K9YA Telegraph

Robert F. Heytow Memorial Radio Club

Volume 4, Issue 10, October 2007

Ready Reckoners

Gone with the Slide Rule

Philip Cala-Lazar, K9PL

"Look on my works, ye mighty, and despair!"

Ozymandias, Percy Bysshe Shelley, 1818

Gratis advertising piece or purchased for a pittance, these "ready reckoners" bear witness to companies and times evaporated. Operating upon an occidental form of *origami*, they are, in the ham radio sphere of influence, nearly extinct.

Too often tossed out when old timers' shacks are purged of their collections of amateur radio ephemera or ignored when displayed on hamfest tables, they form a little appreciated part of our history. Produced by electronic components manufacturers, the ARRL and a coterie of small entrepreneurs, these aids once proudly resided on shack desks and workbenches as useful tools. Today, when fewer of us build from scratch they idle unused, yet admirable.

Colorful or monochrome—they are ingenious bits of pre-byte technology. Over time I have collected a small number of these items and offer them here for your enjoyment.

American Radio Relay League, West Hartford, Connecticut: Lightning Calculator. Produced under license of their designer, W.P. Koechel, the League sold six types of Lightning Calculators; designated A through F. Types A and B were priced at (in 1940) at one dollar postpaid and the others at 50 cents postpaid.

Type A, Radio Calculator, determines coil dimensions and winding data; Type B, Ohm's Law; Type C, Wire Data; Type D, Decibel; Type E, Parallel Resistance Series Capacity; and Type F, Resistance.

CALECTRO, GC Electronics, Division of Hydrometals, Inc., Rockford, Illinois: A simple ohms calculator acquired at Heathkit retail store, Lincolnwood, Illinois, late 1970s.

Centralab, Milwaukee, Wisconsin, copyright 1953: COLOR CODE CALCULATOR for resistors and tubular ceramic capacitors. All six wheels to input capacitor markings and four wheels input resistor markings. Manufactured by Graphic Calculator Co., Chicago.

Also from Centralab, copyright 1941, "FIXED RESISTOR CALCULATOR." This one substitutes three vertical slider inputs for the more commonly utilized wheels.

CONTINENTAL CARBON INC. ("Manufacturers of High Grade Carbon Resistors"), Cleveland, Ohio, copyright 1931: STANDARD R.M.A. COLOR CODE INDICATOR and STANDARD R.T.M.A. COLOR CODE INDICATOR. (RMA, Radio Manufacturers Association; RTMA, Radio-Television Manufacturers Association;

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Inside This Issue...

Philip Cala-Lazar, K9PL
Editor

Mike Dinelli, N9BOR
Layout

Dick Sylvan, W9CBT
Staff Cartoonist

Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

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Disaster in the High Arctic

The Airship Italia, Umberto Nobile and Giuseppe Biagi

Mark Solomon, KQØA with Philip Cala-Lazar, K9PL

Airship *Italia* before flying to the North Pole

In 1928 a dramatic rescue of the survivors of the airship, *Italia*, took place in the high Arctic. It was made possible, in part, by the contribution of a little known Russian amateur radio operator, Nicolai Schmidt, who was first to hear their distress call. Prior to the development of reliable airplanes, airships were used for long-range exploration in the Arctic. One such vessel, *Norge*, designed, built and commanded by General Umberto Nobile, made the first successful transpolar flight in the spring of 1926 from Kings Bay in Spitzbergen to the small village of Teller in Alaska. Roald Amundsen, famed Norwegian polar explorer, and American explorer Lincoln Ellsworth were both part of the crew of this flight, which attracted worldwide attention.

General Nobile's Team

Shortly thereafter, General Nobile assembled a team to return to the Arctic. In the spring of 1928 he left Rome aboard his airship, *Italia* (*Norge's* sister ship), and again headed for Kings Bay as *Norge's* hangar was available and permission was secured from the Norwegian Aero Club for its use. In April the flight proceeded via Milan, Italy; Stolp, Germany; then over Russia, Finland and Sweden to Vadso on the northeast coast of Norway. Early on the weather encountered was quite stormy imposing repairs to *Italia*. On 5 May *Italia* left Vadso and began a fifteen-hour flight to Kings Bay where, because of high winds, her landing was delayed and further damage to the ship occurred.

