 at the commencement of hostilities on the continent and the emergence of the threat to the U.K. It is estimated that as many as 1,700 amateurs, scattered across the British Isles, became engaged as Voluntary Interceptors (V.I.'s), each combing an assigned bandwidth of the radio spectrum at assigned hours, compiling what they copied, generally as five-letter code groups, and mailing them off to what they only knew to be a post office box in Barnet, Hertfordshire.

As it turns out, there weren't any spies transmitting for them to find because when spies did land, they were usually found very quickly. Their fates were execution, or, being turned to become double agents. But what

*"the 'old boy'
network"*



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the veteran amateurs did not learn until 1979 was that their efforts had uncovered the radio networks of the *Abwehr*, the German secret service. A half hour television documentary broadcast in 1979 became the first public disclosure of exactly what the hams of the U.K. had been doing with stealth antennas and receivers hidden in blacked out closets and garden sheds. Suspicious neighbors reported them as spies, but the amateurs were forbidden to speak, and official intervention from higher “authorities” was required and quickly resulted in the termination of inquiries and investigations of what these folks were doing. To all appearances, most of the V.I.’s were able-bodied men avoiding a duty to their country hiding in their closets and garden sheds. The revelation is available for viewing at:

<http://www.eafa.org.uk/catalogue/5108>

But, I digress. The V.I.’s were only a part of the army (and navy and air force) of people who were trained and turned loose (in a regimented fashion) with the very best receiving equipment then available (generally American-made National HRO and Hallicrafters receivers) to make sure no portion of the usable radio spectrum was not being monitored at all times. In addition to the V.I.’s, there were sophisticated receiving centers scattered across the U.K. and throughout the British Empire. The “Y Service” was not a single, identifiable, unified entity; perhaps it is more appropriate to use the plural, “Y Services.” The author tells the stories of the people of these services, and puts them into the context of some of the surrounding events of the war.

The story of the people, both at home and at the outposts of the Empire is not an easy one to tell. These people were not at the front and not facing the imminent terror and brutality of the front lines, although in many cases their lives were at risk on a daily basis. There was little glamour in the work. The author has focused on recounting the very human side of the story, giving the reader more than a glimpse into the wartime lives, thoughts and feelings of a number of those intrepid souls who suffered the process of learning Morse, gaining proficiency and speed, only to be posted to places they never heard of, to which they had little desire to visit, under circumstances that put them in peril for their lives, for the purpose of sitting for long hours clamped between a set of headphones, listening and making perfect copy of messages they could not understand, under whatever QRM and QRN the

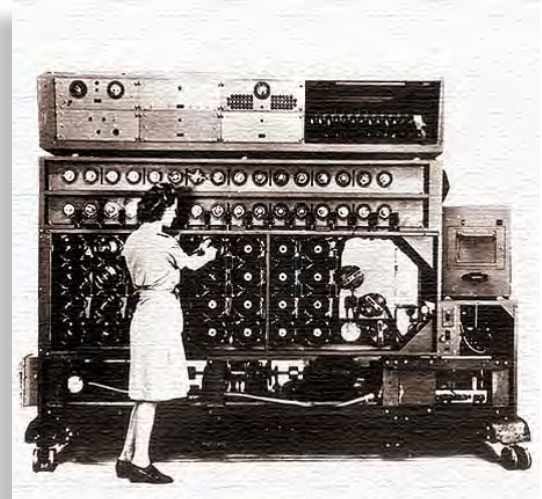
bands brought through the receiver circuitry. They certainly didn’t have the advantages of the DSP processing we so richly enjoy now; these operators truly had to hone the skills of using the filtering equipment that existed between their ears.

The story is intriguing and fascinating. It pays tribute to those without whose work the famous magicians and mathematicians at Bletchley Park would not have had the rich array of material to feed their endeavors. That said, the work is short on material detailing the technical features of the listening stations and outposts that many amateurs would appreciate reading concerning antenna systems, receiving equipment, switching arrangements and the like. But, that was clearly not the author’s focus, and there are other books and materials available for those more interested in further study or research on the technical side. It is the human stories of the extraordinary work of ordinary people, woven into the fabric of various fronts and stages of the war that emerges.

