previous | next

CALLING CQ

ADVENTURES OF SHORT-WAVE RADIO OPERATORS

By CLINTON B. DeSOTO

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Knowing that personal webpages are often transitory due to financial solvency of the domain owner, ability of the account holder to pay subscription fees, mortality of the account holder, etc in 2009 David Witkowski (W6DTW) captured NG3P's web book, assembled a PDF, and added a hyperlinked table of contents. The resulting file was designated a Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License and posted to the both the Internet Archive and W6DTW's blog at http://sparqi.blogspot.com/ under the aforementioned Creative Commons license.

--- David Witkowski, W6DTW
--- Dated: 04-September-2009

previous | next

CONTENTS

Chapter

previous | next

Chapter One -
"It's Like This ...."

by Clinton B. DeSoto

"**Calling CQ!** Calling CQ to any amateur radio station!" A thousand times a night that call goes ringing out over the crowded amateur air lanes. It is the general call to any station--an invitation to any other amateur operator who might be listening to step up and chew the rag about anything and everything under the sun.

It is the trademark of the radio hams--that adventurous crew who roam the world at will, a band of good fellows, happy convivial, carefree. This book is their story. In it are tales of their adventures on earth and in the air. Tales of amateur radio....

Then--the question may be heard--what is this amateur radio? What's it all about? What is it like to be an amateur short-wave operator? Well, it's like this....

According to the official definition, amateur radio is "radio communication between amateur stations solely with a personal aim and without pecuniary interest." A comparable definition might describe a diamond as a "carboniferous solid." Yet, properly mounted, a diamond is a many-faceted gem of dazzling beauty. Amateur radio, too, has many facets.

This is one facet of amateur radio: it is a hobby. "The ordinary life of the ordinary man from whence spring the great majority of hams is a dull, drab and somewhat dreary struggle," according to one amateur. "Psychologists tell us that periodically one should drop his work for awhile and try something else, that if it be interesting enough one will usually return with renewed interest and zest." Then this amateur, a successful professional man, continues: "Amateur radio is *my* hobby. In its pursuit I find the balm of Gilead."

He might have added that amateur radio is unique among hobbies in that it is the only one established by federal statute and international treaty, the only one whose practice is limited to qualified, licensed practitioners. This is another facet of amateur radio: it is a means of self-expression.

"Being an amateur gives me the chance to meet people I would otherwise never meet," says one. "That's part of it. There's more to it than that though. If I build a new amplifier or something and make it work I feel that I'm *creating* something. When I hook up a rig I've just finished and I push the key and a fellow in the next state answers me--all this with things I have made with my own hands--why, then I feel like I have accomplished something sort of worthwhile."

Another describes his facet thus: "I have radio pals in all sorts of odd corners of the world whose signals come whispering to me through the night ... out of the jungles of the Congo ... from the tiger-infested districts of Malaya ... from the interior of Dutch Borneo ... from mountain tea estates of Java and India ... from the elephant and lion country of Rhodesia, from the burning sands of Iraq.... We wander over the face of this little old world like a bug on an orange." There are other facets, too: public service by providing emergency communication in the time of disaster, radio contact with expeditions to remote places, experimentation and research, and many other activities that combine to make amateur radio truly "all things to all men."

Radio amateurs live in a world of their own--a magic world not open to everyone. The "Open Sesame" that lifts its portals is the possession of amateur-operator and station licenses issued by the Federal Communications Commission. The applicant for such licenses must pass a stringent examination at one of the district offices of the Commission, demonstrating his technical qualifications, his knowledge of radio theory and law and his ability to send and receive the International Morse code. He must first spend hours burning midnight oil, acquiring the rudiments of an engineering knowledge of radio theory. He must practice for seemingly endless weeks until the meaningless string of dots and dashes becomes an intelligible language. He must learn the regulations of the F.C.C. and the provisions of basic communications law, because all radio--including the amateur brand--is a closely regulated enterprise.

The neophyte does not metamorphose easily into the full-fledged amateur. But when he does leave his chrysalis a new world is opened up to him. First he gets a new name--his radio call letters. Thenceforth he has a new identity--even a new personality and new social status.

He finds amateur radio "the means of communications with others on equal terms, of finding friendship, adventure and prestige while seated at one's own fireside," according to Dr Raymond V. Bowers. "In picking his human contacts out of the air, the amateur is not seen by them.... He is not known by the company he keeps nor by the clothes he wears, but by the signal he emits.

He enters a new world whose qualifications for success are within his reach. A good homemade set gives him more prestige than a commercially manufactured one. There are no century-old class prejudices to impede his progress. He enters a thoroughly democratic world where he rises or falls by his own efforts. When he is W9XYZ the beginner the radio elders help him willingly and when he becomes W9XYZ the record breaker and efficient traffic handler he willingly helps the younger generation. Without a pedigree, a chauffeur or an old master decorating his living room he can become a prince--of the air. At the close of the day, filled with the monotonous routine of the machine age, he can find adventure, vicarious travel, prestige and friendship by throwing in the switch and pounding his signals into the air."

His equipment may be of the most elementary kind, and his complete station may cost less than fifty dollars. Yet with such an outfit--with perhaps ten or twenty watts' power--he can accomplish as much as his operating skills will permit. One amateur in New South Wales, Australia, for example, talked with each of the six continents with a ten-watt transmitter. Another amateur, in Columbus, Ohio, communicated by code with South Africa, Australia and New Zealand--halfway around the world--using only one-half watt of power.

On the other hand, he may have high-powered, completely automatic transmitters rivaling or excelling those of a large broadcasting station and costing many thousands of dollars. A Mexico City amateur is reputed to have spent fifty thousand dollars on his station; another, in San Francisco, is said to have invested over one hundred thousand dollars.

But the enjoyment of amateur radio is not measured in dollars or even in elaborate equipment. It is rather measured by such gauges as service, self-expression, a sense of personal accomplishment.

Friendship is such a gauge too. Even the shyest, most introspective soul will respond to a proffer like this: "Well, old man, let's know each other better. I'm thirty-nine years old. I own a garage in this sleepy Arizona town of five hundred people. I also do electric welding. I have three children. What do you do?--and how old are you?"

The Chicago dentist whose CQ he had answered responded in kind, and between the Chicagoan and the Arizona garage owner there sprang up a strong friendship. Such contacts occur constantly

in amateur radio; the community of the air is a friendly one. And, lest those contacts become ordinary and commonplace, coupled with them is the element of unpredictability. The next amateur "worked" may be a grocery clerk or a retired banker or a housewife or a rancher or a film star or physician.

Unexpected encounters are always turning up. A Philadelphia industrial engineer climbed up on the roof of his home one day to repair his transmitting antenna. He noticed a neighbor airing a couple of odd-looking rugs next door and inquired about them. "They're Persian carpets." the neighbor replied. "My son sent them to me from Iran--that's what they call Persia now, you know. He's an airplane pilot with an archeological expedition there."

The engineer was greatly interested. They discussed the expedition for a few moments, and then he mentioned his hobby--amateur radio. This time it was the neighbor's turn to express interest. "Maybe you can talk to Iran by short wave, eh?" he asked. "It's Mother's Day, you see, and my wife is feeling bad because her boy is so far away from home." The father was told that Iran, unfortunately, was one of the few countries that did not permit amateur operation within its borders. His face fell. With quick sympathy the engineer said it might be possible to relay a message through a European station however.

The men went into the house, and soon a message was launched on its way, via Denmark and Egypt. Two days later the reply came. The boy sent greetings to his mother, said that he was feeling fine, but that he needed some film for his camera. The mother went down to the corner drugstore, eyes glowing with joy at the opportunity to do something for her boy. She bought the film and sent it on its way.

Her pleasure at receiving the message so delighted the engineer that he made arrangements with a station located in Russia, near the Persian border, to get in touch with the pilot in Teheran. Some days later, after several exchanges and much planning, the explorer son flew his plane to a point near the border. From there he was taken to the Russian station where he talked with his mother for a quarter of an hour and then hopped back to Teheran.

This is an age of rapid communication, yet situations frequently arise in which swift communication is either difficult or impossible through commercial channels. A young Japanese boy was dying in Chicago not long ago, friendless and alone in the strange city. The physician who watched him as he lay in his bed in a South Side Y.M.C.A. knew he had come there a few days previously hoping to find work. Now the boy's only wish was that his parents in Honolulu might be notified. The physician heard this whispered plea compassionately and turned to the clerk who stood in the shadows of the darkened room. "Do you suppose Mrs Mida could help up?" he asked. The clerk nodded and left. He telephoned Mrs Mida, championship golfer and ardent radio amateur. She was instantly ready to help. An urgent "CQ Honolulu" went throbbing along the air waves.

In a surprisingly short time the clerk returned and told the boy that his parents knew--everything. The lad died a few minutes later, peacefully, secure in the knowledge that his parents would care for him in accordance with their custom.

Amateurs make no attempt to compete with existing commercial channels in handling messages, but as a self-training measure an elaborate network of "trunk lines" and feeder lines covering the country and involving hundreds of stations has been established.

The creation and maintenance of this network is one of the functions of the American Radio Relay League, the national amateur organization. This organization, which has headquarters in West Hartford, Connecticut, represents the amateur in legislative matters, promotes interest in amateur

communication and experimentation and strives in various ways to advance the radio art. It stands for the maintenance of fraternalism and a high standard of conduct. One of its principal purposes is to keep amateur activities so well conducted that the amateur will continue to justify his existence.

The League was founded as a cooperative movement for the relaying of messages, the ranges of amateur stations in the early days being limited to a few miles. When, in 1914, Hiram Percy Maxim was unable to reach a fellow amateur in Springfield, Massachusetts--thirty miles away--from his station in Hartford he arranged to have his message relayed by a third amateur in intermediate Windsor Locks. Impressed by this solution to his problem, he conceived and organized the A.R.R.L. to put such relays on a nation-wide basis.

As the range and effectiveness of amateur stations increased the need for relaying decreased, but the League continued as a protective and fraternal association providing legislative protection and leadership in research and operating activity. In 1919, when the U.S. Government was reluctant to give up its wartime control of radio, the League carried the fight to Washington, brought the amateurs back to the air and kept them there. Later, whenever other radio services or coalitions of foreign governments tried to encroach on amateur privileges the League, aided first by the Department of Commerce under Herbert Hoover and then by the Army and Navy, successfully fought off the attacks.

In early days amateur stations used code alone in their transmissions. These days they use both voice, or 'phone, and code, or c.w. (continuous wave) telegraphy, the proportion being about one third 'phone and two thirds c.w. Actually, all amateurs must be able to understand the radio code. A 'phone transmitter, involving microphone, speech amplifier and modulator, is more complex and expensive than one for c.w. alone which needs only a telegraph key. There is a traditional rivalry between confirmed addicts of the two methods, a rivalry comparable to that between sailing-boat and power-boat owners or between sailplane and airplane pilots.

Amateurs operate in specified bands of frequencies allocated to them by international treaty. In these narrow slices of radio spectrum, sandwiched in among broadcasting, police, marine, aviation and all the other radio services, they are free to roam as they will. Each band has its own peculiar properties and is most useful for a particular distance and a particular kind of communication. In general, the higher the frequency (or the lower the wavelength) the greater the distance that can normally be covered. The 1.7-megacycle (160-meter) band, for example, is commonly used for distances ranging from cross town up to a few hundred miles. The 28-megacycle (10-meter) band, on the other hand, is chiefly useful only for transcontinental or international work; in fact, a phenomenon called "skip distance" ordinarily renders signals inaudible the first few hundred miles from the station, making reception at near-by points impossible.

Occasionally this phenomenon leads to extraordinary situations. During a flood emergency in New England some years ago an amateur operator, attempting to make an important contact, found his signals being jammed by another station downstate who happened to be talking with a European amateur. Repeated calls did not succeed in attracting the interfering amateur's attention. The emergency operator grew frantic as time passed and his urgent message stayed on the hook. Finally he had an inspiration; he called the European station, "raised" him and explained the circumstances.

It would be difficult to describe the interfering operator's reactions when his foreign contact came back on the next transmission, saying: "Get off the air! There's an emergency going on, and you're QRMing (interfering with) important traffic."

Amateurs talk a language all their own. Anyone who has tuned an all-wave receiver through those portions of the dial marked "Amateur" has heard it. On voice it is a strange jargon made up of terms like "73" and "QSL" and phrases like, "Well, old man, how's my modulation?" or "I've changed over to a 6L6 tri-tet, and the drive is up to twenty mils now." And if the mysterious jumbles of dots and dashes are translated they may read something like this: "GE OM TNX FR QSO UR SIGS RST 599X HR IN PODUNK MO." Which, being interpreted, means: "Good evening, old man. Thanks for communicating with me. Your signals are: readability--five, strength--nine and tone--nine, here in Podunk, Missouri."

This seemingly senseless jargon is a language that outdoes "pig Latin" and Esperanto and even "boogie talk." Brevity, they say, is the soul of wit. It is also the essence of ham language or, as it is sometimes called, "QST English"--from its occasional use in the amateurs' magazine, QST. The basic principle is abbreviation--the elimination of all but the indispensable elements of expression in conveying intelligence--combined with a collection of technical and pseudotechnical terms and a few choice colloquialisms that belong only to radio.

The abbreviation of words to save transmission time has long been the habit of American amateurs. Thus "very" becomes "VY" and "operator" becomes "OP", and "old man" is shortened to "OM". By international agreement a long list of "Q" signals permits the statement in three letters of almost any expression used in ordinary radio exchanges--for instance, "QSO": "I can communicate with----" and "QSL": "I give acknowledgement of receipt." "CQ", too, is an international symbol, meaning "General call to all stations." From the land telegraph lines there came such expressions as "73," meaning "best regards," and "88," meaning "love and kisses."

An idiomatic radio shorthand, these abbreviations have become an identifying characteristic of ham radio.

"Ham" radio? That term itself deserves explanation. Its origin probably goes back to the nineteenth-century English sports writers whose slang term for "amateur" was "am" pronounced "ham" by the cockneys. It came to amateur radio from the landlines where it originally applied to "cubs" or neophytes; now its meaning is that of "unprofessionalism." In origin and significance the term in radio is quite different from that of the theatre where it is used to denote an actor of indifferent ability. Amateurs view their appellation with considerable pride. To be considered a "good ham" is just about the highest mark of honor there is.

Thus from one source or another--the abbreviation of English words, an admixture of international code signals, a few relics of the old Morse wire-line expressions--the amateur's language has emerged.

It is based on the English language but it is understood by amateurs who comprehend not a word of English, who understand "DX" as a term implying communication with a distant station but who do not realize that it is a contraction for a word called "distance" or who use "CUL" as a parting phrase equivalent to "au revoir" without knowing it as a symbol for "see you later." In the course of time most foreign amateurs learn this form of radio "pidgin English."

As a language it is useful only over the air however. The difference between understanding English as sent by code and actually carrying on a conversation by voice is as great as the difference between a written and a spoken tongue.

A New York City amateur named John Preston discovered this some years ago. He answered a buzz on his doorbell one day to find a swarthy, dynamic individual standing at his apartment door. The visitor sprouted unintelligible gibberish that bore only a vague resemblance to English. It was

only when the stranger produced a brightly colored QSL (acknowledgement) card and offered it with a bow that Preston realized his visitor was a European ham he had worked many times over the air.

The visiting amateur did his best to make himself understood, but his QST-English was simply unintelligible. Preston became aware of another man in the background who finally stepped up, smiling, and introduced himself as an interpreter. Through this intermediary the two hams carried on a lengthy and interesting conversation.

When dinnertime arrived Preston called his wife, and they went down to the dining room together. Everything started off well at dinner, but before long the interpreter became interested in his food. The conversation died....

Suddenly the visitor picked up his spoon and started tapping. Preston looked at his wife who also knew the code. She smiled, and they picked up their spoons and started tapping too. Their guest's face split wide in a delighted grin.

The interpreter looked up, puzzled, and then went on eating. The hams no longer needed him; they were talking their own language once more.

Among radio amateurs there is a genuine brotherhood and informal camaraderie Everyone is called by his "handle"--his first name or nickname. The president of the Chicago Stock Exchange and the mechanic in a Birmingham garage are just "Paul" and "Joe" when they meet on the air. It's not a question of what a person is in private life, but is he a good operator, and what is his standing in the Brass-Pounders' League (total messages handled) or DX Century Club (number of countries worked) ?

"Hamfesting" and "ragchewing" are active verbs in amateur radio. The bond of brotherhood via the air waves excels that of many fraternities and lodges. When a ham goes traveling, no matter where he goes, he knows he will find friends who will welcome him with wholehearted hospitality, invite him to stay for the night, show him the sights and give him a royal good time--whether it be in Oscaloosa, Durban or Nome.

An amateur from New Zealand planned to visit the United States. He wrote ahead to several amateurs he had met over the air, explaining that he did not expect to have much time to spend in America and wanted to make every minute count. Would they meet him on arrival to say "Hello"? Word of his coming spread like wildfire, and he was met at the dock by scores of welcomers.

He had intended to stay but a day or so in San Francisco and then go on to New York, but the hams willed otherwise. He was two full weeks in San Francisco and another week making various side trips to West Coast points, but the hams willed otherwise. He was two full weeks in San Francisco and another week making various side trips to West Coast points, visiting amateur stations, "chewing the rag" in person with his other friends and seeing the sights.

Finally he got started on his trip East. But the San Francisco gang had made his presence known to all the amateur fraternity. They knew his train schedule and route. The trip from Coast to Chicago resembled a presidential campaign tour more than a cross-country railroad trip. He hadn't intended to stop in Chicago at all, but the national ham convention was only a week away, and he was persuaded to stay over for it. A week after the convention he was still in Chicago, being shown a royal time and enjoying it immensely. His trip East was no different. Clubs took him into custody, passed him around from city to city. Before he left the United States his planned "short visit" had grown into a several-months trip.

Not long afterward an amateur from Switzerland arrived in the United States for a three week tour of the country. But the warm welcome extended by amateurs in New York City kept him there for the full three weeks. He never got west of Jersey City!

Fraternalism ... good fellowship ... ingenuity ... public service ... the power to annihilate distance and bring oneself closer to mankind throughout the world ... the ability to build and create and put the products of one's hands to work to overcome the miles and hours ... thrills and sport and adventure....

That's what amateur radio is like.

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previous | next

Chapter Two -

On The Spot

by Clinton B. DeSoto

WHENEVER wire lines break down and the nerves of civilization are severed there is usually a radio amateur somewhere near to step in and bridge the gap.

The reason for this is partly that there are more amateur stations licensed than all others together; there are amateurs everywhere. But it is also because a good ham, like a good reporter or newsreel cameraman, has an instinct that warns him when great events are about to happen. Wherever the going is tough and the need great there is usually an amateur on the spot.

In Florida nowadays hurricanes are accepted as necessary natural phenomena. They are unpleasant occurrences to be guarded against but not worried about. Radio hams are prepared for hurricanes now, with special emergency stations dotting the landscape and a Florida Storm Net that warns the entire state of every approaching storm.

But this was in the days before Florida had learned to prepare for hurricanes--before the amateurs of Florida had the Florida Storm Net. Even in those days there were amateurs on the spot.

It was in the late summer of 1928. Natives knew that trouble was brewing--the weather had been too calm, the air too tranquil. That deathly quiet, marked by swiftly moving clouds and followed by a darkening of the horizon, could mean only one thing--the gathering of a hurricane.

When the wind began to freshen out of the south-east, whipping the palm fronds along the coast, amateurs in Palm Beach began to mobilize. Their brethren in Puerto Rico and the Virgin Islands were already in the thick of it. All the naval stations on the island--which normally provide radio contact with the shore--had gone out with the storm as it swept over the Caribbean in shrieking fury. Operators at the San Juan naval station had improvised apparatus from the wreckage that would operate in the amateur bands and quickly got on the air. They succeeded almost immediately in lining up an amateur circuit that tied them into the Navy Department at Washington. The naval station at St Thomas, in the Virgin Islands, was also wrecked by the hurricane. But one of the operators there promptly got on the air from his own amateur station, which was left intact, and with the assistance of mainland amateurs the island was soon in direct contact with NAA, the Navy's station in Washington.

Meanwhile Florida's amateurs, aware that the blow was coming their way, were preparing. They located stocks of dry batteries for use if power failed and readied their equipment for action. Some relayed storm warnings as the tempest progressed through the night.

In Palm Beach, Forrest Dana, a young civil engineer, and Ralph Hollis, a fireman, met at Hollis' station which was set up in the West Palm Beach Fire Department building. At 1:30 A.M. they roused a dealer from bed and bought a set of "B" batteries for emergency power. They then borrowed storage batteries and prepared themselves for the worst.

They had not long to wait. Out of the Caribbean swept the hurricane, a howling wind carrying death and desolation. It leaped the channel of the Great Bahamas and fell like a thunderclap on the Florida coast.

In Palm Beach the wind rose furiously. Upstairs in the firehouse Dana and Hollis waited. There was a shrieking gust of wind, then a rending crash. Hollis dropped down the fireman's pole and looked outside. His antenna system had blown down. It lay there in the street, a crumpled mass of wreckage. The structure creaked and tottered; it seemed inevitable that the building, too, would go. There was danger in going outside, but there was even more danger within. Flying bricks and debris finally drove the two men into the open.