> *"…three 250 hp Maybach engines propelled her…"*

At 106 meters long and with a diameter of 19.47 meters, *Italia*'s 18,500 cubic meters of hydrogen gas provided lift while three 250 hp Maybach engines propelled her to a top speed of 100+ km/h.

Her radio complement included a Marconi RA8 transmitter and a Marconi RA6 receiver; part of a series of radios developed for military aircraft. The RA8 transmitter utilized two Osram-Marconi T250 vacuum tubes rated at 300 watts output over a frequency range of 600-900 meters. The loop antenna used at these wavelengths comprised 100 meters of bronze wire wound in a drum-shaped configuration. Storage cells provided power to the radio gear and were charged by a Marelli dynamo driven by a propeller that could be deployed into the airflow.

Italia's Radio Gear

For short wave reception was an English Burndept MK IV receiver employing three Mullard S525 vacuum tubes and covering 12 through 100 meters via interchangeable coils. The short wave transmitter employed a Philips TB 0410 triode and was a Hartley-type oscillator design. It was developed by Ascanio Niutta, I1KX, and Giuli Salom, I1MT, and generated 5 watts output between 30 and 50 meters. The entire miniaturized unit (carrying an "S" designation for Salom) fit in a wooden chest measuring 55x22x25cm and weighed about 12 kilograms. An off-center-fed antenna was installed with the three-quarter-wavelength leg running toward *Italia*'s bow and the quarter wavelength leg running to the airship's stern.

Italia was also provided with a Marconi DFM2 direction finder based on the Bellini-Tosi design.

First Flights and Crash

Italia's first two flights from Kings Bay took place on 11 and 15 May. The first flight returned to Kings Bay after eight hours due to icing and problems with the control system. The second flight covered 1,500 kilometers into uncharted regions of Nicholas II land while gathering meteorological, magnetic and geographical data. The support vessel, *Citta di Milano* (IGJ), broadcast a beacon used by *Italia* to determine its bearing.

The third flight departed Kings Bay on 23 May for a flight to the North Pole. They crossed the pole at twenty minutes past midnight on 24 May at which time they dropped the Italian flag and an oaken cross

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telegraph@k9ya.org

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donated to the mission by Pope Pius XI. *Italia* started back to Spitzbergen at 2:20 am and encountered extremely bad weather. At one point the elevator jammed, but the crew was able to recover and the airship rose to 1,000 meters breaking through the cloud layer into bright sunshine. However, at 10:25 am the airship became tail heavy and rapidly descended towards the pack ice. Recovery was impossible, the crash resulting in the control cabin being torn from the airship. Relieved of the weight of the cabin the envelope regained buoyancy and drifted away. Six crewmembers trapped in the envelope were never seen again. The crash site, 81 14' latitude north and 28 14' longitude east was on the pack ice off North East Land in the Spitzbergen Archipelago adjacent to Foyn and Broch Islands.

Airship Down!

Of the nine men surviving the crash several were seriously injured, including Nobile who suffered fractures to his right arm and leg. The crash site included crushed and twisted remnants of the main cabin, a sack containing a collapsible tent, a sleeping bag and food, including boxes of pemmican and chocolate. In all, their food totaled 65 kilograms, however, their situation was desperate. The ice pack was beginning to break up and was rapidly drifting southeast. They erected the tent and dyed it red for greater visibility. The dye was obtained from the contents of glass spheres dropped from *Italia* to determine its altitude by measuring the time required for the sphere to hit the ice. Giuseppe Biagi, the radio officer, scoured the crash site first recovering his emergency receiver and then, lifting a small box from the snow and ice, the emergency transmitter.

> *"Spotting the red tent…"*

Go Box to the Rescue!

An aluminum tube, taken from the wrecked control cabin, was erected as a quarter-wave antenna mast and a counterpoise was stretched out on the ice. The recovered batteries were intact and would last for sixty hours of transmission. Biagi transmitted a distress call on 33 meters every 55 minutes in a pattern prearranged with the *Citta di Milano*:

SOS Italia *Nobile. On the ice near the island of Foyn, the Spitzbergen northeast, latitude 80 37', east longitude 26 50' of Greenwich. Impossible to move lacking sled and two hurt. Lost airship in other locality. To answer via IDO 32.*

Life on the ice floe was difficult, the tent was too small for all the survivors and at one point they were attacked by a polar bear. Finn Malmgren, Swedish meteorologist for the expedition, took charge of the situation and killed the bear with a pistol. Now the men supplemented their meager diet with portions of poorly cooked bear meat.