My digression, above, into the work of the Voluntary Interceptors, was intentional. They do not comprise the major focus of the book, but they are significantly recognized and their work should be recognizable to any amateur who picks up the book. We, as radio amateurs of this era recognize their mastery of the art and skill of radio

and radiotelegraphy in particular. We can imagine them with headphones on for hours on end, copying Morse. The fact that it was encrypted language is what is significantly different and knowing what they copied might mean life or death also distinguishes it appreciably from what we now do.

The V.I.’s were there because of their particular love of radio, electronics, and Morse. Were it not for that element, the listening effort would have taken far more resources and time to assemble. The men and women who manned most of the military and civilian monitoring stations were not uniformly from the ranks of radio amateurs. Most were not. We can



*“...their
particular
love of radio,
electronics
and Morse.”*



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CONTINUED - SECRET LISTENERS ON PAGE 8

“On the Shoulders of Giants”

Paul W. Ross, W3FIS



Harold E. Edgerton

Images: Smithsonian

“The 12th century theologian and author, John of Salisbury, used a version of this phrase in a treatise on logic called *Metalogicon*, written in Latin in 1159. Translations of this difficult book are quite variable but the gist of what Salisbury said is:

We are like dwarfs sitting on the shoulders of giants. We see more, and things that are more distant, than they did, not because our sight is superior or because we are taller than

they, but because they raise us up, and by their great stature add to ours.

[The Phrase Finder: <http://www.phrases.org.uk>]

This phrase has always stuck in my mind over the years. I have had the honor over the years to have worked with, known, or met some of the seminal leaders in science, or “giants.” A story...

A Summer Job

Many years ago, when I was a junior in engineering school, I was looking for some sort of meaningful summer job, and something that might pay some money, into the bargain. The previous summer was spent as a part-time church janitor, along with playing a lot of tennis. I really needed something better, and in particular, something that would fit in with my career goals. Off to the campus placement center!

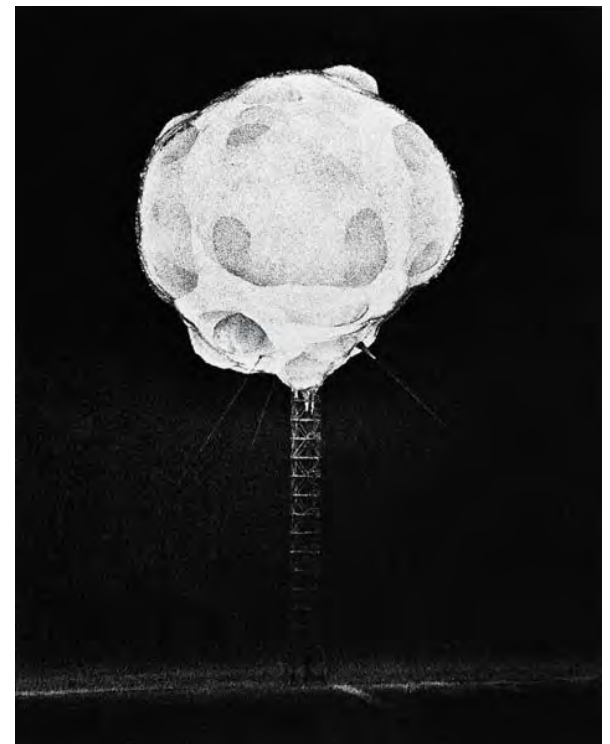
Along with the usual stuff, there was an ad telling of an upcoming visit to campus by a firm from Boston, called “EG & G.” It was not at all clear what they were up to, but it seemed to be something to do with electronics, so I signed up for the interview. The full name of the firm was “Edgerton, Germeshausen, and Grier.” I knew about Edgerton, as Harold “Doc” Edgerton was, along with Ken Germeshausen and Ken Grier, the inventor of the electronic flash.

In high school I developed an interest in photography, so my dad lent me his electronic flash—with a 450-volt dry battery, mind you, to take photos of our high school basketball games. Wow! This might really be good! An article in the *Leica Manual* referenced Edgerton’s work. I had also seen some of his remarkable “stop action” photos.

New Haven to Boston

Well, I got an offer for a summer job, what we now call an “internship,” and at the end of the semester, I packed my stuff, and got on a train from New Haven to Boston. Fortunately, I had some friends in the Boston area that could help me find suitable (cheap) housing for the summer. It was off Central Square, which at that time was an acceptable part of town. Better yet, not having a car, it was just a block from the MBTA, which would take me back and forth to work each day.

The next day, I went off on the MBTA from Central Square in Cambridge to Kenmore Square in Boston.