In a short time there came a lull, and then the storm relaxed its fury for a moment. Hollis and Dana returned to the firehouse and began transferring apparatus from their station. They found a protected spot at the other end of the building.

As though enraged at losing its prey, the storm rose again in high crescendo. Struggling in winds against which they could not stand erect, they carried the gear to the new location. There, in the lee of a wall, they strung up a makeshift antenna. With deft, capable movements they assembled the stations components. Their voices were drowned out by the high-pitched roar of the wind, and even dots and dashes in the headphones were almost indistinguishable through the roar....

Meanwhile, in Washington, throughout the night anxious officials had clung close to telegraph and telephone lines which were busily clicking off news of the oncoming storm. Then, suddenly, everything had gone silent. With one sharp blow the hurricane cleaved all wire communications. Sounders stopped clicking, telephone wires hummed emptily. A dead, terrifying void opened around the storm area. Florida was an island amid silence....

Silence that reigned until daybreak. Then came the sturdy peeping signal of battery operated 4AFC--the word that Hollis and Dana were on the job. They had got their transmitter on the air again and from Monday through Thursday it stayed on, handling every word that left the devastated sector or seeped in from the outside world.

For four days the station was kept in continuous operation. Dana was told that his home, his automobile and all his personal possessions had been swept away in the storm. But his hand never left the key. The two men ate what food there was whenever someone thought to bring it to them, and neither slept in a bed. But they continued their self-appointed vigil until official communications were restored.

All the information that the Red Cross and the Army got during those terrible days came through this circuit. Everything that was done--all the relief and rescue work--was based on this information. Some eight thousand words of press--many scores of personal messages--these, too, passed through their hands.

"You are to be commended for your untiring effort and loyal devotion to duty which you have so well expressed during the last three days, and we shall always remember this worthy duty well performed." Major General George E. Gibbs, chief signal officer of the Army, told them in the final message to come over their circuit with Washington at the conclusion of the job.

In quiet residential streets in thousands of towns and cities throughout the land these fireside D'Artagnans are to be found, ready to leap into action at the first signal of distress. But it is not alone in the United States that this is true. Amateurs abroad are fewer, more scattered--but when the opportunity arises they show they're of the same breed.

There was an amateur on the spot during all the vicissitudes of the city of Chefoo in war-torn China in the past troublous years. His name was Dr William Malcolm, and he was health officer of the

port.

Beset by revolution, counterrevolution and invasion, this port in northern Shantung province has seen the flags that wave over it change so frequently that its nationality seems akin to the chameleon. The ancient city has seen many an extraordinary character in its midst, but none more remarkable that Dr Malcolm. An active amateur, he was for years operator of the only radio station in Shantung province. His station XU3MA was, for that matter, one of the few consistently active in all of China, for at one time or another each of the successive Chinese administrations banned private radio communication.

Dr Malcolm himself was forced off the air for brief periods, his station ordered closed, and his apparatus dismantled. But always the inhabitants of the Shantung Peninsula protested so loudly that his authority to operate was restored.

For the service he rendered more nearly resembled that of a communication center for an entire city than of an amateur station. In addition to maintaining regular schedules with amateurs throughout China he was in frequent contact with British shore stations at Hong Kong, Tientsin, Singapore and other bases, as well as with vessels of the British fleet itself as they plied the waters of the China Sea or patrolled the Yangtze River. The British Navy, ordinarily rather sticky about co-operation with civilians, violated all precedent by communicating with Malcolm whenever he called, on occasion even making use of his services for governmental business. Telegraph lines never stayed up for very long at a time in disturbed Shantung, it seemed, and an always accessible radio link was a very convenient asset.

If Dr Malcolm himself were not on watch because of official business or absence on a visit to Shanghai or elsewhere, his young daughter was very likely at the key taking his place. She learned the radio code when she was still a youngster in school and at fifteen she was a competent operator.

On one occasion or another XU8MA contributed materially to the safety and security of most of the foreign residents of Chefoo. Perhaps the most difficult time of all was during the beginning of the Japanese invasion of China.

During the anxious period at the time of the Shanghai crisis of 1938 the burden of providing the sole communications link for the port of Chefoo fell on Dr Malcolm's aging shoulders.

When the Shanghai cable was cut, leaving the commercial community quite isolated from the outer world throughout the month of January, he was called on to fill the gap by the British Chamber of Commerce and the three large cable companies: the Commercial Pacific Cable Company, the Great Northern Telegraph Company, Ltd, and the Eastern Extension Australasia & China Telegraph Company, Ltd.

Thus rescued from isolation, the Chefoo business community was enabled to function more or less normally while the messages of the three cable companies were forwarded without delay. The Chefoo Chamber of Commerce, too, found the service of extraordinary value.

Despite his age--he was then seventy-seven--Dr Malcolm performed the arduous task of transmitting nearly five hundred radiograms during this period. "I derived much pleasure from the fact that all commercial code as well as other traffic for eighty-two different firms was taken care of with satisfaction to all," he said afterward with customary modesty.

At the Shanghai end J. MacDonnell operated the temporary station XU8DI to receive the messages. MacDonnell was nominally on the staff of the Royal Signals, British forces in Shanghai,

but in this case his miniature amateur set was of greater utility in aiding Chefoo than all the Empire's far-flung facilities.

Back on the American side of the Pacific a furious storm that struck the Oregon and Washington coasts in late October of 1934, attaining maximum force off the mouth of the Columbia River, gave Henry Jenkins an opportunity to demonstrate all the amazing in genuity and resourcefulness of the radio amateur.

The violent storm swept across the north Pacific like a Titan's hand, smiting ships and shores with thunderous waves. If ever there was a night when the coastwise vessels plying off Oregon's shores needed the friendly guidance of the Tillamook light and fog signal this was it.

But the Tillamook Rock was silent and dark-dark, that is, until amateur radio lent a helping hand. . . .

The evening began quietly enough. At 10 P.M. a fresh southeast wind was blowing, with light rain. During the night the wind increased to gale force and changed to southwest. By 3 A.M. seas were rolling in high on Tillamook Rock. The swells hit and burst, flinging high showers of stinging spray over the Rock.

At nine-thirty that morning Henry Jenkins, first assistant keeper of the U.S. light station on the Rock and amateur W7DIZ, was awakened from his sleep by a deluge of water that completely covered him; all his clothes and bedding were soaking wet. The heavy seas by this time were breaking against the tower itself; they had pounded against the window shutters of his room until the catch let go, opening the windows and flooding the room.

Driving the water was a wind blowing with hurricane force-one hundred miles an hour or more in the gusts. The seas submerged the entire lighthouse, flooding all quarters. With the water came large rocks, timbers-destructive debris that smashed the plate-glass windows for the lantern high in the tower, one hundred thirty-three feet above normal high water.

Sixteen panes were broken, but the light still burned. Keepers struggled to replace the glass panes with temporary wooden shutters. Unbroken seas flooded the lantern, filling the watch room where the keepers worked. They were submerged at times to their necks before the rush of water could escape through the door into the tower and quarters below.

Battered and bruised, the keepers finally completed the job as best they could. Hug Hansen's right hand was deeply cut, and Henry Jenkins helped him dress the wound. As he did so he glanced at the barometric reading.

"Whew!" Henry whistled sharply. "Barometer reads 28.92!"

Hugo shook his head stolidly. "Never saw anything like it before, I tell you."

Both flinched as another wave of water crashed against the tower and came down with a terrific impact on the roof-tons of water that covered the building. Jenkins had his eye on the barometer.

"It dropped to 28.72 when the water hit and then right back up again!" he said excitedly.

At ten-fifteen a tremendous wave came that enveloped the entire tower and building. It seemed as though the ocean itself had swallowed the Rock. When the water subsided the large eighty-foot derrick and the telephone cable had been washed away. The tremendous power of the wave

caused terrific havoc, hurling rocks weighing as much as fifty pounds through tower and roof, smashing shutters made of half-inch wood as though they were paper. The wave actually broke off about six feet of the west end of the Rock, they later found.

The light station was badly wrecked. The shutters at the base of the building had been carried away, flooding the interior and breaking the piping for the heating system. Cutting off the heat represented a genuine calamity, for the crew were all cold and tired and wet.

Still there was no immediate cessation in the fury of the storm. The crashing blows from tons of water and rock came at intervals as little as three seconds apart until nearly noon. Then the force of the waves diminished, and by early afternoon the sea was comparatively calm.

The lantern and the fog signal had both gone out following the disastrous wave that wrecked the building. Shipping would need both badly, for a heavy fog lay thick over the sea, still murmurous and heaving. Yet if a light different from the signal normally flashed from Tillamook were used mariners would be mystified, and if they came up close enough to identify the light the consequences might be disastrous.

Nevertheless, a fixed white lamp was set up. The next problem was to notify the mainland that the light was damaged. But the telephone line had been washed away, and no small boat could live in those seas....

It was then Henry Jenkins yearned bitterly for his little amateur station. If only he could have brought it along with him to the light station.... He closed his eyes with the intensity of thought.

> "What I wouldn't give for a little 210 Hartley and a motor generator," he mourned to Hugo Hansen. "Or even a 30 and a 'B' battery, that's all...."
>
> "Well," said Hugo, "you don't have them, so I guess that's that. We haven't even got a regular radio set even-now. Only that old Atwater Kent-and the batteries in it are dead." Henry Jenkins' eyes had been shut tight but now they opened slowly until they were staring orbs. Then he brought his clinched fist down sharply on his knee. "That's it!" he cried. "That's what I'll do."

Disregarding the wonder in Hugo's face, Henry went to the room where the battery-operated broadcast receiver was set up. The room was drying off a bit; it was possible to work now. He looked at the radio set. It hadn't played for the past couple of weeks....Batteries dead, of course....

He dug around in the rear of the cabinet until he found the battery tester. Water had run off the top of the cabinet without getting inside, thank God. Now to check the batteries.

The filament dry cells were dead-completely dead. The three "B" batteries had a little life left in them. The three in series gave about eighty volts instead of the normal one hundred thirty-five. Not very much-but enough. But he still needed filament batteries....

His eyes roamed speculatively around the room. It reached the ancient crank-operated telephone on the wall and stopped. Pulling himself stiffly erect-the wet and the cold were already taking their toll-Henry unscrewed the front panel from the telephone box. Inside were two telephone-type dry cells. Thank Heaven, they were new!

So much for the power problem. Henry began to move faster, hope spurring him on. He found two half-dry boards, each roughly a foot square. These would be the baseboards for transmitter and receiver. Removing the Atwater Kent chassis from its cabinet, he began disassembling the

principal components. The chassis stripped, he found a length of transformer bell wire and went to work.

Having no sockets, Henry drilled holes in each board to pass the bases of the type 30 tubes from the broadcast receiver. For connections he soldered directly to the base prongs of the tubes. On the transmitter board he placed an inductance coil made out of fourteen turns of transformer bell wire wound over the cardboard container from one of the telephone dry cells. The middle section of the three-gang variable condenser unit taken from the broadcast set became the transmitter tuning condenser. Series fixed condensers for the antenna were made out of alternate layers of tin foil and waxed paper taken from a loaf of bread. Henry used no grid condenser or leak. The plate blocking condenser came out of the Atwater Kent collection. A choke coil with half its turns removed served as a short-wave radio-frequency choke.

When it was assembled this collection of miscellaneous scraps and junk parts became a radio transmitter using the famous "TNT" circuit. And the way it worked proved its name was no lie!

The receiver was equally crude-and equally effective. Wire unwound from one of the radio-frequency transformers in the Atwater Kent was rewound on the shell of the telephone receiver to make the grid and plate coils of the oscillating detector. Fixed coupling Henry used-enough to make sure the thing would oscillate under any conditions. There was no need for regeneration control anyway! Two insulated wires a couple of feet long provided an antenna series condenser, the insulation serving as a dielectric between the two wires. Another tin-foil-and-wax-paper condenser completed the grid circuit; there was enough leakage so a grid leak was unnecessary.... The tuning condenser was a tougher problem. Finally Henry took two brass plates off the doorknob, fastened one plate to the receiver base, placed the other above it with a sheet of waxed paper in between and connected a flexible lead to the upper plate. Tuning was accomplished by sliding the top plate over the bottom plate with a pencil eraser!

He had no conceivable way of measuring the values of the parts he used, but his practiced eye calculated the dimensions as best he could from his long practical experience as an amateur. He was not far wrong.

At last every connection was made.

The receiver connected up, a soft hiss could be heard in the headphones. There was an encouraging "plop" when he touched one of the brass plates with his finger; this established the fact that the detector was oscillating. Gingerly Henry slid the top plate across the other with his pencil. Wait a minute... There was a signal.... No, back a little....There-got it!

The first station he heard was in Seattle. The operator was busily talking to someone else and couldn't be reached. But the signal did show where to tune in the amateur band. A bit further... and there was Henry Goetze, W7CXK, calling in Seaside, Oregon, not ten miles up the coast.

While listening to W7CXK's call Henry turned on his transmitter and tuned the dial carefully until he heard a sharp, swooping beat note as his transmitter came into resonance with the carrier from the other station. Certain now that his transmitter was working, he called W7CXK, tapping the end of a connecting wire against the terminal of a "B" battery with his fingers in lieu of a telegraph key. It was 6:50 P.M. W7CXK didn't hear him at first, but another operator, farther inland, did. The signals were weak and chirpy, and the inland operator couldn't understand all that was being sent but he passed the word along to Goetze at W7CXK.

W7CXK immediately listened for Jenkins, and soon Tillamook Rock was again in contact with the

mainland.

The first message transmitted was to the superintendent at Portland, notifying him of the damage and requesting that all vessels navigating those treacherous waters be warned that the lighthouse was darkened.

That was only the beginning of the service accomplished by the valiant little makeshift station however. It performed reliably for Jenkins throughout the next several days, the batteries growing weaker and weaker, until finally their dying energy had given out. Not only to Portland did its messages go, but also to Astoria where the Lighthouse Service supply depot was located and to the lighthouse tender, Rose. A Coast Guard lifesaving crew and boat were sent to rescue those who were injured and ill at the light station. Weather reports, landing conditions, medical advice-these and other data facilitating preparations for permanent repairs were handled. Only when the telephone line was restored did operation cease.

By then Henry Jenkins had written a shining page in radio's history with his ingenuity and resourcefulness.

There are many thrilling episodes in the chronicle of radio's achievements, but none more stirring than the 1927 Pacific flights, climaxed by the installation of short-wave equipment on Captain Erwin's Dallas Spirit and the reception of its signals right up to the time of its tragic end.

The year 1927 was, of course aviation's greatest year. During its first half Lindbergh made the first nonstop New York-Paris flight, De Pined completed a four-continent flight from Italy through Africa and North and South America and return, Chamberlain and Levine flew nonstop to Germany and Maitland and Hegenberger covered the twenty-four hundred miles from Oakland to Honolulu in twenty-six hours.

The first news of each of these triumphs reached the Hawaiian Islands through a schedule arranged between station 6CZR, operated by J. Walter Frates, an Oakland newspaperman, and 6AJL at Lihue, Island of Kauai. Over this circuit went Hawaii's first news of the arrival in Eisleben of Chamberlain and Levine and of Byrd's forced landing on the French coast after missing Paris in a dense fog.

When the west-east route across the Atlantic seemed to be thoroughly vanquished in the first half of 1927 attention focused on the Pacific. Lieutenants Maitland and Hegenberger showed that the California-Hawaii hop could be made, and they were followed by Smith and Bronte in July.

Then came the Dole Prize Race. Five airplanes and crews were readying for the flight when the first of August came, but Major Livingston Irving's Pabco Pacific Flyer-the only ship equipped with short-wave radio, which was then a novelty for aircraft-cracked up, and then there were four.

Of the four only two-the Woolaroc, flown by Goebel and Davis, and the Aloha, piloted by Jensen and Schluter-completed the route. Although unable to communicate with the airplanes, San Francisco amateurs maintained continuous watch on the six hundred-meter SOS wave for signals from the Woolaroc and for naval and marine reports on the fliers' progress, providing the press with news coverage of the flight.

News of the safe arrival of the Woolaroc and the Aloha came swiftly back over the amateur circuit. But still Miss Doran and the Golden Eagle were unreported. An unconfirmed report that the Miss Doran had been located eighty-five miles from Hawaii came over the wire services, but a quick

radio check with Honolulu proved it false.

The next development was the dramatic announcement that Captain William P. Erwin would hop for Hawaii in the Dallas Spirit in an effort to locate the missing ships. The radio operators had gone without sleep or food during the tense vigil, but their interest was still keen. They called on Captain Erwin and persuaded him that he needed short-wave radio. The fifty-watt short-wave transmitter that had been installed on the Pabco Pacific Flyer was transferred to the Dallas Spirit. The installation was pushed through in record time, and Alvin Eichwaldt, the navigator and radio operator, made preliminary tests which gave excellent signals.

When the Dallas Spirit winged its way past the Golden gate on the rescue flight the entire amateur contingent was convinced that they would be in contact with the ship for the entire duration of the flight. As the plane passed the coastline the selected corps of operators picked up its transmission and prepared for the long watch. Other amateurs were listening, too, for prior to the flight a request had been broadcast to all amateurs to stand by on the 33.1-meter wavelength used by the airplane. All up and down the coast and as far away as Texas and even New York City amateurs were tuned to that wavelength.

Those who heard the signals from KGGA, the station call of the Dallas Spirit, will never forget the drama and tragedy of that night. From the start of the flight the signals were powerful, and as the airplane sped farther out over the gray waste of the Pacific the signals even increased in intensity. For hours the steady drone of the transmitter brought news of the progress of the plane. Amateurs all over the continent heard the informal Morse code remarks rapped out from time to time by Eichwaldt, the radio operator, in his humorous, human fashion.

When darkness fell the note became unsteady, its frequency rising and falling at intervals. The changing tone told a tale of "bumpy" weather conditions and uneven speed. To those who could read the story of the varying note this caused considerable concern which was only partially relieved by Eichwaldt's jocular and unconcerned comments. The air was electric with mounting drama.

Then at nine o'clock that night the first grim SOS was sounded from the void in which the Dallas Spirit flew. It was followed almost immediately by a terse "Belay that!" and the further announcement that the ship had gone into a spin but emerged on an even keel.

Right on top of this report, however, there was a second SOS and the curt announcement that the Dallas Spirit had shuddered into another spin. The rising and falling whine of the note told its own story to those ashore.

The second SOS was cut short by the crash. The instant the aviators were plunged to death in the sea the fact was known to the radio operators listening, for Eichwaldt was still sending when his trailing antenna hit the water.

Here amateurs, in recounting the tale, pause a moment to pay tribute to the cold nerve and supreme courage of Eichwaldt, the operator. He could not have failed to realize the danger they were in, yet during the half-hour preceding the crash, when the plane was bucking squalls one after the other, he continued sending out his unconcerned comments and jokes.

His first SOS and the remarks immediately following it were still in the same light vein. There was no trace of nervousness or fear. When the second spin came and the plane started down to its end Eichwaldt continued with the same even, unhurried tempo he had used throughout the flight. He stayed at his post until the end, sending calmly and evenly right up to the time the plane hit.

With the note rising to a shrill shriek and falling almost to zero-denoting violent movement of the ship--the dots and dashes came through like clockwork until they were actually heard sputtering out as the antenna hit the water. To know that he was heading for his death and then to stick by the key telling the world just what was happening right up to the last second required courage of the highest order. Alvin Eichwaldt preserved the finest traditions of the radio-operating fraternity.

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previous | next

Chapter Three -

Flood--Storm--Hurricane

by Clinton B. DeSoto

EACH YEAR the president of the Columbia Broadcasting System, Mr William S. Paley, awards a trophy to "that individual who, through amateur radio, in the opinion of a distinguished board of judges, has contributed most usefully to the American people, either in research, technical development, or operating achievement."

The awards for the years 1936, 1937 and 1938 were each made on the basis of heroic accomplishment in emergency work. The feats performed by amateurs in winning this award are epics of courageous public service.

More than that, they are tales of high adventure.

The first amateur to receive the Paley Trophy was Wlater Stiles, Jr, of Coudersport, PA. A youthful employee of the Pennsylvania Railroad at the time of the disastrous 1936 Eastern states' flood, operator of amateur station W8DPY, he was given the award because of conspicuous service in that emergency.

The story of Walter Stiles, radio amateur, is typical of the stories that might be told of many an amateur--even including the exceptional emergency performance. The principal difference is that Stiles performed under circumstances that ultimately brought him recognition in the form of the Paley Trophy. The others still await their recognition.

At the age of ten Walter Stiles got the money to buy his first radio equipment--a crystal receiver--by selling garden seeds. Four years later he passed his examination and was granted a federal license. Immediately he went on the air, his transmitter utilizing a receiving-type tube with a power output of almost four watts!

By 1933, when he was twenty, Stiles had talked with seventy-two foreign countries and a good many of his fellows in the U.S. His subsequent marriage cut down on his ham activity for a time, but by 1936 he was active again with a powerful station set up in a small room built onto the rear of his Coudersport home. There Walter carried on his radio pursuits, assisted at times by his young bride--who, by exposure, had contracted a slight case of radio fever herself.