Biagi Heard Near Archangel

Although there was no response to their distress calls they were able to monitor marine radio station San Paolo (IDO) in Rome on 32 meters where they learned of the enormous effort underway to determine *Italia's* situation. On 6 June, twelve days after the crash, Biagi was listening to San Paolo when he learned Nicolai Schmidt had received his distress call. Schmidt, a Russian amateur radio operator (call unknown), who lived in the village of Voznesenye near Archangel, alerted Soviet authorities who then passed the information to the Italian government. Eventually, radio communications between Biagi and *Citta di Milano* was established despite poor atmospheric conditions imposing frequent interruptions. Finally, the survivors' position was successfully transmitted to the base ship.

General Umberto Nobile

Jubilance and Tragedy

A massive international effort was underway including searches by Norwegian, Swedish, Finnish and Italian aviators to locate them. In addition the Soviet Union provided several ice breakers to participate in the search. Spotting the red tent from the air proved to be extremely difficult. Biagi was instrumental in directing radio-equipped planes to their location. Finally, on 23 June, Swedish pilot, Einer Lundborg, landed his Fokker ski plane on the ice and insisted on flying Nobile back to Kings Bay. This caused an enormous furor and Nobile, as leader of the expedition, was accused of abandoning his crew. Lundborg flew back to the crash site and in attempting to land crashed his plane and was marooned with the others. On 12 July the Russian icebreaker *Krasin* arrived at the site and rescued all the survivors.

During the extended period between reception of the distress signal by Schmidt and identification of the

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telegraph@k9ya.org

Volume 4, Issue 10

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'6XT's Flying Ford

Rocky Mountain High

John Kirk, VK4TJ/VE6XT

Ever notice how some stories get bigger and better with every rendition? This tale apparently still gets trotted out around the campfires at hamfests by the grizzled veterans of the Calgary (Canada) Amateur Radio Club VHF Contesters, getting more blown out of proportion with every telling, I'm sure. Here are the straight goods—I ought to know, as you'll see:

Calgary is blessed with an abundance of superb VHF contest sites in proximity to the city. The club all-time favourite is Plateau Mountain, some 50 km southwest of town. An ecological reserve, it is normally off limits to tourists, but if you happen to know someone whose third cousin knows someone with access to a key… you get the picture. At 8,000 feet, it offers stunning vistas of the front range of the Canadian Rockies, as well as VHF capabilities to gladden the heart of any wannabe DX'er. "Dead band" contacts of out to 1,000 km are not unheard of.

> *"These dudes are obsessive/competitive!"*

The major ARRL VHF contests occur in June and September—great for the "You-alls" down south, but dicey for VE6's, as June is barely clear of the snow season, and September is well inside the next one. Generally content to do my own thing for these contests, I decided one year to join the club cadre for the September event. Bad move! You've of course heard of obsessive/compulsive behaviour? These dudes are obsessive/competitive!

Sporting a shiny new, three-week-old Ford Ranger pickup truck with slide-in camper unit, I followed the convoy up a set of wheel ruts, one mirror scraping solid granite, the other dangling out over a 1,000 metre precipice—no free hand for the mike ascending this one! From the summit, we could see a weather front moving in over the Rockies, and battened ourselves down for some serious contesting and whatever Mother Nature had in store for us. Within hours, the temperature had dropped 30 degrees to a chilly -20 C, the wind had whipped up, and close to a metre of snow had fallen. Uh-oh—rewind to my comments about the "road." Just in attempting to get off the camping pad and onto the track, VE6CA's truck and camper ended up on its side. None of us were keen to tackle the track down under total whiteout conditions, where the first loss of traction would spell almost certain death. We radioed for a group of 4x4-equipped amateurs to meet us about halfway down, and began the long walk out, resolving to come back the next weekend to retrieve our vehicles and contest gear.