Edgerton A-Bomb Test



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EG&G was located on Brookline Avenue, just down the street from Red Sox stadium. I checked in with their HR office, signed a pile of stuff, and was escorted to my new digs. My boss was sitting cross-legged on his desk, talking to a number of people I found to be my new colleagues. I should have caught on that this was going to be something more than a routine job. I was not disappointed. They had just got back from some bomb testing in the Pacific, and were all attired in "Aloha" shirts.

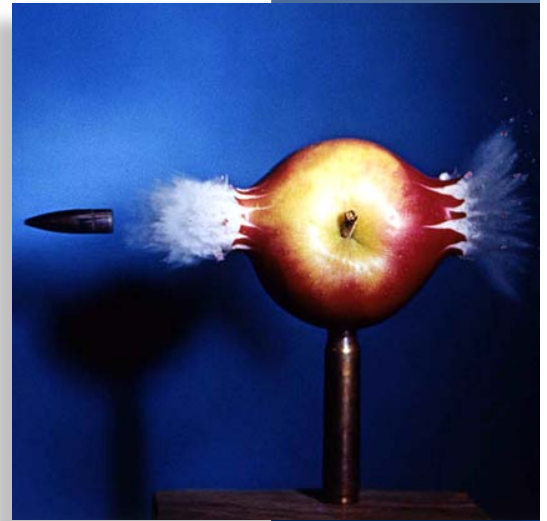
The Big Time

EG&G's main task was to run the timing and firing tests for the then Atomic Energy Commission. My job was to work with another summer intern to help get some equipment ready for the French to try out their atomic bomb in the Sahara Desert. We were definitely the "big time" here. I was handed a pile of manuals for some equipment I had never seen before, and am unlikely to every see again. There was test protocol, and the statement "we have to ship this stuff out in three weeks." Panic ensued, but we rose to the occasion, with more than a few panicked calls to our supervisor. We shipped on time. Since that episode, very little scares me.

An interesting upshot of this was that my fellow intern was a student at MIT, and arranged a tour of Harold Edgerton's office and laboratory. We not only met the man himself, but also saw one of his photographic experiments in operation. Frankly, it was much simpler than I expected. This was the gunshot with the bullet just leaving the muzzle of the pistol. The shock wave from the exiting bullet was used to trigger the flash with the simple expedient of using the sound picked up by a microphone close to the muzzle. Simple is always good.

I suspect all our hard efforts on getting the equipment ready for the French resulted in some serious melting of sand somewhere south of the Sahara Desert.

What was the eventual outcome of all this? I didn't take a permanent job with them, but earned enough spare cash for an engagement ring for the lady I am still married to. Who knew? ■



Images: Smithsonian

The Rest of the Story...

About that job with EG&G financing the engagement ring, that story is pretty good. As usual, I approached my father about such matters when I was home for bit at the end of that first summer in Boston.

He informed me that he had a friend, who knew a friend in the diamond business over in Buffalo. I am from Niagara Falls, about 25 miles north of Buffalo.

So, off we go, me, my father and his friend, to visit the diamond merchant. The fellow empties out what must have been about a quarter-million dollars (in today's prices) worth of diamonds on his kitchen table (he worked out of his home), and gave us a short course on how to pick a good one. As part of the conversation, the fellow complained as how his electronic flash wasn't working that well, remember, I had been working at Harold Edgerton's company. I volunteered to take a quick look at it. I don't recall the details, but it was quick fix, either corrosion, or something loose.



I am not sure, but I think I got a pretty good price on the diamond, and the wedding band into the bargain.



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Chicago Daily Tribune

January 25, 1925

Amateur Gets Rice Expedition in Brazil Wild
Conversation Carried On Over 7,000 Miles.

British amateur, Gerald Marcuse, 2NM, heard the expedition's "faint call," responded, and was re-

warded with a DX QSO. The weather report, "1,000 miles up the Amazon and 200 miles from the closest village," was "Balmy and warm. In the day the temperature is 90, and cold at night. The wind from the Pampas river is very swift."

The WJS to 2NM QSO was described as "One of the most curious phenomena of English radio history occurred... when Garlad [sic] Marcuse, an amateur at Caterham, found himself in communica-

tion with the Rice Expedition, 7,000 miles away in the heart of wildest Brazil."