There, too, he performed his duties as State Net Control Station for Pennsylvania in the Army Amateur Radio System. There he executed the experimental and writing chores associated with his post as technical editor of the *Mason-Dixon Straddler*, 3rd Corps Area Army Amateur publication issued by the Signal Corps. And there he occasionally stole a few moments from amateur radio for secondary hobbies: photography, a stamp collection, his miniature railroad complete with passenger and freight engines.

The model railroad was associated with his job. Walter Stiles was very proud of the fact that he was one of the youngest workmen on the P.R.R.--proud that in the year and a half that he had been in its employ he had already received two promotions. Starting as an electrician's helper, he had been promoted to car repairman's helper and shortly afterward he was made a full-fledged car

repairman. The miniature engines and rolling stock in his model railroad were modeled exactly after the full-sized cars and locomotives on which he worked every day at the P.R.R. shops.

But radio--first, last and always--was his hobby. It was radio, therefore, that claimed his attention when the Allegheny River reached flood stage at Coudersport in 1936 and it became apparent that a general flood emergency was in the making. His first thought was of the opportunity for radio work that this might mean--bridging communications gaps when wire lines went down.

When Walter arrived home at 3 P.M. on the afternoon of Wednesday, March eighteenth, therefore, he went immediately to the radio room and put his station on the air, standing by ready to serve in any way he could.

He stood by throughout that afternoon and evening and at nine-thirty the next morning he was still on watch. Occasionally a little routine traffic would come through, but for the most part--despite the fact that hundreds of stations were on the air standing by--there was little actual emergency traffic in his immediate vicinity. Stiles puzzled over this silence, for he knew that communication lines were down in many sections. Throughout the rest of the state and up in New England relief traffic was clogging the few clear channels. Yet in northern Pennsylvania there was only silence . . .

Until about nine-thirty the following morning. Then Stiles tensed in his operating chair; the weariness of his nightlong vigil vanished. A faint signal was calling "QRR"--the SOS of the amateur air lanes. He answered the call, and contact was established. It was W8LYB calling, operated by Stuart Over at a CCC camp near Westport, Pa., seven miles from Renovo. Signals were weak and fading, but Stiles finally succeeded in copying the message:

> RENOVO BOROUGH AND VICINITY WITH TEN THOUSAND POPULATION COMMA TWO THOUSAND FIVE HUNDRED IN DISTRESS AND WILL NEED MEDICAL ATTENTION STOP TOWN PROPERTY THREE FOURTHS INUNDATED AND WATER SUPPLY IS GONE STOP IT IS STILL RAINING HARD STOP AS FAR AS POSSIBLE SEND SUPPLIES FOR THAT NUMBER AS FOLLOWS COMMA BED CLOTHING COMMAWEARING APPAREL COMMA COD LIVER OIL COMMA TYPHOID VACCINE COMMAQUININE COMMA ACETO SALICETIC COMMA WHISKEY COMMA PNEUMOCOCCIC SERUM ALSO ANY ADDITIONAL THINGS THAT A HOUSE EMERGENCY BUREAU MAY DEEM NECESSARY TO HELP AVERT AN EPIDEMIC STOP AIRPLANE LANDING IMPOSSIBLE COMMA DROP BY PARACHUTE
>
> (Signed) SMITH MAYOR RENOVO

The operator at W8LYB had time only to add that all public highways as well as the railroad tracks had been washed away before his signal faded out completely.

Stiles checked over the hurriedly penciled message and placed a long-distance call for Governor Earle at the state capitol in Harrisburg. A few minutes later the operator called back--all telephone lines between Coudersport and Harrisburg were down.

Stiles reached for the switch on his operating table and prepared to relay the message by radio. But after it had gone he sat in thought. They must be receiving dozens--hundreds, even--of such messages at the state capitol. Could they take care of all the needs? Could they get there in time? After all, Coudersport was nearer Renovo than was Harrisburg. . . .

Pushing back his chair, he took his jersey from the hook on the wall and shouted to his wife. "I'm going out for a minute, dear," he called, and down the street he ran, the long legs on his lean, tall frame eating up the ground.

Down to Red Cross headquarters he went, and there he described conditions in Renovo. The Coudersport Red Cross chapter acted immediately. A meeting was hurriedly called, and a course of action charted. By 1 P.M. a CCC truck was being loaded with medicine, food, clothing--and radio equipment.

Every doctor and merchant and just about every citizen in Coudersport contributed to the store. Hundreds of dollars' worth of medicines were provided, as well as large supplies of bedding, clothing and food.

Stiles recognized that even this would only be a stopgap for the community as large as Renovo however. He realized, too, that communication would be a vital necessity in organizing and directing further relief and rescue work. He was not needed in Coudersport--another local amteur, Bernard Hauber, would stand watch. . . .

And so he resolved to take his portable station to Renovo. A member of the A.R.R.L. Emergency Corps, he had assembled the station with just such an emergency in mind. A rugged twenty-five watt transmitter and a three-tube receiver of proved depenability were the basic units; together with spare parts, accessories and a large gasoline-engine-driven generator, they were loaded onto the truck along with the medical supplies and food.

A tent was loaded, too, as well as food rations for the relief party, changes of clothing, medication, whisky--all the crew's necessities, accessible without disturbing the relief supplies. The six-man crew was a picked lot--including two husky CCC drivers, a physician, Dr P. W. Shaw, Stiles, Fish Warden Wright Rumsey who acted as guide and an expert wire-and-rope man.

At 5:15 P.M. they started out. It was still raining but the roads were good. They traveled twenty-two miles to Galeton on the direct route to Renovo. There still more food and clothing were taken aboard. There the hard road ended.

For the next twenty miles they followed a dirt road that led from Galeton to Cross Fork. This road had been officially closed by the State Highway Department. Local farmers said they had failed to get through even with horses.

Undaunted, they pushed on. It was not long before they understood what the highway patrolmen and the farmers had been talking about. Washouts threatened them from below, landslides from overhead. Slides from the rain-soaked hillsides covered stretches of forty or fifty feet in places. Currents of raging water crossing the road and digging huge valleys seemed to recur every quarter of a mile.

But still the party pushed on. Somehow the huge truck, growling and snarling in defiance of the elements, plunged through the ruts and valleys and slides.

At midnight a faint gleam of light could be seen in the distance ahead, and half-hour later the party drew up at Cross Fork. The few inhabitants of this small community were completely isolated. Neither man nor beast of burden had conquered the water barrier since the first day of high water, they told the relief crew.

Food was unloaded for them from the supplies, and after a twenty-minute pause the party again started for Renovo.

The road from Cross Fork to Renovo follows the river's edge all the way. It is normally a hard-surfaced road, but so little of it remained intact that night that it was hardly recognizable as a road at all. There were washouts of fifteen to twenty feet in width, some of them as much as twenty

feet deep. There were landslides blocking the road for hundreds of feet, through which paths were cut with pickax and shovel. Temporary roads had to be dug out of the mountainsides. Where bridges were out temporary planking was thrown in place. For miles the road was covered with floodwaters.

Yet foot by foot and mile by mile Stiles and the rescue party slogged along. The mechanical behemoth they rode strained and bucked and battered its way through the rain and the night. Finally they reached a point only five miles from the isolated town.

There a mountain landslide had washed the roadbed into the river, taking a large bridge with it. Further progress was impossible. Stiles and Dr Shaw got out of the truck, removed their clothing and plunged into the swift, cold current to seek a possible footing for transporting supplies and radio equipment on the backs of the crew.

Precious time was spent trying to locate a passage for the truck's load of supplies, but it was a hopeless attempt. Finding no bottom, they clambered out and returned to blaze a trail around the landslide over the steep mountain slopes.

Following this trail, armed with supplies of food and water, they started on into the city on foot through dangerous rushing currents. The city was finally reached. Conditions were fully as bad as they had been pictured.

The aid of some twenty-five additional CCC lads was enlisted. With this augmented crew they made their way back to the truck and shortly after daybreak they carried the radio equipment into the town on stretchers. The food and supplies followed.

The only semblance of order to be found in that valley of distress was in the vicinity of the Pennsylvania Railroad shops. There light, heat and shelter were to be had, and there Stiles and his radio equipment were taken. Gallons of water were poured out of the cabinets, the parts hurriedly dried with a sponge, connections made--and at nine-thirty that morning portable W8DPY was on the air.

Radio operation in Renovo presented problem because of the disorder of the city. Wires were lying across roads and buildings in a tangled mess mess, some of them still alive and producing crashing bursts of electrical interference that made reception difficult. With the aid of P.R.R. electricians the worst of these were cleared, and the situation improved.

The actual operating procedure of the station presented the next problem. Anxious refugees seeking to send messages crowded in. Bedlam and confusion reigned. Finally two National Guardsmen were placed at the door to take messages and keep the room clear.

All messages going back to the headquarters depot at Coudersport were forwarded to Bernie Hauber, W8KKM, who had stayed behind to serve as base station. Messages of a personal nature were transmitted to W8YA at State College, Pennsylvania, from which station they were routed to their destinations. Official and semiofficial messages were sent to W8INE at St Marys, Pa., where they were placed on telephone wires.

Sleepless for two nights previously, Stiles nevertheless stayed at the key throughout that day and night and the next day. At length he was relieved by two operators from State College. When they arrived he was in a state of nervous collapse bordering on absolute breakdown.

But the job he had set out to do had been done. During the most critical period he had been the sole link for the stricken city of Renovo with the outer world. And the food and first-aid supplies

brought by the expedition had averted acute suffering until further help could arrive.

There were many who echoed the President of the United States when he sent Walter Stiles this letter:

> Dear Mr Stiles:
> I have learned of the splendid services you performed as an amateur radio operator during the flood emergency . . . and desire to congratulate you upon the fine work which you have accomplished. What you were able to do in aid of the flood sufferers emphasizes how important the continued development of amateur radio activity is to the best interest of the nation. Very sincerely yours,
> (*Signed*) Franklin D. Roosevelt.

Bob Anderson was born wise in the ways of the river. He was born at Wickliffe, Ky., five miles below Cairo, Ill., where the broad Ohio, itself swollen by the Wabash and the Tennessee, flows into the mighty Father of Waters.

From childhood he learned to know the river. The Anderson family lived on a high bluff, well above any possible flood danger; but past their doorstep flowed the river, calm and placid when autumn leaves were falling, surging in turbulent unrest when the spring torrents run.

Every major flood since 1913, when he was seven, was part of Bob Anderson's experience. He worked with the workers and listened to the river talk. He learned to know the spirit of the river by its sound and by the eternally changing expression on its face. He saw it in the spring when curling fingers of yellow water invaded the streets of the villages and filled the basements and the houses and the land. And then he saw the brown silt that the river left over the soil when it went away again, rich, brown food to make plants grow luxuriantly green and strong.

But most of all he learned to know the danger in the river and the inexorable way its imponderable might discards the puny works of man.

Bob Anderson learned to know radio too. At first it was his deep love for music that led to his interest in radio. For radio could bring a small-town boy the great music he could hear in no other way.

In 1923 or thereabouts he built his first radio receiver. He had never heard or even seen a radio set before but he found out how to build one and then he built it and made it work. After that he built another, and still others each time finding out more about what made them work and why. Soon he was able to fix the neighbor's receiver when it failed, and before long the whole community brought its radio sets to him to repair.

In 1926 Bob entered the University of Kentucky and majored in industrial chemistry. His father was a lawyer, and his mother had been a teacher, and they were determined to give him every opportunity within their means. Bob helped out by building and servicing radio receivers while he was at school. He sang in a choir and served as student assistant in the chemistry department. But at the end of two and one half years a throat ailment forced Bob to leave school.

After that the depression came, and he never returned. Radio-service work had been more a hobby than anything else before but now it became a profession. In the course of time Bob married. With his new bride he moved to Paducah, Ky. There Robert, Jr, was born and there he worked as a serviceman until 1934. In that year a wholesale radio and refrigerator firm in Harrisburg, Ill., offered him the job of service manager, and he accepted.

There in Harrisburg Bob Anderson made a home and played the piano and the organ and built and rebuilt the various pieces of equipment in his amateur station. There Elizabeth was born.

And there he was when the river began to rise in the month of January 1937.

Harrisburg, county seat of Saline County, is an inland town. It is well back from the Ohio River which is something like twenty-two miles away at the nearest point. But by January twenty-second the river, amplified by the inflow of the Wabash, had searched out low spots that led its muddy tentacles right up to the gates of the city. Large sections of southern Illinois were inundated. The region colloquially termed "Little Egypt" was rapidly becoming a vast lake--and inland sea, fifty miles wide, studded with islands as high spots occurred but shoreless farther by far than eye could see. Many of the smaller communities along the river were surrounded with water, isolated, cut off by road and by wire, accessible only by boat--and by radio.

At Harrisburg particular concern was felt for the inhabitants of Shawneetown, a small community with a population of about fifteen hundred, located on the Ohio River not far below the junction of the Wabash and the Ohio. Twenty-three miles east of Harrisburg, Shawneetown is one of the oldest cities in the state of Illinois, historically interesting because at one time it refused the then struggling city of Chicago a loan from its bank. The city fathers said Chicago was too far from Shawneetown ever to amount to anything!

Shawneetown was protected from flood by a levee system similar to those built by other river towns--a sixty foot flood wall surrounding the village on the river side. To the rear, however, it was unprotected, andit was this fact that made the plight of its people seem perilous. For its citizens, feeling secure behind their sturdy wall, would not be aware of the steady encroachment of the backwater. Soon they would be starnded in the midst of a turbulent sea. . . .

Bob Anderson knew the river. As early as January twenty-first he foresaw the approaching emergency. When the rain began freezing he called on Curtis Small, editor of the *Daily Register*, and discussed the situation with him. Then he went to the local broadcasting station, WEBQ, where his friend Kes Schonert was on duty.

"Hello, Bob!" Schonert greeted him. "Sit down and rest yourself."

"Thanks, Kes."

"How's the weather looking?"

"Not so good, Kes," Bob said. "That's why I came over. Ice is forming on suspended objects. You know what that will do to the wire lines."

"I'll say I do!"

"I just talked to Curt Small. He's going to call on us to handle press if the tickers go out tommorow. Can we get on the air if the sleet gets our antennas?" Bob asked.

"Sure we can," Kes replied decisively. "Did Curt have anything to say about the river?"

"Yes. He's worried about Shawneetown. He sent a reporter down there but he isn't too sure he can get through. The telephone is out now, but he's expecting a reporter named Hill to get in from Centralia this afternoon. This guy Hill has a complete portable station and shouldn't have much trouble establishing communication. That'll help that situation."

"Good enough. Say, Bob, how long will it take you to get on the air?"

"Several hours, Kes, I guess. I am going to lay off this afternoon and work on the rig."

"You haven't got a portable outfit, have you?"

"No, but my exciter will work by itself as a transmitter, and I can borrow one of those new six-volt all-wave farm receivers from the store. I suppose I could get a portable outfit together if I had to."

"That's the stuff, Bob. You know my rig isn't very portable--except maybe in a big truck!"

"Yeah, I suppose that's true. But it would make a mighty fine base station, and you know that's gosh-awful important too."

"Guess you're right. Well, Ive got to get my antenna back up. That sleetstorm the other day made an awful mess of it. What say we meet on 3920 as soon as I get off duty here?"

Anderson and Schonert worked on their gear until midnight. When Bob told his wife what he was doing she looked at him for a moment, saying nothing. But as she left the room a few minutes later she turned back to remark: "If you think you're going into that flood, Bob, you're crazy."

The next morning the Andersons' telephone rang. "Hello, Bob. Curt Small just called. He said the AP reporter was sent to Cairo instead of Shawneetown and wants to know if we can establish communication with Shawneetown."

"Sure thing, Kes. Tell him I'll take my portable down."

"How soon can you start?"

"Oh--by noon, tell him."

"Good. Curt is working for the Red Cross and he'll arrange transportation."

"Fine. I'll see you before I leave."

"O.K., Bob. So long."

Bob went home and told his wife he was going to Shawneetown. She did not speak for a moment and then she said quietly, "All right, Bob. When do you start? I'll have a good hot meal ready for you just before you get ready to go. It may be a long time before you get a chance to eat again."

She was right. It was eighteen months before Bob Anderson was able to eat a regular meal again.

Bob gathered his improvised transmitter, the battery receiver, spare batteries and other parts and loaded it all in the small truck provided through Curt Small's aid. He stopped to arrange schedules and a working program with Kes Schonert. They shook hands, and he set out. it was one o'clock on the afternoon of the twenty-second.

Following a roundabout route, Bob traveled northeast to Eldorado and thence to Equality. the temperature was twelve degrees above zero, and snow and sleet were falling heavily.

Outside Equality he was halted by water over the road--a swirling current of water so dangerous that the two local rivermen he found there refused to take him across. "Why, a fish couldn't live in that there river the way it is now," one of them ridiculed his request. They told of having refused to

take an Associated Press reporter across before even though he had offered them all the money he had with him.

But when Bob explained that he had radio equipment for isolated Shawneetown the spokesman looked quickly at the other man and then said, "Why didn't you say so? Get in--let's go."

They loaded Bob and his gear aboard and at length, by dint of skillful, strenuous rowing, they succeeded in crossing the treacherous stretch of water without mishap.

The boatmen set him down on the edge of a lonely road. There was no one in sight. Anderson finally succeeded in locating a farmer who transported him three miles further. This put him at the water's edge near the Midcity coal mine.

From the coal mine to Shawneetown one telephone wire remained intact, and Bob was able to talk to the isolated city.

WPA officials were in charge at Shawneetown. It was learned that the city was out of bread, that conditions were bad and hourly growing worse. Anderson wanted to set up his radio gear to relay this information back to Harrisburg from the coal mine office, but the officials insisted that he continue. They promised to have a boat at the next gap, a mile and a half away, to meet him.

This mile and one half of water was even worse than the stretch he had just crossed. It seemed impossible to go further. Bob was beginning to despair, but then about this time a bread salesman from Eldorado came along. There were two hundred and fifty loaves of bread in his truck. Informed of the food shortage at Shawneetown, he offered to contribute his stock. Together they loaded up a small boat and started out. So heavy was the cargo, however, that the boat nearly capsized. The two men had a close escape.

Eventually a boat originally constructed for use with an outboard motor--but with the motor missing--was located, and Anderson and the breadman set out. They had one paddle between them. Fortunately, the wind was with them, and they succeeded in crossing to the next high spot without great difficulty.

This high spot was a railroad crossing near Junction--the last community before Shawneetown. There they found a deserted house and eleven marooned people--including a just-married bride and groom--clinging together in the bitter cold on the B.& O. tracks. This was the point where the boat from Shawneetown was to meet Anderson, but there was no boat. Between the crossing and Shawneetown stretched six miles of open water--the main current of the Wabash, impassable in their unwieldy craft with only one paddle. Equally impassable was the crossing back to the mine, for the wind which had aided them coming out was too strong to be overcome returning.

There was but one thing to do. Laboring in the bitter cold, with the aid of a flashlight, Anderson began to set up his equipment. It was 7:30 P.M. Sleet blowing down froze on his clothing as he worked. By eight-thirty the transmitting setup was assembled, with a short piece of dangling wire for an antenna.

But the interference was strong, the power low, and the antenna ineffectual. Bob could not raise Schonert, patiently listening at W9HQD back in Harrisburg. Recognizing that the weakness of the system lay in the antenna, Anderson, with the aid of the other refugees, then strung up a longer and more efficient wire. By midnight they were on, the air.

QRR! QRR! The urgent distress call of the amateur air lanes went forth on the air.

But short waves are notable for their vagaries. "Skip" effect was so great that the tiny signal was inaudible at Harrisburg, twenty miles away. However, off in Louisville, itself disaster ridden, Bob LaVielle, W9ELL, was able to hear both stations. He offered to relay the traffic. At 1:30 A.M. the first clear message came through in steady code:

"Shawneetown needs food bad. All medical supplies."

"Go ahead, old timer, down there in the water," W9ELL answerd. Slowly, painfully, the information was pounded out. Harrisburg wanted details--wanted Anderson to send someone to find out just what was needed.

"Send somebody, hell--you send somebody for us," came his desperate reply, and then for the first time they learned of the critical situation at Junction. In typical ham spirit. Anderson's first concern had been for the stricken community of Shawneetown rather than his own immediate danger.

His next message told vividly of the plight of those on the crossing. It read: "We have bread and meat. They promised boat at crossing, but haven't seen it. Tell Lieutenant B. and XYL am O.K. and warm. Am using batteries. Thirteen people with me."

Anderson's wife--his XYL--was given the glad news that he was still safe. The next message said that "the man from Eldorado" was safe and sound and requested that his family be notified.

"What's his name?" Schonert wanted to know. "Just say the bread salesman from Eldorado." Anderson answered. That was all he knew. They had faced death together, but he had not thought to ask the man's name.

Throughout the next hour the 6.2 watts from the midget emergency station poured out its vital traffic. Messages were scribbled on an old newspaper and read by flashlight. Anderson's fingers were so numbed with the bitter cold he could scarcely pound his key. But still the dots and dashes marched steadily along. . . .

After a time W9ELL broke in to say he was forced to discontinue relaying. "I've got some Red Cross work to do myself," he said. The situation at Louisville was getting bad. . . .

Bill Lamb, W8CXR, in Wheeling, West Va., took over as intermediary in his place. Now the messages were traveling close to a thousand miles to cover seventeen--but still they went through.