The next Sunday dawned bright and clear. As frequently occurs in the eastern Rockies, a Chinook ("Snow Eater") wind arrived, bringing clear skies and lovely warm air courtesy of the Pacific Ocean currents. The road up, while never a picnic, was passable and snow-free. Upon reaching the summit, everything appeared FB until someone thought to do a quick count of vehicles. Uh-oh again. Where was my brand new Ford pickup? All signs of it had vanished! With the gate at the bottom locked and the road impassable for most of the week, grand theft auto had been the least of our worries. How am I going to explain to my wife that our just-rolled-off-the-dealer's-lot pride and joy "just disappeared?"

After a thorough search, we eventually found it down a steeply sloping embankment in a bed of rocks. Application of not one, but two winches slowly persuaded it to rejoin us at the summit. The Chinook winds are really the Pacific jet stream. It's not uncommon for their appearance to be accompanied by winds of up to 200 km/h. The camper unit on the back of the truck obviously acted as a bit of a sail, so that, even with the hand brake on and the vehicle in gear, it took to the air for a short flight of some 50 metres—hopefully it's first and last solo effort! Though the undercarriage had certainly taken a

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Tom Swift and His Magic Umbrella

Bye-Bye, Good Buddies

Rod Newkirk, VA3ZBB/W9BRD

It happened overnight. A quiet and congenial neighborhood became a surly enclave of snarky individuals. Their TV reception, a rabbit-ears passion in the early '60s, had become a shambles of intermittent torn images and garbled sound. Tom, a proud and unabashed radio amateur, was prime suspect. Strolling around in plain view with his kids during the interference helped deflect blame, but it's hard to keep proving a negative.

The problem's origin was obvious in a day or two. A groundplane vertical was slightly visible on the newly rented house across the street, along with a whip-equipped junker in the driveway. Aha—just another Citizens Bander. But to the unenlightened public it was just another *ham*. The miscreant turned out to be a furtive recluse, gruffly rebuffing Tom's offer of technical help.

Good ole buddy's havoc was compounded by his "club" running a lively business in the sale of channel crystals, probably Asian contraband. A parade of raucous mobiles tested newly purchased rocks before departing. City police wouldn't touch a federal case with an 11-meter pole, referring all complaints to the Federal Communications Commission downtown. Tom called and wrote the FCC, mainly in self-defense, and was assured the clown was on their radar. But the CB boom had then swamped.

Another week of this wireless anarchy with no end in sight made the situation perilously confrontational. Snarling neighbors were wearing out Tom's doorbell. His XYL was a nervous wreck. As a known radio person he must somehow be involved, or at least could do something about it. One more fruitless visit to good ole buddy's front door made up Tom's mind. He and his neighbors needed immediate relief. An emergency demands emergency response.

In a couple of hours Tom had built a one-tube squegging oscillator in a coffee can, a 27-MHz version of Armstrong's old superregenerative detector. Once you've heard its hair-raising squeal, you never forget it. Imagine 10,000 fingernails scraping on a blackboard. He keyed its filament with an RC relay circuit on a half-minute cycle. The QRP output was invisibly fed into a handy metal back fence. A shorted twinlead quarterwave stub for 11 meters, plus notching stubs for Channels 2 and 5, kept the TV spectrum unaffected.

The Citizens Band temporarily became a localized howling hell, buried by a sweeping scream varying in amplitude, frequency and tone. It was interesting to hear good ole buddy and his cohorts hopelessly groping for the source of Tom's handiwork. Like grabbing for a screeching will-o'-the-wisp, they never had a chance. Realizing he was out of business, GOB vacated the area as quickly as he had appeared. No doubt he reopened shop elsewhere. "But not in MY backyard," chuckled Tom, well prepared for the next invasion. ■

Ham Quips

DICK SYLVAN, W9CBT

2-METER PHONE

Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

Volume 4, Issue 9

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K9YA Telegraph

The Lighter Side of Ham Radio

In the Movies

Rick Hiller, W5RH

If you subscribe to one of the currently popular DVD movie services, put these movies on your must see list.

Pee Wee's Big Adventure—Pee Wee heads to St. Peter Island for a wintry, but magical, DXpedition.

Bourne Supremacy—Swedish ham, Bourne Wennström, SK3TG, utilizes his massive 80-meter antenna farm to easily sweep the *CQ* World Wide SSB contest.

Frequency—HF DX'er accidentally discovers ELDE's—Extremely Long Delayed Echoes, decades in length, using tube gear and a dilapidated Yagi, with only half a director element. His discovery leads him to have multiple QSOs with his long-since deceased uncle, Jim, "2FK."