The first message Marcuse received from the Rice party followed a period of several weeks without news as they explored a tributary of the Rio Branco 1,200 miles north of Cuiabá (state of Mato Grosso): *Progress slow, owing to extremely difficult physical conditions. Personnel expedition numbers over fifty. Unable use hydroplane at present due to low water, objects expedition being obtained. All well. This message sent by expedition's own wireless. Rice.*

Gerald Marcuse served as president of the Radio Society of Great Britain from 1929 to 1930 and, starting in 1927, was a shortwave broadcasting pioneer who initiated "Empire Broadcasts" five years before the BBC launched its "Empire Service."

Most of the traffic passed by the Rice Expedition was directed to the American and Royal Geographical Societies. The RGS issued a bulletin hailing the event as "the first-ever communication by radio to the Society from an expedition in the field." One variously routed message from Dr. Rice was addressed to Arthur R. Hinks, secretary of the RGS in London. Failing to raise U.K. stations 2GK and 2NM, it was eventually copied by Edward J. Eckert, 3GK, in Philadelphia, who mailed it to London.

QST

April 1925

"2AXF has worked WJS the station of the Rice Expedition in Brazil." Operator at 2AXF was Harold Fread of Irvington, N.J.

QST

May 1925

"LR is an advance or field station of WJS, the station of the Rice Expedition."

"WJS, the station of the Rice Expedition, and its various field stations, UR, UB, LW, are being heard all over the U.S. and Europe. It is also being worked by a great many."

Conditions in the Field

Conditions in the field were consistently hot, muggy, pestiferous, beset by parasites, disease ridden, and supremely uncomfortable, taking its toll on the men and their gear. Several members of the expedition suffered with malarial fevers, and the party's ethnologist, Dr. Koch-Grünberg, succumbed to the malady.

Swanson and McCaleb moved up the Rio Branco on the stern wheel steamer *Parahyba* to Vista Alegre. That village was revealed a poor radio location, so the two radio operators boarded a *batalao*, a "barge towed by a steam launch," and disembarked at the village of Boa Vista which was then established as the expedition's base of operations "during the time the party was in virgin territory."

To complete the station at Boa Vista logs were hauled from a location four days distant. From these logs three masts were erected: 80-, 75- and 40-foot high. A long wave antenna was strung

between the 80- and 75-foot masts and the shortwave antenna between the 75- and 40-foot masts. Also installed were an extensive ground system for long wave work and "a litzendraht [litz wire] cable counterpoise for the high-frequency set." For receiving, a 30-foot long wire was suspended one foot off the jungle floor. This arrangement was shown to reduce signal strength, "but reduction in static more than compensated for this loss. In a tropical region where every night is a static night, it thumbed its nose to atmospherics."

The Boa Vista 100-meter transmitter was modified to work on HF-80- and 40-meters. Lacking a wavemeter, one was cobbled up. WWV at

"...the heart of
 wildest Brazil."



Rio Negro



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K9YA Telegraph

Washington, D.C., determined the fundamental and “utilizing the system of harmonics, a hastily assembled but accurate instrument was calibrated.” Swanson reported that on nights when operation on 80-meters proved futile QSY’ing to 40-meters got the message through.

The advance camp’s makeshift receiver “picked up amateur signals from every radio district in the United States, and from several foreign countries. A simple Armstrong circuit was used.” First heard at LR was old reliable, KDKA, and the first amateur was 4SA, heard, called, but not worked. Heard with a strong signal, but also not worked, was RCA’s Tuckerton, N.J. coastal station WSC. Station power was derived from a dynamotor powered by batteries and the batteries charged by an auto generator belt driven by the canoe’s outboard motor.

Traffic from the advance camp was relayed to Boa Vista and from there to its destination. One evening its 25-watt transmitter’s HF signal resulted in a QSO with M.M. Burns, 4DO, in Atlanta. “[T]he portable station set up at camps and bivouacs beyond civilization’s frontier was dispatched by operators whose right hand tapped the key and whose left repulsed an insect onslaught.”

Speaking of dispatching, a blowtorch was used to evict ants residing in the shortwave receiver. Hornets, too, took up the radio bug. One mud daubing species invaded the transmitter. This was discovered when “their mud huts shorted the grid and plate terminal’s of one transmitter tube and a veritable fireworks display resulted when the current was turned on.”

Limited by what they could carry the expedition mostly lived off the land and consumed tapir, the expedition’s “principal meat supply,” with some specimens weighing as much as 500 lbs. and described as tasting like beef while physically resembling pork.