The batteries attached to Anderson's transmitter grew steadily weaker however. The storage battery barely held out until the last of the messages was clear. At 3 A.M. it was dead.

At 3:25 A.M. W8CXR reported: "He seems to have dropped out of the picture. His carrier is no longer there. Looks bad for the boys there. . . .

But W9HQD had a solution. Besides being a skillful amateur he was chief engineer of the local broadcasting station at Harrisburg, WEBQ. Over this station--despite the hour--he broadcast a plea to the general public requesting that rescue boats and supplies be sent to Shawneetown and Junction. By dawn boats were on the way.

In one of those boats was Jack Hatfield, also from Harrisburg. He had been trying to reach Shawneetown but had been forced to stop along the way and so he had heard the WEBQ broadcast. When Hatfield learned that his friend Bob Anderson was stranded on the ridge he set out in his small motorboat, bent on rescue. Before daybreak he arrived at the cold and lonely

railroad crossing.

The first job was to rescue the thirteen shivering refugees. Hatfield loaded the young bride and the radio equipment in his boat on the first trip back to the mine. In the darkness and confusion Anderson dropped his message file and some parts from his equipment; they were never found.

Following in Hatfield's wake, Anderson and seven of the remaining men decided to attempt the trip back in the powerless powerboat. Two of the men had rubber boots. When the rest had boarded the boat they waded alongside, pushing it through the shallow water. Finally the icy water reached their boot tops.

As the two men climbed into the boat one remarked slyly: "I think a snake bit me." He pulled a bottle out of an inside pocket and took a long pull on it. The other man laughed and replied: "Shouldn't wonder. The river is full of snakes tonight," and reached for his quota of the snake-bite cure.

Such exchanges as these lightened the hazardous trip. They tried to follow the highway as closely as possible, since the water was not as deep there as elsewhere. This presented considerable difficulty, however, since the wind kept blowing the boat over into the deep water. Once they saw a lone road marker just showing above the swirling water: KEEP TO THE RIGHT ON HILLS AND CURVES.

Someone in the boat yelled out: "Hey, look out! You're driving on the wrong side of the road!"

Despite the relieving humor it was a ghastly trip. The men frantically bailed water from the leaky boat and rowed desperately against the powerful wind.

At length they arrived. Back at the mine Anderson again set up his station. Equipped with a fresh storage battery, he was on the air again at 6:30 A.M. He operated until noon when telephone service was restored across the intervening distance to Harrisburg.

By this time Jack Hatfield had beaten a three-mile lane through the heavy ice--an amazing performance in a boat with a 5/8-inch cypress hull--and he and Anderson dismantled the radio equipment then took it to Shawneetown. They reached the isolated city about 5 P.M., set up the gear and established communication immediately. No traffic was handled, however, because the telephone line to the Midcity mine was still open. Anderson went to bed on the operating table about midnight--his first rest in forty hours of strenuous activity and strain.

Next morning the telephone line was gone completely, and W9MWC again was on the air, handling all the relief traffic for the city.

The WPA officials in charge at Shawneetown provided Anderson with complete facilities. They supplied a table in a local bank building where he could work and a petite blond stenographer named Penelope Lewis to take incoming messages by shorthand.

Miss Lewis was as efficient as she was attractive. She helped Anderson in many ways--brought his food, helped locate radio supplies and became an invaluable assistant. She even secured a badly needed pair of trousers. Leaving the Midcity mine, Bob fell on the ice and tore his trousers at the knee. By the time he landed at Shawneetown this rent was enlarged until it reached from his boot top to his belt, exposing a considerable expanse of heavy woollen underwear. No one seemed to notice it, and he disregarded the lapse until the station was on the air and the pressure somewhat relieved. Then he asked where he could get some pants. Penelope replied: "I've been wondering how long you were going to run around like that," and disappeared. A few minutes later she

returned with replacements from the relief stores.

The river continued to rise steadily, and it became obvious that Shawneetown could not be saved. Reports from up the river made it clear that the water would rise above the levee. Every citizen of the small community must be evacuated. But where? There was no place to which they could be taken in Illinois. Two thirds of Gallatin County was under water. The situation was growing desperate. Some five hundred refugees had been taken to the Shawneetown High School, situated on a high spot a mile and one half from the city. There each of the human beings, not counting dogs, had about nine square feet of floor space in which to exist for a period of four days--the last two days without food, water or medical supplies. Quite apart from the rest of the city, something must be done to relieve this intolerable situation. . . .

Finally, in response to radio pleas, a large steamer, the SS Patricia Barrett, arrived, on the twenty-fourth. Early Monday morning everyone in Shawneetown was ordered to the boat. The refugees were all safely evacuated to points in Indiana and Kentucky; not a single life was lost.

The emergency over in Shawneetown, Bob Anderson prepared to return home. It was about time. As the USS Vandenburg arrived at Harrisburg from Shawneetown on Tuesday morning after an all-night run with Anderson aboard he was completely exhausted. From Friday morning until Monday night he had slept less than ten hours--and that on a hard table with his clothing on.

But when he arrived at Harrisburg he found Kes Schonert badly overloaded at W9HQD, which was a key station for the entire southern Illinois area. Bob returned to stand his "trick" on watch there ten hours a day for over a week. Then one morning he climbed one of Schonert's ice-covered seventy-foot steel towers to make an adjustment on the antenna. He climbed down again, drove his family to the hospital for typhoid inoculations and there conveniently collapsed.

After being hospitalized for two days he was put to bed at home for another week. The terrific mental and physical strain had taken its toll. Anderson's sensitive, introverted nature--belying his husky physique--could withstand no more.

It was eighteen months before he recovered fully from the ravages of that amazing odyssey in which his indomitable will drove him from danger to danger until there was nothing left to drive.

To Bob the saddest part of all his illness was that he was still too sick to do full justice to the epicurean presentation luncheon at the Waldorf in New York City when he received the Paley Trophy. But this was partly compensated by the presentation citation in which William S. Paley summarized his performance when making the award:

> On behalf of the Board of Awards I present this to you ... for meritorious performance during the 1937 Ohio River flood from January 22 to January 25 ... for proceeding with your amateur shortwave equipment from Harrisburg to the relief of the isolated inhabitants of Shawneetown, twenty-three miles away ... for transporting this equipment in the height of a blizzard, in a small open boat, over great areas of water running at flood force ... for setting up your transmitter in a raging storm at twelve degrees above zero and establishing the first communication direct with relief agencies ... for the exercise of extraordinary perseverance and ingenuity at the risk of your own life in bringing relief to eleven marooned people near Junction, sending food and supplies to the fifteen hundred isolated inhabitants of Shawneetown and bringing about their eventual evacuation ... for cooperating unceasingly with the military and civil authorities through more than forty hours of intense activity without sleep and then again manning your station and again serving the entire southern Illinois area with the transmission of

official communications throughout the duration of the emergency ... and, finally, because throughout these activities you exemplified the highest standards of amateur radio operation.

In 1938 it was a hurricane and tidal wave that put amateur radio to the test--a tropical hurricane, the first in 150 years, that came screaming over New England, bringing death and destruction. Over Long Island and into Connecticut and Rhode Island swept the shrieking, churning vortex of high-speed air. Across Long Island and inland along an unfamiliar route the storm center sped, its cross-country velocity the swiftest ever recorded--forty-five miles per hour. In the storm gusts of ninety--one hundred--even more miles per hour demolished flimsy structures, lifted roofs and steeples, snapped and uprooted hundreds of thousands of trees.

In the little town of Westerly, R.I., the rain and wind swept houses, churches, people into the engulfing tidal wave. Trees crashed. Debris came flying through the air. Power, telephone, and telegraph wires went down.

"And in all that maelstrom of terror," one press report stated, "there was only one voice--one feeble radio spark--to call for help and spread the news of disaster."

That voice was amateur radio station W1BDS. Its owner--William E. Burgess--was acclaimed by the five distinguished judges the Paley Award winner for 1938 because of exceptional performance during that time of crisis.

Will Burgess is like many another ham--a quiet, unassuming lad, successful in his job, happy and contented with his family and his radio. He was twenty-nine years old when the hurricane struck in 1938. For ten years he had been active in amateur radio, had progressed from a neophyte's makeshifts to a powerful, modern station that brought the world to his door.

Upon graduation from Chapman Technical High School in New London, Conn., his home town, he became a clerk in Montgomery Ward & Co.'s New London store. After a time the company made him manager of the appliances department in its Westerly store.

He was in the store when the front of the gale struck Westerly that Wednesday afternoon. The wind blew out the windows of the store. Panicky people went screaming up and down the aisles.

At first Will Burgess did not realize just what was happening. A high wind--yes, but there had been high winds before. The talk began to circulate. It was more than a high wind this time, they said. It was a hurricane. The shore community was rapidly becoming a mass of wreckage. Trees were blowing down by the hundreds outside.

Before an hour had passed Burgess realized that this was a disaster of incalculable proportions. From that it was but a step to the realization that this meant a communication emergency. And at such a time his services would be needed.

He collected a quantity of dry cells and "B" batteries and a large storage battery and started for home. The wind was so strong he could lean against it. His eyes were blinded by salt spray. Trees fell behind and in front of him as he struggled up the street.

When Burgess got as far as the police station he encountered another amateur, George Marshall, W1KRQ. He enlisted George's aid, and together they struggled to carry the equipment up the Granite Street hill against the storm to Burgess' home. It was a long way, and progress was slow. Eventually they succeeded in commandeering a South County truck and proceeded in it. But they

had only gone a few yards before the way was blocked by fallen trees. Over lawns and up banks they forced the straining vehicle. They would go a block, and a tree would crash to earth in front of them, only to be followed by another falling in the rear. They made a long detour on a dirt road, trying to avoid the flying debris and trees, but time after time death almost struck them down.

Before they were much more than halfway home the way was completely blocked. The truck could go no farther. They carried the batteries the rest of the way.

When they reached his home Will found that the garage that supported one end of his antennas had been swept away by the hurricane. By then it was pitch dark, and the wind was still blowing at an estimated sixty-five miles per hour. Burgess set out with a coil of wire and a pair of pliers to put up a makeshift antenna. On his way in from the yard the pliers were whipped from his hand by the wind. They disappeared. He did not find them until two days later--embedded deep in the trunk of an elm tree near by.

So strong was the wind and so dangerous the flying debris that in order to keep the antenna up it was finally necessary to wrap the wire around the house.

The next problem was the transmitter. Obviously, there was no power available, and the regular station would not work from batteries. Working against time, they rebuilt the equipment to utilize the batteries so laboriously carried from the store. Marshall made his perilous way home to get needed parts. For two endless hours Burgess labored by the feeble light of a kerosene lamp, bulding up a simple one-tube transmitter for battery operation. The windows of his radio "shack"--a tiny room just off the kitchen of his modest frame house--had been blown out by the storm, and the rain poured in. His three-months-old baby, Jane Gail, screamed in fear as the house shook and rocked on its foundations.

But at last they were ready. Instead of the ordinary six hundred watts of power of W1BDS they had less than five watts from the tiny battery transmitter and its receiving-type tube. Even the receiver was a makeshift battery-operated affair.

His heart in his mouth, Burgess sent out his first call--"QRR QRR de W1BDS." Anxiously he listened for a reply. There was none. He tried again.

> "Hear anything, Will?"
>
> Burgess pulled the headphones from his ears and sat back in his chair. "Too much QRM--there's a hundred stations on in there."
>
> "They don't know there's an emergency on, I guess."
>
> "Yeah. Look--why don't we try moving up into the 'phone band? Sure, there'll be QRM there, too, but our code will be such a novelty someone will be sure to notice us an listen."
>
> "Great idea, Will. Go to it!"

Enthusiasm restored, they hastily made the needed changes. Another distress call--another QRR. . . .

And this time there was an answer. W2CQD in Roselle, N.J., answered the call. But the faltering signal was too weak in New Jersey to be intelligible, and W2CQD had conflicting schedules, so he turned over the contact to Clark Rodimon at W1SZ in West Hartford. This station provided W1BDS with an open channel continuously for the next five days.

There is no record in the message file at W1BDS of the first message that was sent. There was no time to write a message--the need as already confirmed by local Red Cross officials was too urgent. So Burgess pounded out a curt, general account of the disaster in his own words. Something to the effect that a hurricane had struck--hundreds of homes had been destroyed--help was needed immediately. . . .

Meanwhile, neighbors had got word to Red Cross officials downtown that radio contact was being established. The second message was addressed to the national headquarters of the Red Cross in Washington--a brief plea for aid, signed only "Westerly Red Cross." It was promptly relayed to Washington by radiotelephone through the West Hartford station.

But then a hitch developed. The Red Cross in Washington had no knowledge of the hurricane disaster up to this time; this was the first message to reach the outside world telling the extent of the catastrophe. The officials at Washington doubted the authenticity of the message because it lacked the required personal signature and refused to accept it. At W1BDS Burgess could hear Roy Corderman, the Washington amateur, talking with Red Cross headquarters on the telephone, heard them refuse to accept the message. Back from Washington it came--back to Westerly. There the name of the local chairman was added to the signature, and this time the message was accepted.

The Red Cross swung into action. A representitive left Washington immediately to take charge of relief work in the area. The vast, well-oiled machinery of organized disaster relief began revolving.

During the next fifty-six hours a continuous watch was maintained at W1BDS with the aid of Gerald W. Mason, W1KRF, and Edward A. Dolan, W1KCG. Burgess himself left his transmitter only once in that time--and then only for a brief snatch of two hours' sleep.

His home became a center for the relief activity. It was invaded by Red Cross officials, boy scouts, the police, reporters and tearful survivors seeking to send messages to their loved ones. Scores of people crowded in, occupying all the rooms--some dazed, unable to recall the names and addresses of their people, some half dressed, minus shoes or other articles of clothing. Message after message poured from the station--names of Westerly's dead, calls for boats to save those marooned in their homes, orders for bread, workers, power, serum, planes and caskets. For three days that simple frame house was Westerly's only contact with the outside world. Some eight hundred messages of life and death were handled during this period, all of an official or urgent nature, representing every word that went into or out of the city.

At the end of fifty-six hours power became available in downtown Westerly. The South County Power Company suggested that the station be transferred to the company's office. When this was done it was night again, and another antenna was erected in pitch blackness. For a time the station continued to operate at the South County office.

But friction over message priority developed, and so they moved again--this time to George Marshall's home near the center of the city where power was also available. In the meantime other local amateur stations resumed operation, a well-equipped portable outfit brought in from Providence with a full crew of operators was doing a splendid job, and the initial load was beginning to lighten. It was not until Sunday night, however, that the crew at W1BDS/W1KRQ were able to close the station and go to bed.

In the days following the storm there was a deluge of incoming inquiries concerning the safety of friends and relatives in the Westerly region. It was impossible at first to obtain the desired information because of the absence of local telephone service, but Burgess was determined that

anxiety should be relieved wherever possible. He persuaded the authorities to provide him with a list of all the known dead or injured. As inquiries accumulated at the West Hartford station W1SZ, the outlet for W1BDS, the names were read off and then checked against this list. Over a thousand names were checked in this way. In one hundred thirty-six cases it was necessary to reply, "Dead."

Following the emergency praise was showered on W1BDS by a long list of local relief and municipal officials, by relatives and friends of Westerly residents, by such persons as former Attorney General Homer Cummings, Secretary of Commerce Hopkins, the director of Disaster Relief of the American Red Cross and others.

It was Sunday night when Burgess and his fellow workers got to bed for their first night's sleep in four days. But when Monday morning dawned Will Burgess was back at the store--on the dot. Other employees were enthusiastic in their praise; the whole of Westerly knew of the heroic performance, it seemed.

But Will was not impressed. "Aw, it wasn't anything," he said. "Any amateur would have done the same thing. Otherwise, he wouldn't be a ham."

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previous | next

Chapter Four -

To The Ends Of The Earth

by Clinton B. DeSoto

TO DATE no radio amateur has yet adventured on Mars or explored the craters of the moon--at least not outside the comic strips and the pseudo-science magazines. But there are very few spots on this little old earth where some ham has not yet ventured, from high in the troposphere to the depths of the Carlsbad Caverns and from the tangled jungles of Matto Grosso to the ice and snow of the Arctic.

It all began back in 1923 when Commander Donald B. MacMillian, the noted Arctic explorer, was preparing for another of his journeys to the Far North.

This was to be his ninth expedition. Eight times before he had made the long journey above the Arctic Circle, and there was nothing he feared more than the isolation, the relentless, inescapable realization of being cut off from the civilized world for a year or more at a time.

"It has spelled disaster for many an expedition." he said. In 1922 he had carried a radio receiver along, listening to the general traffic of the air. But this was tantalizing rather than useful. What was needed was two-way communication.

About that time Commander MacMillan met Hiram Percy Maxim, president of the American Radio Relay League. They talked about his problem, and Maxim suggested that radio amateurs would undoubtedly be overjoyed to help. MacMillan was keenly interested, but unfortunately there was no money to provide a radio station aboard the vessel and an operator to run it.

But by this time Maxim, too, was interested in his idea. Perhaps the A.R.R.L. could help. More discussion followed, and then an agreement was worked out. The League offered to help in securing apparatus and to pay the expenses of an amateur operator for the duration of the trip.

And so it happened that when the MacMillan Arctic Expedition sailed from Wiscasset, Me., on June 23, 1923, aboard the tight little auxilary schooner Bowdoin there was aboard an amateur operator from the A.R.R.L. and a complete two-hundred-meter station donated by Commander E.F. MacDonald of the Zenith Radio Corporation.

The operator was Don Mix, known throughout the amateur fraternity as the "sleepless wonder of 1TS," a tall, lanky Connecticut Yankee, redheaded and freckle faced and a superhuman performer behind a radio key.

Besides standing his watch as a member of the seven-man crew through the months that followed Mix transmitted a weekly five-hundred-word message to the North American Newspaper Alliance, stood regular watches for incoming press, handled the expedition's personal message traffic and sent back lists of calls of the other amateurs that he heard.

Two months after the expedition left Wiscasset it reached Cape Sabine above the Arctic Circle, the most northerly point of the trip. There WNP, "Wireless North Pole," established a new world's long-distance record.

The crossing to Cape Sabine was accomplished only after several unsuccessful attempts had been foiled by the ice in Baffin Bay. Once at the Cape, the expedition erected a National Geographic Society bronze memorial to the Greely expedition which there perished of starvation and exposure.

Turning south, the sturdy little Bowdoin pushed its way back at Etah, Greenland, a few miles below the Arctic Circle, before it was frozen in by the winter ice.

Then the radio installation came into its own. Communication through the summer static had been spotty, but autumn brought good conditions. Mix strung a huge antenna from a cable suspended between the cliffs on either side of the ice-locked harbor. The radio installation on the Bowdoin annihilated isolation. It brought entertainment and news of the world. Through the eagerly listening amateur stations back in the U.S. and Canada business messages and news reports to the outside world were generally handled with the speed and reliability of a wire-line connection. When President Coolidge filed a message of Christmas greetings to the party it was delivered like an ordinary telegram.

Despite the static and aurora borealis, despite the two-hundred-meter wavelength (this was before the days of short waves), despite the handicaps of cramped quarters and insufficient fuel supplies the expedition was in contact with home until its return in September 1924.

"No polar expedition will attempt to go north again without radio equipment," predicted MacMillan on his return, and he was right.

The barrier of silence, the greatest single obstacle to all explorations, was broken for all time. Other explorers heard of MacMillan's success and eagerly sought the help of amateurs for their ventures. In 1924 another expedition secured amateur communication; in 1925 there were five; in 1926 this number increased to six, and the following year to seven.

Since 1923 well over a hundred scientific expeditions and other parties wandering the face of the earth have depended on amateur radio for communication. Usually there has been an amateur along as operator, too, for explorers quickly learned that the ham's innate resourcefulness could be depended upon to keep them on the air.

The adventures encountered by these operators would fill hundreds of volumes. Some traveled by airplane, others by boat. Bert Sndham sweated and bounced in a Ford touring car on a motorized expedition breaking the international "highway" from Los Angeles to central Mexico and later to El Slavador. A caterpillar tractor hauled the short-wave stationof the Haardt Trans-Asia Expedition. Ray Meyers traveled in the submarine Nautilus under the polar icecap when he operated the radio equipment of the Wilkins-Ellsworth Transarctic Submarine Expedition which attempted to reach the North Pole by the underwater route. Other short-wave operators have toured the wilds of darkest Africa in a luxurious motor trailer, climbed the peak of Mount Crillon, floated down the Orinoco in an oil-prospecting houseboat, braved the jungles of Matto Grosso, sailed with sealers in the Antarctic, mushed behind dogsleds in the Arctic and roamed the isolated corners of the world from top to bottom.

The experience of Harry Wells may be taken as a sample.

Harry penetrated territory never before seen by a white man, came close to losing his life a dozen times, created a Dyak shrine, thwarted a native uprising--and it all started with a football game.

A native of Washington, D.C., Harry returned there in the fall of 1928 for the home-coming game

between the University of Maryland and the University of Virginia. It was after the game that he found out that the All-American Lyric Expedition was outfitting to leave soon for Borneo, its purpose to make an anthropological study of the primitive natives, obtain geographical data and take observations on tropical and equatorial radio conditions.