Contact—AMSAT member, and avid VHF'er, has daily QSOs with beings of another world via 2-meter EME array.

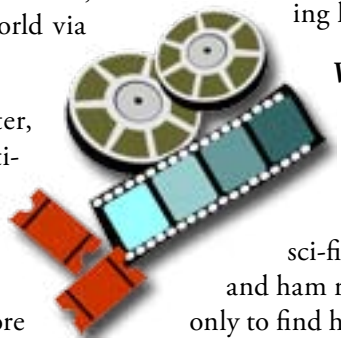
Steel Magnolias—Alabama contester, and his friends, build the ultimate multi-tower antenna farm amongst indigenous trees of the southern U.S.A.

Transformers—Animated battle between "bifilar toroids" and "iron core autos" takes its toll on saturated transformers everywhere, as it breaks through electrostatic lines of flux and flows into the magnetic fields of the AC voltage's ferromagnetic homeland despite Helmholtz coil's inherent shielding. Powdered iron's reluctance and tightly coupled eddy currents are phased to fight for hysteresis, flux and the Amidon way.

The Breakfast Club—Deep east Texas ham radio club's weekly Saturday morning get-together provides the backdrop for antics of all colors and calibers.

Broke Back Mountain—Two ham's DX-adventure on top of Broke Back Mountain to work the VHF/UHF contest and they actually work the contest.

Titanic—Massive North Atlantic liner on its maiden voyage hits iceberg and ultimately sinks as the ship's demented "Sparks" goes crazy and ignores the captain's orders to send SOS. All the while, "Sparks" incessantly tries to work the Clipperton Island DXpedition on all bands before abandoning his post.



World's Fastest Indian—Wind Talkers hold high-speed CW contest at their annual, post-war, reunion.

The 5th Element—Edge of the seat sci-fi thriller about a New York cab driver and ham radio op. He picks up his ultimate fare only to find he is a crazed, serial, Yagi-Uda designer modeling the addition of, yet another, parasitic element pushing the envelope on gain, directivity and front-to-back ratio. ■

Clipperton Revisited

Page 4 of the July 1954 issue of *CQ* magazine carries a Hallicrafters advertisement entitled, "Clipperton Adventure." This is the same DXpedition spotlighted in the August 2007 issue of the *K9YA Telegraph* on page 6. The ad features reproductions of the Chicago Daily Tribune articles covering the event and photos of the gear used by the FO8AJ team: SX-88 receiver, "Only $595.00" and HT20 transmitter, "Only $449.50."

CONTINUED - FLYING FORD FROM PAGE 4

beating, it drove normally, and I descended the goat track and reached home without incident.

Months later, I had the vehicle up on the hoist at the panel beaters for another matter. I could tell that the estimator was just itching to ask me what manner of accident I had been involved where 100% of the damage was confined to the underside, but he wouldn't have believed the answer anyway: "Fords can fly, you know. This one just overshot the runway on final approach to Plateau Mountain Airport." ■

Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

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succeeded by EIA, Electronic Industries Association.) Three concentric wheels comprise this resistor value calculator.

HUGHES PRODUCTS-SEMICONDUCTOR DIVISION, Newport Beach, California: Semiconductor type and polarity identification. Four wheels. Manufactured by Graphic Calculator Co., Chicago.

OHMITE, Skokie, Illinois: "Little Devil" Color Coder: RTMA STANDARD RESISTOR COLOR CODE and EIA STANDARD RESISTOR COLOR CODE. Three wheel "Color Coder."

OHMITE, Chicago, Illinois: Handy pocket reference (with wall-hanger hole) RMA resistor values chart.

SHURE, Evanston, Illinois: RSR-1 REACTANCE SLIDE RULE, copyright 1979. A late 20th century tour de force: one side for figuring resonance frequency problems and, on the reverse, capacitive and inductive reactance.

That wraps up my collection of ready reckoners. I remember others, especially the W9IOP Second Op, a handy reference for DX chasers. What amateur radio-centric ready reckoners do you recall or possess?

Further Reading

http://www.slidechart.com/

http://www.sliderulemuseum.com/Circular.htm

Continued - HIGH ARCTIC from Page 3

red tent from the air another drama took place, which had tragic consequences. Amundsen offered to join the rescue effort, but was rebuffed by Italy because of the intense animosity, which existed between him and Nobile. Nevertheless, Amundsen left Tromso on 18 June aboard a French Latham seaplane bound for Kings Bay. He and the three-man crew were lost at sea.