Supplementing the tapir protein were piranha, they “offered good sport as well as good food.” Carbohydrates and sugars were supplied by manioc flour (*farinha*) and plentiful supplies of oranges, pineapples and bananas.

On February 23, 1925 Swanson, his leave of absence over, departed the expedition to return to the U.S. McCaleb became the sole operator until early summer of that year when the expedition pulled up stakes and returned home.

Evening Independent

July 11, 1925

Thanks to the unprecedented view offered by *Eleanor III* it was proven the two rivers, Rio Negro and Orinoco, did not share the same source.

Consequent to mapping the upper Amazon basin Dr. Rice foresaw the development of the huge area for “water power, timber... abundant cotton, tobacco and fruit, and... grazing grounds for countless herds of cattle.” The passing decades have seen the fulfillment of his prediction.

Upon his departure Dr. Rice established a legacy of schools and a hospital. Three schools: São Gabriel, 700 miles up the Rio Negro; Boa Vista, a school with “several hundred enrolled,” and a hospital; and at Nianoa, “seven miles up the Rio Negro.”

Wrapping up, Dr. Rice stated, “The work which I set out to accomplish is done, but I am going back again. We have just made a good start.” Though he would live another 30 years filled with noteworthy achievements and institutional endowments this would be his final expedition. ■

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Thomas S. McCaleb,
Assistant Operator

“...a veritable
fireworks
display...”



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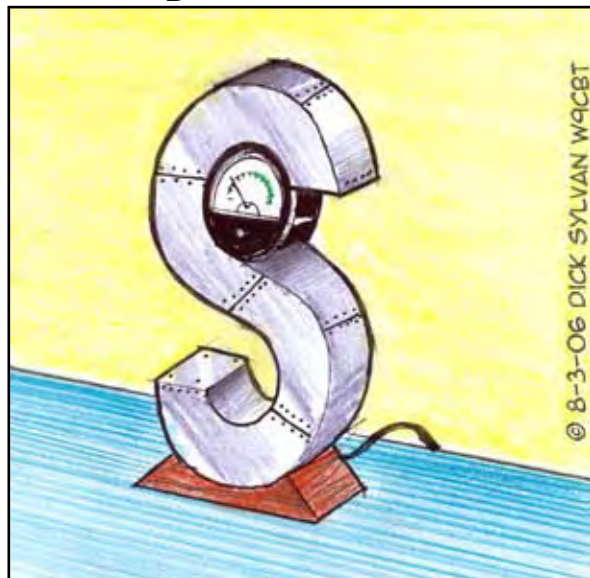
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Dr. Hamilton Rice, Royal Geographical Society

Ham Lingo

DICK SYLVAN, W9CBT



"S-METER"

appreciate what it took to bring them "up to speed." The Secret Listeners, military and civilian, have stayed in the background for decades, at first not knowing how they contributed to the war effort, and then not being fully recognized for the importance of their work in providing the raw materials to those who received most of the honors and accolades. But that is changing with the publication of works like this one. And, hopefully, now that the Radio Society of Great Britain has its new museum facility on the grounds of Bletchley Park, the role of the radio operator should receive more credit with the public.

In 2007, this writer had the privilege of attending a reunion of Voluntary Interceptors and of men and women of the military units that were a part of the Y services, as well as those deployed to fields of battle to receive Ultra intelligence. The group photo, taken at Bletchley Park in April 2007, showed 23 of the veterans. Sadly, the photo from the April 2013 gathering shows only 6 were able to attend. Recognition eluded many who stood in the shadows and who faded from those shadows during nearly seven decades since the war's end.

The capability to perform the extraordinary emerges when the ordinary are placed under an extraordinary threat. It may sound trite, but the way the people of Great Britain mobilized for the common good in response to the threat is a tribute to their character and strength. In a serious way, we, as amateur radio operators can be proud of our association and participation in the role that a love of radio can play in the movement of history. ■

The Secret Listeners, Sinclair McKay, Aurum Press, London, 2012 (ISBN 978 1 84513 763 2)

A Winning Formula...

Like what you're reading in this month's *K9YA Telegraph*? If so, you're in good company, as amateur radio operators in more than 100 countries agree with you. Know what else? Hams just like you write the *K9YA Telegraph*.

Evidenced by your feedback we know we've hit on a winning formula:

YOU + K9YA Telegraph = A Great Read

But without your side of the equation, it just doesn't add up.

http://www.k9ya.org/write_for_us.htm