To Wells, an indefatigable amateur, this sounded like opportunity knocking. After demonstrating his operating experience and technical training to Professor Theodore Seelman, an anthropologist of the University of Chicago, who was leading the venture he was placed in charge of the radio portion of the project.

Preparations, including the provision of a fifty-watt gasoline-powered base station, a low-powered emergency rig and a battery-operated portable outfit, were completed by the end of March, and the party embarked from Seattle on April third.

The journey to Borneo constituted an odyssey in itself. It was two months before they arrived. In the meantime they stopped at Japan, China, the Philippine Islands, the Celebes and Java.

The long-awaited first glimpse of Borneo proved something less than enticing. "The heat seemed to come rolling out to meet our small coastwise steamer," Wells reported. "The shore line was indefinite and appeared as a rather depressing maze of swamp and jungle."

They disembarked at Bandjermasin, capital of Dutch Borneo, on the southwestern coast. After completing final preparations the party traveled up the Barito River bound for Poeroek Tjahoe, the last Dutch military post, some two hundred and fifty miles from the coast and forty miles south of the Equator. There the main base was to be established.

Wells found the journey up the Barito intensely interesting. At times the progress of the little Dutch river boat, the Negara, was almost completely blocked by water hycinths, vast quantities of which formed a solid mass from bank to bank."The strange jungle odors, the bright-hued tropical birds flying overhead, the herds of chattering monkeys playing along the banks, the occasional wild boar or deer seen cautiously quenching its thirst, the crocodiles or snakes gliding through the muddy, sluggish water--all seemed to be crying, 'This is the road to adventure and the real things of life!'" he observed.

A week later they arrived at Poeroek Tjahoe. The entire white population--the post commander, two young lieutenants and a doctor--turned out to welcome them. Captain J.C. DeQuant, the post commander, was *controleur* of a portion of central Borneo larger than all Holland.

The work of setting up the base camp was begun immediately. All hands pitched in and helped set up PMZ, the expedition's main transmitter, and that evening the station was on the air. The very first call resulted in a contact with a station in California. All those months of traveling and thousands of miles of distance were wiped away at the touch of a key!

The sound of the gas-engine generator attracted the attention of the brown-skinned natives, and the news quickly spread that the white men had a strange contraption that made a noise like thunder and revolved like lightning. Soon the entire population of the *kampong* was squatting around the network of wires and instruments. Whole families would travel for days through the jungle to see the white man's wonder.

To show that the sounds were coming from the air Wells would disconnect the antenna and then put it back. Unable to comprehend the functioning of the radio system, the natives believed the white men induced friendly *anthos* or spirits to carry forth their messages.

The stolid Dyaks showed little surprise on hearing the moanings of a saxophone or the melodies of an orchestra for the first time--mostly amusement and curiosity. Curiosity, in fact, was an outstanding trait. When the toy phonographs were played some native invariably tried to climb inside the horn to see where the noise was coming from. They crowded around the set, becoming tangled in the wiring or knocking the units out of adjustment, until one day Wells let one of the boys touch the terminal of a 108-volt battery. He jumped back, yelling, *"Panas* [Hot]!" After that all their curiosity would not induce them to come within ten feet of the white man's magic.

As the Americans gradually grew accustomed to the equatorial heat and the direct rays of the sun plans were started for the first real exploration trip. The Dutch Government had very courteously offered military assistance wherever possible, and so it was agreed to make an attempt to reach the headwaters of the Murung River, in territory never before seen by a white man, at the same time carrying on a search for the nomadic Punan Dyaks, the most primitive natives then known.

By middle July all was in readiness for the start. The field party consisted of Professor Seelman and Wells, together with Captain DeQuant wh was in charge. John H. Provinse stayed behind at the base camp, operating the main PMZ transmitter.

Besides the three white men five convicts who were serving time at Poeroek Tjahoe were assigned to do the paddling. Cooking was added to the paddling assignment when the Chinese cook, Lim, decided that he did not care to see any wilder people than those he had seen already at Poeroek Tjahoe and refused to leave the base camp.

For the first day or so the two heavily laden boats plowed through sluggish, muddy water. On the third day the banks became higher and the water faster, and by evening they were on the edge of Kiham Hatas, Borneo's longest single rapid--six hundred yards of water fury.

The month that followed was one continual story of man's battle with the elements. There were days of hard paddling and days of roasting in the intense heat. Sudden showers would soak them through, and then the slightest breeze would chill them to the bone. Swarms of insects troubled their rest at noonday and at night. The river was a continual succession of rapids, waterfalls, narrows and whirlpools where the slightest error in judgement might mean disaster.

At the fork of the Barito and Murung rivers they turned east along the Murung into the land of the Punan Dyaks, the little-known branch of the Dyak race which Dr Seelman desired to investigate. A tribe of aborigines--of Malayan speech, but differing in stature--with Caucasion features, they were known only to have a low civilization level and to be far from peaceful.

The explorers had been warned that these primitive aborigines, while not cannabalistic, were dangerous. But Seelman and DeQuant disregarded these warnings, and their unconcern communicated itself to Wells. "We were too busy and tired to heed any rumors of unfriendly natives," he said.

Actually, such disregard of the very real danger, while courageous, was also reckless. They were yet to learn that the Dyaks' hatred for the whites could be satisfied only by killing.

This hatred stemmed from the outrageous treatment of the Dyaks by the Malays which was tolerated by the Dutch. Throughout the journey they observed that the Malays exploited the Dyaks shamelessly. At the village of Tombangolong a Malay trader had even speared and killed a Dyak the day before, and the villagers were vainly searching for the killer.

In this case Dutch authority upheld law and justice. The All-American Lyric party arrived in time to witness the tribal burial, and then Captain DeQuant set out to track down the assasin. He

succeeded in catching the Malay and told the Dyaks the killer would be held for trial at Poeroek Tjahoe.

That night the murderer was chained by the neck to a post in the center of the shack the explorers occupied. The men's camp beds occupied the remaining space in the room. The Malay was instructed to sleep on the floor but he was afraid to do so because he thought the Dyaks might spear him from underneath.

"Personally," said Wells, "I could only think, 'Gosh, what if they miss *him?*' That canvas spread on my bed felt awfully thin . . . ."

But the Dyaks did not attempt to avenge their dead, and the party continued on its way unmolested.

Three days later they arrived at Toembang Topus, the last village on the Murung. This was to be the take-off point for the dash to the headwaters. The next day it was necessary for Captain DeQuant to make an overland journey to another isolated *kampong*. That night, as usual, Harry Wells had a long radio contact with the Philippines and reported on their progress.

The next morning Dr Seelman and Wells, leaving the portable radio outfit and the collection of primitive weapons in camp under guard, started their dash for the headwaters. They were now in territory never previously penetrated by white men.

The four--two Dyaks and the explorers--paddled steadily, and their light boat moved swiftly through the water. Before noon the waters became so shallow that it was necessary for them to wade. Logs and overhanging creepers impeded their progress, but by early afternoon they reached the uncharted source of the Murung.

It was there Harry Wells erected his shrine. A small clearing was cut in the virgin jungle and a raised platform constructed. A signed statement was sealed inside a gourd. Together with an old battery and a radio tube, the gourd was placed on the platform. The official expedition flag, made by Mrs Seelman before their departure and bearing the diamond shaped A.R.R.L. emblem and the letters PMZ, was raised. The shrine was dedicated to the Goddess of Fate who had guided them safely thus far, and several salutes were fired into the air. The Dyaks seemed deeply impressed by the solemn ritual.

Then the party returned to Toembang Topus. Aided by the downstream current, they arrived at nightfall. The message they would send back to the U.S. was already drafted: "Reached destination. Starting back tommorow. Batteries getting low, so expect next QSO from base station."

But they were a little late. The batteries were already too low--they had even then given double the expected usage. Rain water had destroyed the spare batteries. To make matters worse, Manila, the relay point, was in the throes of a typhoon, and the message never did get off. The next day they were obliged to start back for the base. Before they left they gave the dead batteries to the natives as souvenirs.

In Manila the expedition's silence led to newspaper reports that they were believed lost, perhaps killed by natives. But the downstream journey went swiftly, and before the growing anxiety in the States reached great proportions they were able to report that they had arrived back at the main base in at Poeroek Tjahoe late on the afternoon of August seventeenth, fagged by exposure and hardship but safe.

The All-American Lyric Expedition stayed in Borneo throughout the remainder of the winter, and

PMZ remained actively on the air. On a number of occasions other field trips were made, accompanied by the portable outfit, which made some amazing performance records. These trips were shorter than that up the Murung and less dangerous.

Still, danger was always lurking ahead in that primitive country. On one trip into the jungle the party arrived at a *kampong* to find the Dyaks armed to the teeth with knives, spears and blow guns. The woman and children cowered fearfully in their huts not daring to venture out of doors.

An enemy tribe was hiding in the jungle, they said. Two hundred warriors were preparing to attack and massacre them all. One man had been shot at with a poison dart.

The explorers prepared to defend their lives along with the natives. There was no attack, however, nor did they hear or see any of the head-hunters. The lurking death had avoided them another time, but yet it was always there in the shadows.

Shortly before the expedition ended and the party returned to America there occured the tragic happening that climaxed the growing unrest among the natives. The Dyaks had been in a sullen mood for weeks. Their resentment directed primarily at the Malays but it included the Dutch authorities who in their minds apparently shared responsibility for the ill-treatment they received.

And then, on Christmas Day, Captain DeQuant was brutally murdered only one hour from the base.

There was high alarm at Poeroek Tjahoe. This assassination could bring anything--more murders, even an uprising that would result in the massacre of all the whites at the post. It was vitally important that word of the tragedy be got to the Dutch colonial government authorities at Bandjermasin in the shortest possible time. To send it by boat to the coast and have a reply returned would take two weeks. In the event of a serious uprising the whole place could be wiped out in that time. . . .

So Wells offered his services. On Christmas night at six o'clock PMZ sent an official message for the garrison at Poeroek Tjahoe to an amateur in the Philippines. There it was rushed to a cable office, and news of the tragedy reached its destination on the very day it occurred.

Thereafter all official reports concerning the subsequent disturbance and its political consequences were handled through this circuit. Replies were cabled from Bandjermasin to Manila and then radioed back to the isolated posted through PMZ. Several months' time and much expense were saved thereby, apart from averting what might have developed into a serious uprising, and the colonial government was sincerely grateful.

Not long after conditions returned to normal, PMZ said good-by to its friends of the air. The little gasoline engine was shut down for the last time, the telescopic mast was lowered, and Harry Wells boarded a steamer for home.

As he stepped on the gangplank he was struck by a sudden thought. "Say!" he exclaimed. "I wonder who one the Maryland-Virginia game last fall?"

In exploration lore 1926 is remembered as the year in which three expeditions raced to be first across the North Pole by air.

They traveled by different methods and different routes, but each used both of the newest marvels of science to be adapted to exploration: avaiation and radio.

Apart from the glory and adventure, these expeditions provided a conclusive test of the value of short-wave radio.

The Detroit Arctic Expedition was first to leave. It differed from previous U.S. Arctic expeditions in that no ships were used. Captain George H. Wilkins, its leader, planned to fly over the Pole in a large three-motored Fokker monoplane piloted by Lieutenant Carl B. Eielson, taking off from an advance base to be set up at Point Barrow, Alaska.

Comprehensive short-wave equipment especially designed for the expedition was provided, with a pair of outstanding Seattle amateurs, Howard Mason and Bob Waskey, as operators. In early March all of the personnel and equipment, including the big airplane and a smaller single-engined Fokker for supply work, were assembled at Fairbanks, the railhead. From there an advance party set out overland with a snow-sled caravan, transporting aviation gasoline and a powerful short-wave base station, its mission to establish the base at Port Barrow. Mason accompanied this party when it started out, carrying a small battery-operated portable for communication back to Fairbanks.

At Tolovana, sixty miles out, the snow motors were abandoned because it was discovered that they were consuming fuel so rapidly that there would be none left for the airplanes when they would arrive at Barrow! Five dog sledges were substituted for the motor sleds. Mason returned to Fairbanks, and Waskey joined the advance party, and they started again on the long six-hundred-mile overland trip.

After seven harrowing weeks the advance party--"Sandy" Smith, the leader, Earl Rossman, photographer and correspondent, Waskey and the drivers--reached Point Barrow. They ran short of food en route and for a time were unable to proceed. The temperature was thirty-five degrees below zero, and it was necessary to shoot some of the dogs. Finally they succeeded in killing sufficient game for the men and the remaining dogs and pushed on. The bulky gasoline-engine generator for the base station was temporarily abandoned one hundred sixty miles outside of Point Barrow, to be later retrieved.

Throughout the seven weeks' mush Waskey was in contact with Mason back in Fairbanks every night over the little battery portable.

In the meantime Wilkins had begun freighting gasoline and supplies between Fairbanks and Point Barrow in the smaller Fokker. On the third trip radio signals from the airplane went out after three hours and nothing was heard of the explorer. He failed to return on schedule. A puzzled world wondered about his fate for two weeks. Then it was learned that the wind-driven generator had burned out in flight. Wilkins had arrived safely in Barrow, but that night the tent hangar burned, damaging the propeller on the ship so badly that two weeks were required to repair it with the limited facilities available.

When the overland party from Fairbanks drew near a fast sledge was sent out to get Waskey and his portable outfit and bring them into barrow in advance of the main party, and it was through Waskey and his little transmitter that the world first learned that Wilkins was safe.

Trouble continued to dog the expedition's footsteps however. A series of mishaps finally forced abandonment of the plan to fly over the Pole, and thereafter Wilkins confined himself to the less spectacular activity of carrying on exploration flights over uncharted regions of the Arctic.

The one striking accomplishment of the 1926 Detroit Arctic Expedition was its demonstration of the reliability and range of the low-powered shortwave radio equipment. The tiny battery-operated sets

gave unprecedented performance with power inputs of but a few watts. Waskey at Point Barrow was heard as far away as Transaval, South Africa, on one of his transmissions reporting the safe arrival of Wilkins from a ferrying trip.

This performance was especially striking in comparison with that of the radio on the Amundsen-Ellsworth-Nobile Expedition which carried no shortwave apparatus and was equipped only for the longer commercial wave lengths.

The Amundsen Expedition planned to fly from King's Bay, Spitsbergen (Svalbard), over the Pole to Point Barrow in the dirigible Norge. The two-hundred-watt British Marconi transmitter, operating between six-hundred and fifteen hundred meters, succeeded in maintaining contact with Spitsbergen up to the time the airship neared the Alaskan coast. Then the orthodox equipment failed, and the dirigible itself was not heard for the rest of the twenty-seven-hundred-mile flight.

When the Norge approached Point Barrow, however, it was seen by Bob Waskey of the Wilkins party who flashed the news down to Howard Mason at Fairbanks. Mason informed the correspondent of the North American Newspaper Alliance, giving the newspapers of the N.A.N.A. a big scoop. This was a heartbreaking disappointment for the New York *Times* correspondent who had started mushing overland to Point Barrow two months before with a radio operator and a portable short-wave station just to get that story; they were still some thirty-five miles outside Barrow when the airship passed overhead.

The Norge continued on until it landed at Teller on May fourteenth. For two days the anxious world had no news of her. Twenty-four hours after the landing, however, her radio officer located an ancient spark transmitter on a reindeer ranch near Teller and finally got word out that the party was safe.

Then Mason and the N.A.N.A. correspondent at Fairbanks scooped the other services again, enabling N.A.N.A. to beat its competitors by an hour and one-half with the news that the Norge was safe at Teller.

The third expedition in the race, the Byrd Arctic Expedition, was the winner. Short-wave radio played an important part in its success.

The expedition, under Lieutenant-Commander Richard E. Byrd, sailed from New York for Spitsbergen on the SS Chantier in April. Lloyd Grenlie and George James were the radio operators in charge of the short-wave sets on the Chantier and the three-motored Fokker, Josephine Ford, with which the polar flight was to be made.

The story of that expedition is now history. On arrival at King's Bay preparations were rushed to quick completion, and on May ninth Commander Byrd and Floyd Bennett took off in the Josephine Ford for the fifteen-hour flight to the Pole and return.

No radio operator was taken on the flight, and in consequence amateurs missed the opportunity they had hoped for--a chance to talk with the first airplane in flight across the Pole. The Chantier, however, continued to maintain contact with the United States via short-wave radio, both at Spitsbergen and on the trip home.

Even before before the expedition reached American shores on its return rumor had it that before long the Byrd party would shove off for the Antarctic, to be the first to conquer the South Pole by air as well.

It was not until 1928, however, that the involved arrangements attendant upon such an expedition

were completed. That summer the first Byrd Antarctic Expedition set sail from New York on the SS Eleanor Bolling and the SS City of New York.

Commander Byrd had learned the value of short-wave radio on his earlier trips, in the command of MacMillan's aviation party in 1925 when John Reinartz operated WNP, as well as on the 1926 Byrd Arctic Expedition, and radio preparations for the new venture were even more extensive. Five radio men--Lieutenant Malcolm P. Hansen (who had built much of the gear used previously by Byrd, Wilkins and others), Carl Peterson, Lloyd Berkner, Howard Mason and Lloyd Grenlie--accompanied the party from New York. At Dunedin, New Zealand, they were joined by Neville Shrimpton, a New Zealand amateur.

Immediately upon departure from New York schedules were instituted from the two vessels. All the way down the coast of South America and through the Antarctic Ocean contact was maintained. In January 1929 the radio equipment was landed on the ice floe. The three huge masts supporting the antennas were raised, and the transmitters were installed. Almost at once Little America was heard round the world!

All through the long winter night that followed, past the time of the momentous polar flight which climaxed the two-year struggle, Byrd and his men were in regular communication with the outer world. Contact was sure, speedy and reliable. More than two million words were handled by the stations of the expedition, a great part of the traffic going through amateurs. Even on the final lap of the undertaking when the City of New York left Dunedin on April 1, 1930, homeward bound, the contact with civilization was unfailing.

"The greatest radio achievement of recent months was the constant radio communication with the Byrd Expedition and the part played by the amateurs. Time and time again these youngsters of the American Radio Relay League kept in touch with Byrd when the big fellows lost him. It was the amateur who really discovered the value of short-wave radio." Thus did Dr Lee DeForest, inventor of the vacuum tube and one of the foremost radio men of all time, acclaim the performance.

The first man in history to reach both the North Pole and the South Pole, Commander Byrd's name rapidly became synonymous with exploration and expeditions in the minds of Americans. No short-wave operator could conceive of a higher honor than a chance to join his subsequent ventures. Some of the finest members of the fraternity participated in the Second Byrd Antarctic Expedition in 1933 and in the U.S. Antarctic Service Expedition of 1940, commanded by Byrd in his new rank of rear admiral.

Their spirit is the same that inspired Columbus is 1492 and Lindbergh in 1927; the same spirit drove Galileo and Hertz and Marconi and it is alive in the explorers and the radio hams of today.

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previous | next

Chapter Five -

A Vagabond Ham

by Clinton B. DeSoto

CLYDE DE VINNA is a born wanderer with the wanderlust in his veins and a job that allows him to obey its call. He was home in Hollywood with his family over the Christmas holidays a couple of years ago, but that was the first time in six years. Before that he has been in Tahiti photographing *Last of the Pagans*, in China for *The Good Earth*, above the Arctic Circle making *Eskimo*, down in Africa with *Trader Horn* or in half a dozen other of the remote places of the earth pursuing his profession.

He is a motion-picture cameraman--one of the best.

Lately the producers have been keeping him closer to Hollywood photographing such domestic epics as *20-Mule Team*, *Wyoming*, *Bad Men of Brimstone* and so on. It's just as well. Between his profession and his hobby, Clyde De Vinna has already had about enough adventure for one lifetime. His hobby is amateur radio.

Clyde is an old-timer in both radio and picture business. By 1929, when Metro-Goldwyn-Mayer decided to send a troupe of seventy-five people into Central Africa to make a motion picture from the popular book, *Trader Horn*, his background was such that it was he who got the camera assignment. Still a young man, he was even then a veteran of such expeditions and already winner of the Motion-Picture Academy award for his beautiful and skillful photography in *White Shadows of the South Seas.*

The *Trader Horn* assignment involved a lot more than just taking pictures though. As chief cinematographer and right-hand man to W.S. Van Dyke, director of the picture, it was De Vinna's duty to help unsnarl some of the problems that arose. Not the least of these was communications.

At the outset it was decided to establish a base at Nairobi, with offices and a laboratory for processing of film.

"But how can we keep in touch while we move around the country?" Director Van Dyke wanted to know. "We'll be miles from the nearest telegraph lines--if they have telegraph lines in Africa. And what about supplies? We've got to eat!"

On top of that there was contact with the business manager, as he forged ahead making arrangements for their forthcoming moves, to be considered, checks with the laboratory O.K.'ing the film already shot, possible medical emergencies--a host of contingencies. Yes, communication constituted a vital problem.

But to Clyde De Vinna, with years of active amateur radio experience behind him, the solution was a simple one. "I'll have the answer for you tommorow afternoon," he told them.

A little study of the amateurs' *Call Book* and a hurried message to the A.R.R.L. brought a list of the active amateur stations in British East Africa. A phone call to Ralph Heintz, an ex-amateur in San Francisco who had turned radio manufacturer, brought him down on the next train with a

compact portable short-wave station.