Bust of Amundsen at Launch Site of the *Norge* and *Italia* in Ny Alesund

Nobile and the surviving Italian crewmen ultimately returned to Narvik, Norway where a hostile crowd that blamed him for the death of Amundsen greeted him. Cries of "Down with Nobile!" and "Death to Nobile!" were shouted as he disembarked from the *Citta di Milano* via a gangplank leading directly to a railroad car which took him to Sweden so he would not "defile Norway's soil by setting his damned feet on it."

Subsequent to the flight of *Italia*, Giuseppe Biagi had a successful military career and served as a member of parliament. During the Second World War he was

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Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

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commander of the radio station in Mogadishu, Italian Somalia. In 1941 he was captured by the British and interned in India. While in captivity he constructed a clandestine receiver, which allowed him and his fellow prisoners to listen to the news from Italy. He died in Rome, age 68, in 1965.

Nobile's reception in Italy by Mussolini's government was frigid. He outlived all his detractors and died in Rome at the age of 93. In 1969, age 84, he returned to Tromso to unveil a monument of Italian marble dedicated to those who were lost on the expedition and to the international effort to rescue the survivors.

We Remember *Italia*

Paramount Pictures released the movie, "The Red Tent" in 1969, depicting the *Italia* disaster. It starred Peter Finch as Umberto Nobile and Sean Connery as Roald Amundsen. While straying from fact by including Claudia Cardinale in a romantic role, it does have beautiful aerial views of the high Arctic, which are well worth seeing. For the radio amateur there is an unforgettable scene in which Biagi constructs a resistor by rubbing a pencil on a piece of paper to deposit a layer of graphite.

Tromso, the largest city in Finmark, is Norway's gateway to the high Arctic. It is an ancient city celebrated for its university, its many bars and the high spirits of its citizens. It is also the home of the Mack Brewery that claims to be the northernmost one in Europe. Spitzbergen can be reached from Tromso by ship and air. The photograph of Amundsen on page 7 of this article was taken on a journey to Spitzbergen that grew out of ongoing interest in the story of the *Italia*.

This information could not have been compiled without the invaluable assistance of Steinar Aas of the Department of History, University of Tromso, Tromso, Norway who directed me to a number of new, to me, vital sources.

Italia Down—Who Heard Her?

No matter the vehicle, from the tropics to polar regions, amateur radio operators were there as the primary or emergency communications link to a curious and concerned world. For Nobile's *Italia* adventure, too, hams were there. As in earlier events (see: *K9YA Telegraph*, "The Hassell-Cramer Flight," January 2007) messages were often confusing, misunderstood or downright hoaxed—the *Italia* experience was no different.

27 May 1928

Messages sent in Italian, French, English and Russian were detected by the Radio Corporation of America and American amateur radio operator, Charles Bialack. Heard was, "CCQ, The dirigible of Gen. Nobile is in distress, asking for help. She is equipped with a short wave 30.33 meter radio. Dirigible *Italia* of Gen. Nobile, A.S."

Bialack reported, "The International Amateur Radio Union assigned 'AS' to Siberian stations and this in combination with the repeated call, RAO-3, indicated the signal was sent from some point north of Siberia. The American Radio Relay League said, "'AS'—'RAO3' was assigned to Mr. Golovitchikoff of the laboratory of the Far Eastern University at Vladivostok, Siberia."

The RCA listening post reported a similar message purportedly from *Italia*, differing only in the wavelength reported, in this instance, "40.45 meters."

"Radio men" suggested the airship's radio operator, Giuseppe Biagi, was trying different wavelengths hoping the distress message would eventually be received.

28 May 1928

Italia's signals picked up far from the airship's supposed position, but not by nearby rescue vessels is attributed to a "radio mirror." The "mirror" is identified as the "Heaviside surface."

30 May 1928

Station 061-CM located at Fort McKinley near Manila in the Philippines intercepted Russian station AF-2-BQ located at Vladivostok: "Nobile: heard your transmitter on about 33 meters. Please go ahead."

6 June 1928

A Dutch amateur radio operator in Leeuwarden reported this disturbing message: "SOS *Italia*—demand succor—death rests *Italia*."

Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

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