And the next afternoon Clyde demonstrated his answer to the problem before a large and enthusiastic audience. Those were the early days of sound pictures, it must be remembered, and the movies had recruited most of its sound engineers from the ranks of radio. Many were hams and ex-hams. As the audience increased the population of the sound department decreased proportionately. Finally the sound boss himself came out and asked Clyde please to shut it down so they could do a little recording in the sound department before the day was over.

But it was a successful demonstration nonetheless. And as a result some two hundred pounds of radio gear were purchased by MGM and shipped to Kenya Colony in British East Africa, along with the other paraphernalia of the expedition. Traveling various routes, the personnel of the expedition followed, assembling at Nairobi as the starting point.

It was at Nairobi that trouble began. The authorities, it seems, objected to the use of radio on the expedition. For a time they were adamant--no, they would not issue a license for the transmitter. But De Vinna would not give up. When the situation seemed darkest he found an ally in a local amateur. Together they enlisted the aid of the chief operator at the government wireless station in Mombassa--also an amateur! Finally they aroused the interest of the postmaster general himself in the marvelous qualities of these new short waves.

Clyde was told that the colony had recently completed installing a chain of costly long-wave stations all the way across the Sudan frontier. They had spaced these stations just seventy-five miles apart, deeming that procedure necessary for a sure-fire network.

Yet here De Vinna was claiming he could work VPQ at Mombassa, nine hundred miles away, with a fraction of the power on short waves. The postmaster general, frankly incredulous, asked for a demonstration at the local airport near Nairobi. Arrangements were made to hold it at three o'clock in the afternoon. Three o'clock came, and everyone was there, including the postmaster general and all his staff. Everyone, that is, but De Vinna.

He was late--deliberately late. Knowing that everything hinged on the effectiveness of this demonstration, he timed his arrival with care. The officials were beginning to fume and fuss when he hustled up with the little set. With smooth precision he unfolded the tripods, connected the cables, raised the telescopic mast and cranked the gasoline-driven generator.

Everything worked like a movie script. VPQ in Mombassa came back immediately with a very flattering report, and they chatted back and forth for half an hour or so. The postmaster general and his staff were highly pleased.

The next day Clyde heard the verdict. It was favorable, but there was a condition. He was to be required to maintain a daily test schedule with VPQ from every part of the colony the party visited so that the authorities could check the performance of these amazing short waves under all possible conditions!

The *Trader Horn* troupe had cause many times in the succeeding weeks and months to be grateful for De Vinna's persistence and ingenuity in getting his radio operations authorized. FK6CR, the call the station was assigned, proved an invaluable asset. All the contingencies involving a need for communication that they had foreseen came to pass, and more besides. It was often hard to judge which part of De Vinna's work was more important--radio or photography.

Everywhere they went, through dense jungle or rocky gorge, the portable set followed. Most of the

moves were made by automobile, a specially equipped car carrying the vital parts of the camera outfits and the radio set. De Vinna's camera crew, sound men and electricians were a capable lot, and he never had to bother with the details of camera organization; they took care of that, leaving him free to start with the radio installation immediately upon reaching location. He was always given first choice of a camp site; oddly enough, the most efficient location for the wireless set usually proved to be the most pleasant spot in camp!

On the first camp setup, a sort of shakedown scouting trip in which the safari traveled only twenty miles from Nairobi, the native porters had their first contact with the wonders of wireless. That night the radio schedules were carried off without incident. At daybreak the next morning the party was due to strike camp and move on to the next location. When De Vinna returned from breakfast he found the tent literally surrounded by "boys" with picks and shovels. They had come to begin digging up the wires with which he had telegraphed to Nairobi!

De Vinna had some difficulty explaining that he talked without the aid of wires. The best explanation seemed to be that his words were carried by the wind. It was their fashion to name everyone by some particular characteristic, and throughout the rest of the trip Clyde was known by the Swahili equivalent of "the master who talks with the winds."

The radio gear fascinated the natives. After this first experience their assistance in more useful ways was never lacking, and they were always happy to help in raising tents or putting up lines for the antenna. But they would not touch a wire or any part of the set proper. It was not until the expedition neared its end that Clyde learned the safari superintendent, knowing their liking for bright or glittery things, had told them that if they touched anything connected with the radio huge tongues of flame were sure to leap out and consume them!

In Africa four o'clock tea is an institution, and the troupe quickly fell into the habit. One particular variety of the biscuits served at this time became such a favorite with the group that it was difficult to keep a sufficient supply on hand. However, the head boy of the commissary department, anxious to curry favor, would keep a few tins hidden away for some of his favorites. At least he was suspected of doing so.

One afternoon Clyde's personal boy arrived with tea minus the favorite wafers. The head boy was summoned for an explanation. He protested at great length that there were none in camp nor had there been any for a great many days.

In the course of routine traffic the previous evening Clyde had learned that a steamer with a consignment of supplies, including several cases of these particular biscuits, was en route. The ship was, in fact, due at the river landing below the camp at just about that time.

"You tell me there are no biscuits in camp?" he demanded of the commissary boy through his interpreter. "I know better. I have spoken with the wind gods on this matter, and they tell me that right now, at this very moment, many boxes are down at the river landing. You go--bring me biscuits!"

At first the voluble native was unconvinced. But his visit to the landing, a mile or so below the camp, proved that the wind gods were right! Never again was there a scarcity of the good biscuits or anything else in the store where De Vinna was concerned.

It wasn't all as lighthearted as that down there, however--not by a great deal. The seamier side frequently put in an appearance. Cloudbursts and long, jolting porter carries took their toll of the radio equipment. But always it performed on schedule. Once the power unit fell into the river Nile

but it dried out with no ill effects. No matter how difficult the circumstances, the radio station never failed.

The catastrophes radio served to avert were many. There was a time when Harry Carey decided he was going to visit his wife in the hospital. Carey, who had the leading role in "Trader Horn," had brought his family along with him to Africa. In fact, Mrs Carey played a part in the picture. However, when they were filming scenes in which she did not appear she remained in Nairobi where their children were in school. On one of these occasions the troupe traveled to the Serengetti in Tanganyika country, some seven hundred miles south of Nairobi. On his customary evening schedule with Sydney Pegrume at amateur station FK5CR in Nairobi Clyde received a message that Mrs Carey was ill and had been rushed to the hospital.

Harry was frantic. He announced that he was leaving by automobile for Nairobi in the morning. This, of course, would have been a calamity to the crew as a whole, for the long, slow trip to Nairobi took at least a week. Since Harry appeared in nearly every shot, nothing could be done without him. Exhortations and pleadings were of no avail--Carey was leaving for Nairobi.

All this time Pegrume was standing by at his end of the radio circuit. Finally De Vinna explained their dilemma. "Peggy," with characteristic aplomb, cranked up his trusty Rugby, drove out to the hospital, persuaded the head of that institution to accompany him back to his station and relayed a twenty-minute interchange of questions and answers that finally persuaded Carey that there was nothing critical about the case and he could do no good by coming in.

Production was resumed as usual the next morning.

Such "third party" messages for expedition members were not uncommon. A more unique experience occurred while the troupe was encamped at Murchison Falls, in the heart of a great game preserve in the colony of Uganda. After they were settled distinguished visitors arrived--the governor of the colony and several guests, among whom were an elderly American couple from Pasadena.

When the Americans were shown the radio set they were delighted. Their son was with the Byrd expedition at the South Pole at that very time. Could they send a message to him?

"No sooner said than done," De Vinna replied, but his eagerness to please had betrayed him. It was not quite that simple. Unfortunately, the shooting schedule did not permit him to operate at times when a direct contact with Little America would have been possible. He was forced to ask for help.

It happened that he was then maintaining a nightly schedule with the A.R.R.L. headquarters station in Hartford. When the time for his schedule arrived he asked if the operator could relay the message. The laconic Kentuckian at the key in Hartford said merely, "GA [go ahead]," and the message was on its way. A New York City amateur got it a few minutes later and passed it on to the operator at Little America. The reply came back by the same route the following night.

The visitors had left camp in the meantime, as it happened, but when they arrived at Kampala the message was there awaiting them at their hotel. It had traveled by still another radio relay to VPQ and Mombassa and then by landline to Kampala--a long route, involving three continents and two hemispheres and more than thirty thousand miles, but not bad time for a message to travel from an anxious mother in the upper reaches of the Nile to an explorer son on an ice floe in Antarctica!

Clyde De Vinna has found the unusual and the unexpected at every turning in his adventuring

with amateur radio. Perhaps the most extraordinary experience of all came in London while he was en route on the *Trader Horn* mission.

The party stopped off there for nine days on the way over, making govermental contacts relative to the trip and collecting supplies. Clyde made plans to visit some of the English amateurs with whom he had contacts over the air. Running down his list, he located the first name, that of a Captain Fraser, and left a telephone message. In the course of time word came in reply: Captain Fraser would be delighted to see him and would pick him up at his hotel that evening at eight.

At the appointed hour a very correct Negro chauffeur appeared. He asked if De Vinna would follow him out to the car. This seemed a bit unusual, but Clyde went along. A resplendent Rolls was drawn up at the curb. Its single occupant was most affable. "Come in," he invited as the chauffer opened the door. "Won't you sit beside me?" Clyde saw his hand outstretched, and they shook hands most cordially.

"I thought you might like to run over to the House with me," the Englishman remarked as they settled back and the car moved smoothly off.

This seemed to Clyde an excellent idea; he wanted nothing better than to look over one of England's better amateur stations. They rolled deftly through the narrown London streets. After a time they arrived before the extremely dignified and formal entrance to a stately old building. In the tower above a bell tolled; De Vinna realized dimly that it was Big Ben.

He followed his host silently as they went slowly up the stairs and through the massive doors. A doubt assailed him as he saw the liveried attendant who opened the door. Surely this was not the entrance to any amateur radio station. . . . A short distance down the high-ceilinged hallway the Englishman turned into a small room, unlocking the door. There was a comfortable fire burning in the grate, but otherwise the room was dark.

"We'll leave our hats and coates here in my office," he said, removing his topcoat as he spoke. "Then after a bit of a chat I'll take you through the House and into the visitors' gallery where you may watch the proceedings whilst I put in an appearance on the floor."

De Vinna, undestanding beginning to dawn but still incomplete, stayed silent. An inquiring look came on his host's face as no reply came. Then, comprehending: "Oh! Forgive me. I forgot to turn on the lights when we came in, didn't I? You see, I don't need them. . . ."

Then it was Clyde realized that his host, Captain (now Sir) Ian Fraser, C.B.E., member of Parliment and one of the most enthusiastic hams in Britain, had been totally blinded in the First World War.

They talked a few minutes more and then they went on a tour of the House of Commons. Unassisted, Captain Fraser played the role of guide without an error, pointing out various historical paintings and features of the building, calling by name certain people met in passing, going up and down stairs unaided and finally escorting Clyde to the visitors' gallery. Leaving his guest there, he himself went to his place on the floor of the House, where he took part in the ensuing debate entirely on par with the other members.

Up in the gallery De Vinna sat, pride warming his veins. The fact that Captain Fraser was a gallant and courageous gentleman and a radio amateur did not make all radio amateurs gallant and courageous gentlemen. Still, it made him feel proud to be one.

By and large, the hams Clyde De Vinna has encountered in his travels over the globe have exhibited a good many of the finer qualities. Many of his most valued friendships have resulted from acquaintances made through amateur radio. Unfailing cortesy, a willingness to help in whatever the problem might be--these he has found wherever he has gone. Perhaps he found them because he inspired them; but they were there nonetheless. The principle of reciprocity: "Do unto others as you would have others do unto you" is well exemplified in Clyde De Vinna's career. He has received much and he has given much in return.

One of his staunchest friends is a man named George Bambridge in Papeete, Tahiti. For the better part of two decades this South Seas colonist was responsible for a powerful short-wave signal signing "BAM" that rolled up almost nightly from Papeete. Clyde first met Bambridge on the air in 1922. When he went to the South Seas to make *White Shadows* he visited the enchanted island where George made his home and met his friend then for the first time face to face.

The friendship that had begun over the air ripened into a strong bond, and when De Vinna returned to Hollywood the radio contacts were resumed. Three nights a week they would talk--conversations that touched on everything and anything from astronomy or the price of copra to family life and personal problems.

On one of these aerial visits Bambridge complained that his daughters weren't getting the proper education. The two discussed the problem pro and con, seeking an answer. Then friendship asserted itself. De Vinna offered the solution: he undertook to adopt the girls, bring them to California and sponsor their education in the schools there.

As a result not long ago two attractive and gifted young ladies demurely received their diplomas from Fairfax High in Los Angeles. Now they're at college--and all because of amateur radio and the friendships it instills in men.

Another of De Vinna's long and cherished friendships is that with Kenneth L. King of Honolulu. For years he mainteined regular schedules with King whose station was one of the best know and most consistent in the islands. His operating ability was phenomenal, his skill a byword.

Finally, after years of aerial contacts, De Vinna had an opportunity to go to Hawaii. His first object, of course, was to look up some of the amateurs there, and King was high on the list. The address was in the downtown section of Honolulu. A ring of the bell brought to the door an intelligent-looking Chinese youngster certainly not more than fifteen years old.

"The houseboy, I suppose," thought De Vinna to himself, and he asked if Mr King were somewhere about.

The Chinese boy smiled. "Yes, I think Mr King is about--somewhere. Won't you come in?"

Clyde permitted himself to be led into a comfortable living room and seated in an easy chair. For a time he sat waiting. No one came. Finally, his patience wearing thin, he looked up sharply. The houseboy was standing in the doorway, watching and grinning.

The "houseboy" proved to be Kenny King himself. The famous operator, the speed artist who had burned up the fastest operators on the coast, turned out to be a precocious lad of fifteen.

Some years later De Vinna found himself working on a tremendous exterior set depicting the farm and village of *The Good Earth*, the picture they were then making. They were using the services of nearly every Chinese in southern California; in fact, the demand almost exceeded the supply, and

Chinese people from as far north as Sacramento had been brought in.

The huge crowd demanded an unusual technique in handling, and a rather comprehensive public-address system was set up. Through it some two hundred audio watts hurled the voice of the director to the remotest corners, enabling him to transmit his instructions to everyone simultaneously at a considerable saving of time and effort.

Even this did not satisfy De Vinna. He had added his own touch, a buzzer placed near the microphone and controlled by a telegraph key strapped to the arm of his camp chair, which enabled him to talk directly and privately to his sound men and electricians scattered all over the hundreds of acres.

Several times during the first few days he was puzzled by hearing in the distance a faint whistle that seemed to be spelling his call: "W--6--O--J." Never did it become any louder, and finally Clyde concluded he had been hearing things. But then one day a particularly ragged and grimy-looking "peasant" pushed through the fringes of the throng and ambled toward the director's stand. He stopped before De Vinna's chair and said: "What's the matter, old man? Why didn't you answer my call?"

It was Kenny King again. He told Clyde that he had been making a visit to San Francisco, and somehow or other while he was there MGM's agent had persuaded him to take a fling at the movies.

Not all of *The Good Earth* was filmed in southern California. A long and arduous journey to China was involved, too--a trip filled with danger and hardship. But even more remarkable than the dangers and the hardships of that trip were the daily contacts with home. Radio men out on the coast still recall in awe the precision with which the nightly schedules clicked off with never a missed dot during the six weeks or so of the trip.

Such a performance bordered on the incredible. Taking a radio station into China was no simple matter in the first place. It was not a question of persuading reluctant authorities to grant a license by some device or other; in China in those days authority was so disorganized that no radio licenses valid for the region they would travel were available.

There was even a good probability that any sort of radio gear would be confiscated at customs on arrival. In fact, a warning to this effect came from their broker shortly before landing. It happened, however, that the transmitter, a rather haywire arrangement thrown together at the last minute before leaving, was assembled in a case of the sort used for carrying sound equipment. De Vinna grabbed a piece of chalk, scrawled "Sound apparatus--spare parts" across the box and set it beside the sound paraphenalia. The customs inspector merely came and poked around for a few moments and then passed the lot without question.

Once past the customs and in the interior, the antenna problem proved the most serious. XU2V, the call De Vinna used in China, customarily employed a simple single-wire antenna that closely resembled the sort used on ordinary broadcast receivers. Installed as inconspicuously as possible, this usually served very well.

But in some locations local conditions made even this antenna too dangerous. One such location was a small native hotel in a little village in the interior. On arrival conditions looked anything but propitious for radio. Official sentiment declared amateur work taboo; only a few miles away there was a business like government short-wave station with circuits going day and night.

Other members of the party tried to dissuade De Vinna from attempting to operate. "The risk is too great," they told him. "You're a fool to take the chance."

"Hams rush in where an angel wouldn't even poke a pinfeather," he retorted, but the warning had induced caution, and for his antenna he hung a length of fine magnet wire from a corner of the hotel, some thirty-five feet above the ground. The other end dangled to a cement lamppost about twelve feet high, going from there into his window. When it was finished he wondered if the caution had not been overdone. The antenna was probably as inefficient as it was inconspicuous.

However, it was worth a trial. Arrangements had been made for a station in the Philippines to serve as an intermediate relay point, rather than chance the long jump to California. When time for the schedule approached Clyde decided to call the Philippine station first; it hardly seemed worth while even to try to reach the U.S. with that ridiculous antenna. He sat down and spent minutes calling the Philippine station. There was no answer. His spirits sinking fast, he tried repeatedly without result. Finally, more or less in desperation, he tuned over to the frequency of the U.S. station.

Then his heart flipped madly. There was W6AOR in Los Angeles calling him and telling him to break in, telling him that his signal was loud and strong and all but knocking the receiver off the table!

After that Clyde never worried too much about the antenna. He'd put up the best arrangement circumstances would permit and trust to luck. Always he got through.

Despite the precariousness of the radio activity it was impossible to maintain absolute secrecy. De Vinna adopted the policy of explaining the situation with great frankness to such folk as hotel proprietors and the like, counting on their cupidity for protection. At one village in which they stayed the hotel was managed by a very difficult and uncooperative chap who refused any concession. In fact, the whole establishment was slovenly and inefficient. It was evident that whatever else had been handed down generation by generation from antiquity the idea of "service" had not. The arrival of the motion picture troupe with all its impediments put the hotel facilities to a severe strain, particularly in the way of darkroom space and the like.

When De Vinna got around to discussing the radio installation the manager was about at the end of his resources. The fires of his wrath ignited when the word "radio" was introduced, and Clyde watched him storm off in a verbal smoke cloud of shrill Chinese.

But after the manager had gone a few steps an idea came to him and he turned back. "How this radio work?" he wanted to know. Clyde did his best to explain. "You talk with America?" His pidgin English pursued his inspiration. It developed that he had a brother in New Jersey; could he send a message?

By this time De Vinna was the affable salesman, steering his prospect's hand to the dotted line. Sure, the next schedule would take care of the message. But first they needed ...

Like the sun breaking through, the whole atmosphere of the establishment changed. Nothing was too good for the troupe after that; they had the run of the place. There was so much willingness to serve that the help got underfoot. That night the manager himself came to De Vinna and whispered his fealty. "Should the police arrive I will hold them downstairs until you have had time to hide the radio!"

The story has a happy ending. The message was sent, and the next night the Chinese

hotelkeeper had a reply from his New Jersey brother--the first word he'd had in over three years.

The most dramatic episode in De Vinna's career came within a millimeter of costing his life. It occurred in Alaska where he spent eleven months during the filming of *Eskimo*.

The party assigned to make the picture set out in the small supply steamer Nanuk in early summer and spent a month cruising the Bering Sea in search of walrus, whale and polar bear. They shot the bulk of the picture before winter set in, established winter quarters in the schooner when it became frozen in the harbor at Teller and returned to the temperate zone in the spring.

The equipment at K7UT, the station used by De Vinna in the Arctic, was in sharp contrast to the makeshift gear of, for instance, XU2V. The Alaskan transmitter was a beautiful custom-built job incorporating the latest in tubes and circuits and capable of a high order of performance. Antenna facilities on the Nanuk and later at the shore installation were close to ideal by comparison.

Yet De Vinna does not recall that experience with the enthusiasm and pleasure of his other adventurings. There are several reasons for this feeling. For one thing, radio conditions were erratic and for the most part undependable. Then there was the long winter night spent holed up in the tiny Nanuk frozen in at Teller Bay. Before it ended that night became a nightmare which erased the few pleasant memories the trip had created--the Bering Sea cruise, for example, or the fascination in learning the native customs and habits of the Eskimo.

The nightmare was born perhaps of the dissapointing radio conditions that prevailed, especially during the winter night. Schedules with California were difficult, even with the old reliable, W6AOR, at the helm. It was often necessary to relay by way of the Hawaiian Islands and occasionally even via New Zealand.

Perhaps it was this periodic need that prompted those regular schedules with New Zealand. Perhaps it was part of the thread from which the pattern was being woven. Possibly the contacts would have occurred anyway from mututal liking and need. But whatever the motivation, in the course of time Clyde got in the habit of talking with New Zealand quite regularly.

There was a lighthouse keeper down there, a lonely fellow who spent his days on an islet off the shipping lanes, tending his beacon and operating his amateur radio station. His name was McLaughlin.

They came to know each other, these two, each in his lonely outpost. They felt a kinship. . . .

De Vinna, seeking more favorable conditions than could be found on the crowded Nanuk, moved out on shore when winter came. He found a deserted hut a short way in from the schooner. It was nothing more than an eight-by-ten shack but it offered privacy and a decent radio location. He sealed the old shack to make it as airtight as possible. He erected a high antenna. He installed the radio transmitter and receiver, confiscated a gas stove from the supplies to heat the shack and there he spent his time.

It was late November by the time all this was organized. The winter night had arrived; daylight came and left with scarcely a pause. One late afternoon, a day or two after he completed the final details of installation, Clyde returned to the shack for early-evening schedules following a visit to the schooner.

The stars were shining high and still, and the night was crackling crisp with cold. He pulled open the shack door and let himself in. Making sure the door was shut tight, he lit the lamp. The

gasoline stove had been coasting along while he was gone; he reached down now and turned it up full.

Then he sat down at the operating position, breathing on the headphones to warm the earcaps before putting them on his head. The tubes in the receiver heated slowly; as they approached operating temperature the set came to life with a rush.

De Vinna glanced at his watch. Two minutes to go before the schedule with McLaughlin. . . .

On the instant the minute hand crossed the mark indicating five o'clock the crisp, characteristic tone of the Zedder's signal pulsed across some eight thousand miles of space into his headphones. "G A OM [Good afternoon, old man]," the greeting came.

In turn, De Vinna reached for his key. Steadily, precisely, the black paddles slapped from side to side as the bug poured forth dots and dashes in the one dialect spoken by men without the aid of the human larynx.

Back and forth they tossed the ball of conversation. Outside the lighthouse, far down in the Antipodes, the sea pounded and moaned at the base of the tower, alternately demanding and pleading.

But inside McLaughlin sat beside his warm fire, the intimate headphones excluding the sea's lament while his mind concentrated with undistracted clarity on the signals they brought. He reveled in their smooth rhythm.

"Shack warming up fine business now," they were saying. "Turned stove up full when I came in, and it's up to sixty-two already." De Vinna was in the habit of making a report on his progress with work on the shack. There was a flicker of amusement in McLaughlin's eye.

But what was this? Did that smooth rhythm from De Vinna's key seem to break and then to slow? No--everything was normal for the space of a few more words. Then came that break again--this time unmistakable.

Something was wrong! The dots and dashes hurried for a moment and then lagged. They got tangled up in each other. They stopped for a moment and they resumed in an unintelligible burst of speed. McLaughlin sat up sharply in his chair. His left hand peaked the receiver tuning dial with delicate precision.

"I--I--c--a--dot--dot. . . ."

The beating dots and dashes slowed then stalled and settled into one prolonged dash. Then even that ceased, and there was silence.

The New Zealander snapped switches and pounded his key in frantic alarm. He listened; no reply. He snapped another call. Still silence. . . .

"Clyde's in trouble," he muttered to himself. "Something's happened to him. I've got to get help there. . . ."

Swiftly, expertly, he tuned the band. If only there were another Alaskan station on--but no. Nothing nearer than--Wait a minute, here was a K6 station. Who was that Hawaiian Clyde relayed through? Yes, it was the same one.

"K6EWQ K6EWQ urgent K6EWQ K6EWQ urgent. . . ."

The Hawaiian station came back as though he'd been waiting an hour for just that call. Crisp and snappy--not a single lost motion. "OK GA [All right, go ahead]."

Choosing words with economy and care, but rapping them out at thirty words a minute, the New Zealander told his story. There were no questions, just a brief acknowledgement. Then the K6 could be heard calling Alaska.

The benevolent spirit of amateur radio's patron saint was on the job that day. K6EWQ got an immediate reply to his CQ Alaska. The amateur in Nome took the message. Almost before his pencil stopped moving on the paper his left hand pulled the telephone receiver from its hook. A telegram to the police at Teller, the town nearest De Vinna's shack. . . . Morse sounders took up the refrain, and their clacking dropped word into the laps of the authorities at Teller.

They are calm and imperturbable, those law-enforcement officers of the Northland, accustomed to dealing with anything, surprised at nothing. Within twenty minutes by the clock from the time McLaughlin in New Zealand realized something was wrong up in Alaska they were on their way, a doctor close behind.

Ten minutes later they were hammering on the tightly sealed door of the hut. There was no answer. Two heavily mackinawed bodies moved in synchronism. The door was battered down.

There at the operating table, slumped over, his head on the table and his fingers lying limply over his key, was Clyde De Vina.

The doctor bustled forward, his quick eyes noting details and symptoms.

"Carbon-monoxide poisioning," he barked. "Turn that stove off and get it out of here," he ordered, jerking a mittened glove at De Vinna's gasoline heater. "Stretch him out on the floor--here, like this."

It was some time later when the doctor raised himself from the floor. Sweat beads dotted his forehead even in the cold Arctic air. "He'll be all right," he said wearily. "Some of you lend a hand and get him over to the boat." He looked at the circle of watchers and shook his head. "Another twenty minutes--maybe ten--and we'd have been too late. Say-y, how'd we get here so fast?"

They told him about the telegram from the amateur in Nome, and he nodded his head. They told him about the operator in Oahu, and he grunted. But when they told him about the amateur in New Zealand who first sensed impending tragedy he only stared for a long moment without speaking.

Then his tired eyes turned to the small caravan of stretcher-bearers as it grew smaller in the distance, dimly visible in the starlight. They heard the doctor mutter to himself: "Radio, was it? Mankind is developing strange powers for itself these days, it seems to me. Well, whatever it was, it worked."

And then they heard him chuckle, grimly and without humor. "Call the doctor! The nearest telephone is ten thousand miles away."

He glanced once more toward his patient. They were carrying De Vinna aboard the ship. The doctor buttoned his heavy collar at the throat and pulled on his mittens and started along the trail back to town.

previous | next

Chapter Six -

Frozen North

by Clinton B. DeSoto

IN THE sparsely settled regions of the Far North short-wave radio has made itself and indispensable aid to living. Like the airplane it is continually performing miracles. From Cape Race to Little Diomede and from Windsor to the Melville Peninsula the face of the Northland is dotted with the jutting antennas of amateur radio stations. In the twinkling of an eye their comforting signals leap the vast white spaces, bringing news and companionship and relieving distress.

The inhabitants of Ugashik, a little Indian village on the shores of Bristol Bay along the northwest coast of the Alaskan Peninsula, cowered in their huts while high winds from the north brought winter closer to them.

It was September, but already the ice of winter gripped the shore line. The fisher folk stayed in their scattered huts. Their boats were out of the water, and the fishing season was ended for another year.

But it was not the snow and ice that made them cower in their huts. It was fear--fear of the dreaded red plague. For a deadly scarlet-fever epidemic was sweeping the Indian village.

All of its sixty-five inhabitants had been exposed. Many were sick; some were dying. The others knew the same grim fate awaited all--unless something could be done. They sat, helpless, waiting to be struck down.

But there was one man in Ugashik who was not helpless. He was Virgil Hanson, the lone white resident, representative of the U.S. Department of the Interior in that isolated village and an amateur radio operator as well.

While the Indians burned herbs to propitiate the evil spirits and the smoke from their tiny fires curled upward to the low ceiling Hanson sat at his radio key and sent up a plea for help.

Over in Anchorage Halford Nogle, casually roving the dial, heard the frantic appeal. He answered Hanson's call. When he had received the message giving details he relayed it in turn to the Bureau of Indian Affairs at Juneau.

From Juneau orders came dispatching a Pacific International Airways plane, piloted by Al Monsen, a daring pioneer of the northern air trails. From Anchorage to Kanakanak Monsen flew. At Kanakanak Dr A.W. WIlson, who had come up from his home station of Dutch Harbor, and a nurse of the Indian Bureau boarded the plane. With Monsen and the antitoxin they roared off through the Arctic skies on their mission of mercy.

Meanwhile, Virgil Hanson and Halford Nogle, the Anchorage operator, stayed at their keys maintaining constant communication. Hanson had been a licensed operator for less than a month, but his father was one of Alaska's outstanding amateurs, and he had been nurtured in the tradition. He stayed at his post.

Less than twenty-four hours after the call for help had first been sent the plane landed safely on the wind-swept ice offshore from Ugashik. The fever-swept Indian village gave thanks as the white

man's relief bird swooped low to their aid. The doctor and the nurse administered the antitoxin, treated those who were ill and curbed the epedemic.

The villagers blessed those who brought them relief from the deadly plague--but no less did they bless the magic ether waves that had carried their cry!

Virgil Hanson is one of dozens of amateur operators along Bristol Bay, some situated in the larger centers of Alaskan population, others isolated in tiny villages no larger than Ugashik. Radio is almost as much a part of that life as the telephone is in a suburban household.

The outgoing mail from Pilot Point was nine days late in reaching Anchorage one time, as an illustration, but had it not been for radio it might have been later still.

First of all, the air-mail pilot had the misfortune to blow out a cylinder head shortly after taking off from the Point and made a forced landing at Egegik. Mrs Williams, the government teacher's wife at Egegik, got busy with her amateur station, and soon another plane with two mechanics was on its way from Anchorage.

But when they arrived the mechanics found the engine couldn't be repaired. Mrs Williams got on the job again, and next day the head pilot of the Star Air Service flew in with a whole new engine.

Leaving the replacement, the Star pilot loaded part of the mail and passengers from the stranded ship and headed north. But misfortune overtook him, too; when he landed for the regular stop at Koggiung, fifty miles farther along, he cracked off a ski. However, at Koggiung the postmaster, Herman Hermann, was also a radio operator, and soon a new ski was on its way.

Eventually, after one more lift from radio's helping hand giving weather reports warning of a dangerous storm, the two planes landed at Anchorage and delivered their mail and passengers. They were a few days behind schedule, but they were safe, thanks to radio and a pair of helpful hams.

Amateurs of the Far North have written many such tales in their logs--so many that they are routine and commonplace, seldom mentioned.

And then every once in a while something comes along that puts these casual followers of the microphone and key into the hero class.

In the mining settlement of Selkirk, 150 miles northwest of Winnipeg, many winters ago, a small family owed to its existence to one of these unsung amateur heroes.

This isolated village was populated chiefly by struggling miners who dug for precious metals in darkness underneath the ground in order that their families might carry on a precarious existence above it. In the summer there was an occasional train, and the single line of telegraph wire provided a tenuous link between this outpost of humanity and the rest of the world. There was no doctor in Selkirk; the community could not support one.

In the spring of 1925 a young mining engineer brought his bride to the village. The winter before the engineer had gone out to Winnipeg and there he married. When the spring thaws came and the early buds appeared along the Manitoba countryside he brought his bride back to the mines.

They were idyllically happy in their love, content at first in themselves and later in the thoughts of the child that was on the way. Occasionally there would be a twinge of dread as they thought of the ordeal ahead, but that was dismissed with ready self-assurance.

The glorious summer bloomed and faded again, and then all too quickly autumn came. The sun lost its warmth, and the cold winds searched out the chinks in the miner's cabin. The young husband was tenderly solicitous of his bride.

But the young wife was of more delicate stuff than most of the miners' wives, and when October's winds had swept the ground bare of leaves the old women of the village told him that she would die unless a doctor could attend her.

The lines of strain deepened in the miner's sallow face, and he stumbled about the mine shaft and passages absently, intent on the worry inside him, But there was still the railroad and the telegraph line to depend on. As long as they were there she would be safe.

Then the heavy snows came and blocked the branch-line railroad service, and a glazestorm completed the village's isolation by depositing a heavy load of ice on the single strand of telegraph wire, breaking it.

The men of the village told him no doctor could be reached now.

And now the young wife was suffering, and her time was drawing near. As the last days approached the miner became desperate. Frantic with the urgency of his need, he went from person to person, begging help. It was then someone told him about the radio "bug"—the young fellow who played with an amateur set in a shack on the side of the mountain. A lonely figure, a youth they had laughed at for his eccentricities…. It seemed strange to hear them speak seriously of help from him now.

The sick woman's husband hurried to the radio "bug's" home.

When the miner asked the youth to perform a miracle and save the lives of his young wife and her unborn child the operator looked at him for a long moment. Then he said quietly: "I'll do the best I can."

He did not tell them of the struggle he had been having to make himself heard outside the settlement at all, of the handicaps of working without electric power and without proper parts and accessories, or of the flashing iridescence of the aurora borealis that blotted out signals for hours and even days on end.

He just sat down to work. For two successive nights the amateur remained constantly at his key, taking scarcely a moment for sleep before the next day's labor down in the mine. His skill and his prayers went into every dot and dash. But throughout the Northwest the crashing aurora smothered out his weak signals and kept them from the ears of other operators. With all his efforts he could not make himself heard.

It was not until the third night of trying that another amateur in Fargo, N.D., distinguished the faint whisper from Selkirk through the roar of static. He answered the call and wrote down the urgent message and then he wired the owners of the Selkirk mine at Winnipeg.

At the offices of the mining company there was immediate action. The company physician himself started out on the perilous and exhausting journey to the village of Selkirk. He arrived just in time. Almost before he could shrug himself free of his heavy clothing and restore the circulation in numbed hands and fingers the climax came. The frail wife fought for strength and life with every ounce of nerve she possessed. In the end the woman's courage and the surgeon's skill triumphed. The mother lived, and so did the child. And the radio "bug" of course, became a local hero.

Back in Alaska, in another autumn, high winds again came blowing down from the north, bringing ice and storm. The snow-laden winds wailed around the corner of the world.

The wind whistled high, but higher still there were dots and dashes hurtling through the ether. Their burden was a plea for help--the call of another radio amateur, his mission the saving of another human life.

A thousand miles to the south, in Seattle, Ed Stevens flipped the switches and prepared to keep an early-morning schedule. He heard the call, the hurrying, portent-filled call from Alitak on Kodiak Island in the Gulf of Alaska, and he answered it.

At lonely Lazy Bay on Kodiak Island five-year-old Henry Looff, son of the Bureau of Fisheries warden on the island, was gravely ill. There was no doctor on the island, Stevens learned from the Alitak operator. The boy's parents feared the worst but did not know what was wrong or what to do about it.

Stevens asked Cyril Pemberton, the operator in Alitak, to stand by and reached for the telephone. He described the little lad's symptoms to Dr A.H. Seering of Harbor View Hospital, Seattle. The physician diagnosed the case as accute appendicitis and gravely warned of the danger of peritonitis. He urged that the boy be rushed to a hospital at once.

Stevens relayed this information. But the nearest hospital was at Anchorage. "Can't reach Anchorage because of bad weather," the Alitak amateur flashed back. "Please send a message to Anchorage for help," he pleaded.

Stevens called the United States Army Telegraph which employs both wireless and cable, and the message was relayed through to Anchorage--a radio-wire circuit of more than two thousand miles.

Pilot Harry Blunt, pioneer Alaskan flier, at once took off through the storm with Dr A.S. Walkowski. Twice the seaplane was forced down. Twice the intrepid duo again roared into the gale. Late that afternoon they reached the sick boy's bedside at Lazy Bay, four hundred miles' air line from Anchorage.

Henry Looff was dangerously ill. An operation was imperative if peritonitis were to be avoided. Dr Walkowski administered emergency treatment to forestall more serious complications. Taking the boy and his mother aboard the seaplane, they set out for Anchorage.

But thick weather during the morning forced the ship down before they had gone half the distance. They came down near Barren Island. All day long they stayed near the southern shore of this shelterless island, fearing to take off again. But when night came the storm became even more severe. They were exposed to the open sea, and Blunt decided to risk crossing over to the leeward side of the island.

They made the brief hop successfully and came down on the Aleutian side at Inska Bay. Shelter was found there, but they were still fogbound and they decided to stay until morning.

Dr Walkowski continued his treatment of the stricken boy through the night. When morning came the weather lifted, and they took off on the last leg of the thousand-mile mercy flight through fog and storm. Blunt became concerned over his gasoline supply and wirelessed that they were running low. Pilot Al Monsen flew to meet them, but the aid was unecessary. They landed safely at Anchorage without further misadventure.

Henry Looff was taken to the hospital immediately and at once underwent an operation. The next day he was reported "doing splendidly." An alert operator, a daring aviator, a courageous physician--together they had saved his life.

In the Far North, too, there are times when amateur radio serves to lengthen the long arm of the law.

Such a service was performed by Samuel Hanson of Pilot Point on Bristol Bay, Alaska. As a matter of record, Hanson is himself something akin to the law in that small community, for he is the resident teacher in the Indian Field Service of the U.S. Interior Department. Besides the teaching of Eskimo children on behalf of the Office of Education (the territory provides its own schools for whites) his job entails handling the work of the Reindeer Service, actively engaging in the care of the sick and distressed, distributing food and clothing to the destitute, providing hospital care and performing other incidental services.

It might be assumed that Samuel Hanson is a busy man. Yet he finds time to be an active radio amateur with an elaborate station installed in the teacherage of Pilot Point's big new government school. Moreover, he is an expert 16-mm. color-movie maker.

It was this combination of his hobbies that fitted him for a leading role in this affair. It was a tragedy of the frozen North that might well be titled: *The Stepdaughter and the Eskimo*.

Yet that is treating with levity what actially was a fairly serious business--serious to Hanson and his Eskimo charges at least.

The opening scene of the drama was laid in Pilot Point; the time--autumn, 1939.

In his official capacity Samuel Hanson received an invitation to attend a wedding, the wedding of attractive Annie Olympic to an up-and-coming young Eskimo. In his unofficial capacity he took advantage of the opportunity to preserve the colorful occasion on 16-mm. Kodachrome. He took shots of the bride and the groom and the bride's mother and all the assembled guests. Even Tim, the bride's stepfather, was around somewhere in the background of the pictures.

The next day Samuel Hanson made more movies, but Tim was no longer in the background. Nor was Hanson acting any longer in an unofficial capacity. It was official now.

For at twelve-fifty-three that morning, Annie Olympic had died with three bullets in her body.

Retribution is swift and sure in the north country. Hardly more than an hour's time elapsed after the shooting before clues pointing to the identity of the murderer were uncovered. In less than an hour more the killer himself was in custody.

The murderer was Tim, the dead girl's stepfather. He was jealous of Annie's marriage to her handsome Eskimo husband, it seemed. There was an element of revenge, too, for Annie had testified against him at Valdez, the seat of the law, where he had been tried some time before on a statutory charge.

And so before her marital night was ended he shot Annie three times.

At 4 A.M., the killer safely in custody, Samuel Hanson warmed up his transmitter and sent out an urgent general call. He had a message for Valdez, center for the law-enforcement agencies of the territory, twelve hundred miles away.

No one nearer than San Francisco answered his call, but the California operator agreed to take his message and telephoned it to Western Union. Back up the coast it came by wire to Valdez.

Early that forenoon the U.S. marshal at Naknek, one hundred miles distant from Bristol Bay, received orders from his headquarters to go to Pilot Point and take the prisoner. The coroner's jury met, and Tim and the marshal boarded the airplane that carried them to Valdez.

Tim was jailed and held for trial. In the meantime Samuel Hanson had his film developed. He had pictures of the wedding, of the coroner's jury, of Tim as he was taken to the plane and of the corpse in her blood. The pictures helped to gain a confession from Tim.

When the trial was held Hanson and his Kodachrome movies were subpoenaed as witnesses. He got an airplane trip to Valdez out of it.

Tim? Tim got twenty-five years.

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previous | next

Chapter Seven -

Life and Death

by Clinton B. DeSoto

THERE IS SOMETHING about the saving of a life, a single life, the life of a specific human being whom one can call by name and see and hear, that makes it a very tangible accomplishment. Death, after all, is a very formidable antagonist.

Every now and then some radio amateur encounters a situation where his peculiar ability to be able to make himself heard beyond the range of his own voice gives him an opportunity to outwit "Hell's grim tyrant" and save another's life.

In the beginning this story goes back to early September of 1935 when Dr E. Russell Wightman, professor of physics at Doane College in Crete, Neb., helped Robert Stewart set up his amateur short-wave station, W9DOA.

W9DOA, probably the highest amateur station in the world, was installed at the Claire L Mine of which Stewart is president. The Claire L is a precious-metal mine situated on the rich Leadville-Aspen limestone horseshoe on Italian Mountain on the western slope of the Rockies. It is twelve thousand feet above sea level and about seven thousand feet above the surrounding terrain.

Such a location means isolation. It is forty miles over a tortuous and dangerous mountain road from the camp to Gunnison, the nearest city; the trip takes five hours by automobile if all goes well and nothing breaks down--as usually happens. From October to May the camp is snowbound. Only three mail deliveries are made in that time. A twenty-six mile ski trip over a route that takes an expert two days, facing death every step of the way, does not encourage outside contacts in the winter.

In such circumstances as these amateur radio is a godsend. The little battery-operated transmitter in use at W9DOA served to keep Stewart and his men in regular touch with their families and friends, supplementing the infrequent deliveries of mail.

It served other purposes as well. Because there were two women and two small children in the camp Stewart was anxious to have some means of outside contact in case of emergency. A telephone line was out of the question. But when Dr Wightman, an old-time amateur and operator of station W9BB, vacationed with his wife on Italian Mountain in the summer of 1935 Stewart learned the solution--amateur radio. The station was installed, and when Dr Wightman returned to his teaching post in the autumn regular schedules were instituted. Christmas of 1935 was made happier for the men isolated at the mining camp by the holiday greetings that came from relatives and friends in all parts of the country via W9DOA.

But in January the inhabitants of the little camp, usually self-reliant in the face of emergencies, became worried. For genial William "Slim" Janes, two-hundred-pound foreman of the mine, complained of an ailing ear that stubbornly refused to respond to ordinary treatment. At first it was only an earache, but one that did not get better. The common home remedies applied by Stewart did not seem to help; instead the pain grew steadily more intense.

Finally the man was put to bed in a gigantic bungalow that was the mine's headquarters. Hour by hour the crisis grew more severe. "Slim" Janes became unconcious, his fever mounting steadily.

Near the end of an all-night vigil Bob Stewart, hollow eyed, face drawn with worry, turned away from his bedside.

"What are we going to do now?" his wife, Edna, asked.

Stewart brushed his forehead wearily with the back of his hand. "I don't know," he confessed. "I've done everything I know how."

"Slim's" brother, Tom Janes, spoke. "If we only could get to a doctor. . ." The miner's voice trailed off hopelessly.

"But we can't," one of the others retorted. "So what's the use of talking about it?"

Bob glanced at the speaker and then sat sharply upright. "That's it!" he shouted. "That's the answer!"

The men looked at him in amazement, and he explained. "We can't get Slim to a doctor and we can't get a doctor here. But suppose we could get a doctor here. What would he do?" He looked quickly from one to another of the men.

"Why, he'd----- I dunno what he would do," a bearded miner answered, baffled.

"That's just the point! We don't know. But if we got him to *tell* us we would know. And that's just what I'm going to do," Stewart declared, getting to his feet. "I'm going to ask a doctor to tell us what we should do!"

Stewart left the room and sat down before the tiny transmitter and receiver that constituted his radio station. It was almost time for his regular schedule with Dr Wightman in Crete. Impatience burning fiercely within, he watched the hands of the clock slide past the minutes.

At last six o'clock Mountain time came--seven o;clock in the morning on the Doane College campus where Dr Wightman was sitting down to his short-wave receiver. When the minute hand moved around to the figure "12" Stewart reached for the key.

Contact established, he relaxed and steadied to his job. Sparing his words, but going into complete detail, he described all the symptoms of "Slim" Jane's illness. The contact continued for an hour and a half. At times Wightman would interrupt with questions, copying the answers with painstaking care. Finally the complete story was told.

Wightman signed off then. Gathering up his notes, he drove to the residence of Dr A.A. Conrad in Crete. It was still early in the day--too early to go to the physician's office.

Seated in the doctor's study, the professor began to describe the sick man's symptoms. Dr Conrad listened carefully.

"Why, that man must be taken to a hospital at once!" he declared when he was told Janes was unconcious.

Wightman explained that it was physically impossible to move him. "The man is snowbound in the Rocky Mountains," he said. "This information came to me by radio."

When Dr Conrad learned that he was expected to diagnose the case by radio he raised his hands in protest. "But that's--preposterous!" he expostulated. "How could you get instructions to the cabin, and who would carry them out?"

Patiently Dr Wightman explained the circumstances and the manner in which the amateur circuit functioned. Finally the physician, convinced, began to ask questions. Some of these Wightman could answer, others he could not.

The latter he took back with him to W9BB. On arriving at the station he called Stewart who was standing impatiently by at the mine with headphones clamped to his ears. When the replies to the questions came they were relayed to Dr Conrad by telephone. The doctor grunted and then announced his diagnosis--mastoiditis!

Treatment must be commenced at once, Dr Conrad said, and asked for a detailed list of the medical supplies available at the camp. When Wightman brought him the list he sat down and wrote out directions for the treatment of the isolated miner, directions to be followed with the meager stock of emergency supplies and first-aid equipment on hand at the lonely cabin. These were relayed to the mine.

There was intense activity in the snowbound mining camp as his friends set about treating the unconcious man. For two days, fighting static and weak signals, Stewart and Wightman maintained regular contact, the one reporting changes in the situation and the other relaying Dr Conrad's instructions.

Gradually the sick miner rallied. By the end of the third day he seemed to be noticeably better. At the end of a week Dr Conrad released the patient he had never seen. In ten days the husky foreman was on his feet again, temporarily deaf, but alive and well.

There's a sequel to the story too. During the following March Tom Janes, brother of "Slim," together with two other miners donned skis to "go down" to civilization. Near the end of the trek Tom fell, breaking several bones in his foot.

The other miners succeeded in carrying Janes into town without difficulty but after he had been examined they learned it would be several weeks before the bones could knit sufficiently for him to travel.

This left them faced with the problem of notifying Stewart of the accident, as well as a need for instructions concerning the care of the injured man. But there was no way of communicating with the camp. It was only 35 miles away but as inaccessible as if it were thirty-five hundred.

Then Tom Janes recalled his brother's startling "cure by radio." "Tell you what, boys," he said. "You mail a post card to Dr Wightman back East there in Nebraska, and I'll bet he'll send it right along to Mr Stewart by radio!"

His two companions agreed that might be a good idea. They sent the postal card, and three days later there was a letter from Dr Wightman. He had relayed their message to Bob Stewart, received instructions for the men concerning arrangements for Janes's care and their own return to camp and forwarded the reply to them by mail.

The "cure by radio" and the "post card by radio" are now among the prime legends of the mountainous Colorado mining country.

The big ten-passenger Boeing bored steadily through the dust-blackened sky, its twin Hornets throbbing powerfully. Inside the dimly lighted cabin the long dashes of the radio beam punctuated the engine roar. The cheery tone of the beam was a comforting sound, for the Wyoming Airways transport was flying blind through the black, swirling muck of a raging dust storm that had closed down over all the mountain states.

Pilot Herbert Holloway held the ship steadily on its course, following the radio beam as it led them to North Platte, 150 miles away.

Beside him copilot Ray Bullock peered through the outer darkness. Suddenly he jabbed his forefinger in the general direction of the ground at the right.

"Lights down there," he shouted. "Know what place it is?"

"Not sure," Holloway replied, staring at his map. "On the route though."

"Hope so. Think we'll make North Platte all right?"

"Sure, if the gas holds out and the beam don't cut."

"Just our luck to have something like that happen," Bullock said glumly. "Everything else seems to have gone wrong on this flight so far."

"Don't talk like a fool," Holloway told him sharply. Both pilots became silent and they droned on through the night.

It was the Billings-Denver air mail they were flying on a route operated by the Wyoming Air Service. The first hop, from Billings to Caspar, Wyo., had been made in a single-motored Lockheed. It was uneventful enough. The trouble began after the mail and the one Billings passenger, David Lawrence, an investment broker from Denver, had been transferred to the Boeing at Caspar.

Besides Lawrence there was only one other passenger as they took the air at 5:35 P.M. He was R.W. Witt, a Caspar oil-company executive on his way to Denver.

Not long out of Caspar, the airplane had encountered stormy weather. Visibility was poor as they neared Cheyenne--so poor that the dispatcher there radioed instructions for them to continue on. The ceiling was too low for landing.

Shortly afterward the report came through from Denver. The storm was settling there, too, and by the time they were due to arrive officials agreed that a landing would be hazardous if not impossible.

Pilot Herb Holloway had shrugged his shoulders then and pulled open the door leading back to the passenger cabin. He stuck his head through the opening.

"Are you all comfortable back there?" he yelled.

The two passengers, looking lonely in the expanse of empty chairs, shouted back that they were all right.

Holloway slipped back into his seat. "Well, that means we go right on through to Denver, I guess," Holloway said. Bullock nodded agreement. They began to climb, and the plane banked and

headed east.

"Where are we going now?" Ray asked.

"North Platte. Conditions there will be O.K.--I hope! We can follow the Omaha beam in."

"Two hundred miles east when we should be going south." Bullock shook his head glumly.

"Can't be helped," Holloway replied. "We've got to get this load down--and safe. North Platte's the nearest place we can get through."

"Well, I guess that's that."

Fleeing fog and wind and dust storm, they cruised steadily onward through overcast that blotted out sky above and earth below. The sharp, clean whistle of the radio beam was a beacon that led them straight along the sky path toward North Platte and Omaha. They met the blonding menace of the dust storm, but at first it did not concern them greatly.

Then the signal from the beam failed.

"Ray!" Holloway cried sharply. "The beam's cut out!"

The two pilots looked at each other in sudden alarm. Bullock swore viciously and grabbed for his headphones. He twisted the volume control on the beacon receiver, but there was no sound.

"Well," he said with forced lightness, "I guess we've got to keep our eyes open from now on."

Holloway's lips moved inaudibly under the motors' roar. Bullock turned to look again through the window into the swirling blackness outside. After a time he thought he saw a faint haze of light ahead. As they grew nearer the patch of light became distinguishable.

"Looks like another town," he told Holloway.

"Yeah?" Holloway dipped his wing and peered downward. "That's what it is, all right. Wonder what town it is?"

Both men studied the map before them. "Might be Sterling," Holloway said finally. "Off our course, but it comes closest to checking with our rate of speed and drift. Look--check with Denver on the two-way, will you?"

Then he straightened in his seat. "And while you're doing that I think we will take a look-see down there. Maybe we can find a spot to set her down. . . ."

Down below the inhabitants of the quiet little city of Sterling, Col., were going about their business oblivious of the taut drama being enacted in the air above them.

In a comfortable frame house in the residential section Allen Berkstresser, mathematics teacher at the Sterling High School, was sitting at the kitchen table in his home rewinding his fly-casting rod. The dust storm meant poor radio conditions, and fishing season was coming soon anyway. His small daughter looked on, eagerly plying him with questions.

Suddenly Berkstresser interrupted her flow of animated chatter. "What was that?" he asked, holding up a finger for silence. It was the sound of an airplane motor they heard, still some distance off but approaching rapidly. Nearer and nearer it came and then it roared past not far

above.

"Must be that contractor from Greeley," Berkstresser decided, and resumed his winding. "He passes over every now and then. Flying pretty low tonight though."

But a few minutes later the noise of the airplane was heard again. They stepped out on the porch for a look. The plane was clearly visible, its wing lights glowing brightly, metal covering gleaming even in the smoky black of the dust storm.

"That's an airliner!" Berkstresser announced excitedly to his daughter. "Wonder if they're transmitting."

He ran back into the house and turned on his receiver, tuning to the aircraft band. One signal stood out louder than the rest; beyond doubt it was that of the ship overhead.

". . . might be Sterling, Colorado. Come in, please," a voice was saying through the transmitter.

Berkstresser turned the dial swiftly to the Denver ground station's frequency.

"There's an emergency landing field at Sterling, Flight Five. Do you think you can get down there?" the Denver operator inquired.

"Not a chance. No way to locate the field. No lights to get down by. Gasoline running short. Can you-----?"

Berkstresser shook his head. "He'll never make that little field!" he said. He listened to the rest of the report: no visibility, beam gone, two passengers aboard, off their course . . . Something had to be done.

Across the street in the auditorium Bandmaster L.E. Smith was drilling the high-school band in its final rehearsal before leaving for the state contest. The brassy strains of the horns came through the chill April air, and with them came an idea.

Smith was an amateur pilot--Sterling's "flying bandmaster," he was called. He would know what to do.

Berkstresser crossed the street to the auditorium and climbed up on the stage. Smith, seeing the anxiety on his face, waved the band to stop in the middle of its number.

"What's up?" he demanded.

Tersely Berstresser told the story. "What can we do?" he asked.

Smith rubbed the side of his head with his baton. Then his face became purposeful. "There's only one thing to do," he said. "Get as many cars as you can, go to the airport and head them all into the wind at the end of the runway with their headlights on."

"But that'll take a lot of cars, won't it?"

"A dozen or more should do it. Of course, the more the better."

"Thanks. That's just what I'll do!"

Berkstresser climbed into his car and headed out on the five-mile road to the airport. As he rode

along he heard the fire siren sound, and by the time he arrived at the field he was only one of a caravan. Later he learned that Sheriff Ray Powell and Mayor Boggs, recognizing that the transport was in trouble, had left a card game to see what could be done. Sheriff Powell, too, had gone to Bandmaster Smith for suggestions and therefore knew about the plan to use automobile headlights for landing lights.

In an incredibly short time there were a hundred or more cars at the airport. As fast as they came they were lined up along the runway. Highway Patrolman Oldfield set flares to govern the parking of these cars and trained the searchlight of his own car on the wind sock atop the lone airport hangar.

All this time Flight Five had been circling endlessly around the town. Holloway saw no way of getting the ship down but he dared not leave the one lighted landmark. Once out in that Stygian blackness, and they would have no chance at all.

"Any idea what we can do now?" Bullock asked at last, unable to restrain himself longer.

"No," Holloway admitted. "I'm just stalling. Got to do something soon too. Our gas is getting low. Say, have you noticed that patch of light over there away from the edge of town?"

"Yeah, I have," Bullock answered. "Seems to be getting brighter. Wonder what it is?"

"Don't know, but we can go over and take a look. Haven't anything better to do anyway." He laughed mirthlessly.

The big transport wheeled around again and circled over to the growing patch of yellow light that was Sterling's airport. Dimly a faint sound came through the air as they drew nearer. Holloway cut the engines as they glided over the patch of light.

"Say!" Bullock cried excitedly. "Those auto horns! What the heck can it be? Sounds like a barbecue, but nobody'd have a barbecue on a night like this!"

Holloway pulled the ship up. "You're right--they don't," he said. There was a curious note in his voice. "I haven't got it quite figured out yet, but they're up to something down there. I'm going to take another circle around."

On the next turn around they stared intently toward the ground. They followed the steady stream of cars that flowed toward the airport and then they realized what was happening. Pilot Herb Holloway gave a shout of relief.

"Look!" he cried. "They're lighting the field for us!"

"Yeah," said Ray. "They've even got the wind sock lit up. Pretty smart, at that!"

It was 8:15 P.M. The two 525-horsepower Wright Cyclones were still grinding smoothly away, using the dwindling gas supply at a rate of seventy-fve gallons an hour. But that no longer mattered. The important thing now was to get down.

They circled the field twice more. Then Holloway decided to come in. The automobile headlamps showed the boundaries of the field, even though it was but little more than a luminous haze through the dust storm.

Somehow Holloway got the ship down. There was a fifteen-foot-high sand blowout near one edge

of the field; he missed that, put the ship down in the rough sagebrush, jumped onto a north-south runway, ran over that into the rough again and then rolled onto the east-west runway. The ship leveled off nicely, coasting up toward the hangar straight into the blinding headlights of hundreds of automobiles. . . .

"It's a lucky thing Berkstresser picked us up when he did," Holloway later told the reporters who flocked to the field. "Our gas was low, and we were going to have to come down somewhere soon."

And as for their chances of making a safe landing while groping blindly in open country--well, as to that he couldn't say. He shrugged eloquently when the question was asked and in answer told again the story the way it did happen: how Flight Five with pilot, copilot and two passengers aboard had come smoothly down to the little emergency landing field outlined dimly through the choking clouds of dust by the headlights of nearly a thousand automobiles--"the first rescue of a distressed plane by civilians in the mountain states, the most unique rescue in aviation history."

The wild sea moans endlessly over the dunes of lonely San Nicolas Island out in the Pacific, seventy miles west of Los Angeles Harbor Light. It is the mournful accompaniment to all the happenings in the circumscribed lives of those who live on that barren island. It was the background against which four-months-old Edna Agee uttered feeble, poignant cries.

In a little home on the island the baby lay sick--dying. Hope beating against grim despair, its parents, Roy and Margaret Agee, sat waiting . . . waiting. . . . There was nothing more they could do.

For there was no doctor on the island, no medical aid nearer than the mainland. San Nicolas is inhabited only by a few ranchers; it is seldom visited by ships. There were no powerboats, no telephone to the mainland. There was only hope and prayer. . . .

Twilight came, and darkness, and still the feverish infant moaned weakly through stertorous breathing and clinched its tiny fists, eyes tightly closed over flushed, fevered cheeks. Word traveled around the tiny community that the baby was ill. Sheep ranchers gathered in the beating rain. They visited the Agee home and prayed that the fever might abate in the little body.

Word traveled even to the Coast Guard station where Lyman Elliott kept watch at his lonely outpost.

"Roy Agee's kid is dying," the herders said in tones that were dull and somehow bitter.

"Can't anything be done?" Elliott asked.

"Guess not," was the answer. "They should have a doctor, but------" Hands were thrown out, palms up; shrugging shoulders were eloquent with resignation.

Elliott pondered for a moment. "How long do you figure she's got? What I mean is, how soon would a doctor have to get there?"

No one knew. A few hours maybe. . . .

"You know, I might be able to do something about that," Lyman said thoughtfully, and he went inside.

They watched him sit down at his radio table. All the sheepmen knew what it was; they had seen Elliott unpack the shiny boxes with the meters and white engraved dials when he came on duty months before. One or two of them had even helped him run the long span of enameled copper wire from a two-by-four nailed to the roof peak over to a hook eye in the tall flagpole. They knew, too--mostly because their youngsters pestered Elliott with questions through the day and then repeated the answers at the supper table at home--that he was an amateur operator and that he could talk to Los Angeles and Denver and even Chicago--"when the wind was right," he told them.

They could guess when they saw him sit down to the key of his radio transmitter that he was going to contact the mainland. They couldn't be sure just what he was trying to do, but it would be something to help Baby Agee--that was certain. And they prayed that he would succeed.

"I sure hope the wind is right tonight," muttered a grizzled old sheepherder as he shuffled off in the rain.

And the wind was right that night. Elliott's urgent call to Los Angeles was answered almost at once by William Duframe of Redondo Beach. Duframe heard the tale and agreed to help. What could he do?

"Notify the Coast Guard," said Elliott. "Better tell the Los Angeles police too. Maybe they'll help."

But would they act on such a report casually telephoned in? Duframe was dubious. He decided to call first the Redondo Beach Police Department where he was known.

A burst of co-ordinated activity followed that clicked as though it were a carefully rehearsed sequence for a movie shot. Redondo Beach called the Coast Guard and the Los Angeles police. They cross-checked, and the pieces of the plan fell into place. Out to the home of Dr William Brown at 2017 West Seventy-ninth Street in Los Angeles sped an L.A. police cruiser. Warned by telephone, Dr Brown was waiting, his medical kit packed. The doctor jumped into the cruiser as it slid to a stop. The uniformed driver wheeled the car swiftly through traffic and set out for the harbor.

At the harbor Coast Guard Patrol Boat No. 259 was straining at its moorings, motor warmed up and idling. Dr Brown had the door open as the coupe skidded and slowed at the edge of the dock. Before it stopped moving he was out. "Good luck!" the patrolman shouted after him as the doctor ran toward the waiting cutter.

They sailed for San Nicolas Island, seventy miles away, at 11:30 P.M. Eight hours later as the sun shone through the fog and the low-scudding clouds the patrol boat hove to in the lee of the desolate island.

Through that long night Roy and Margaret Agee had waited in lonely vigil while their infant child fought for life. The baby had grown neither better nor worse; the flushed face, the deep, hard breathing had not changed. Now it was dawn.

As the patrol boat's tender grated on the shore willing hands helped Dr Brown to land. He hurried over the slippery rocks. In a few moments he was inside the high-boarded yard of the Agee home. He worked swiftly, surely.

The crisis came. When it passed the fever subsided. The flush face relaxed, and the breathing softened. It was not long before the doctor was able to pronounce the baby out of danger.

Little Edna Agee's life was saved. Amateur radio, a skillful physician--together they had cheated

death again.

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previous | next

Chapter Eight -

The Mayor and the Ham

by Clinton B. DeSoto

THE DAYS of witch hunts are over, and lynchings are no longer regarded with favor in polite society. Yet the phenomenon of mass hypnotism that underlies such pastimes is still encountered. Occasionally it springs up quite spontaneously but more often it is inspired by some contriving rabble rouser with a personal ax to grind.

It is not a pleasant plight to find yourself the object of mass hysteria, as Gerald Coleman of Johnstown, Pa., discovered during the month of March 1936. It is even less pleasant when you've done your damnedest to serve the very people who now condemn you. . . .

The rain began in Johnstown late Saturday night.

By Tuesday noon, thirty-six hours later, the swollen Conemaugh River and Stony Creek were ready to burst their banks. Two hours more, and the streets of downtown Johnstown, Pa., a steel and coal city of thirty-six thousand population, began filling with water, water that had already flooded most of the rocky ten-mile Conemaugh River gorge at whose neck Johnstown waited. People who happened to be downtown then stayed there for another twenty-four hours, marooned.

Horror gripped these people as they recalled that other Johnstown flood, the terrible flood of 1889, when the South Fork dam burst and loosed a forty-foot wall of water that destroyed the city and killed thousands of its inhabitants. But this was 1936, and there was a new dam, a dam that couldn't burst--or could it?

At four o'clock in the afternoon of Tuesday, the seventeenth, all telephones, telegraph wires, and commercial broadcasting services went out. More than that, power was off in most sections of the city. No word of the extent of the disaster, no demands for aid, for food and medicine could be sent out of the inundated valley.

Into the breach stepped the hams of Johnstown.

Gerald Coleman, W8FRC, and Bob Dixon, N8DYY, both members of the Naval Communications Reserve and close neighbors in a Johnstown suburb, were standing by. When the wires went out they were ready.

At 5:05 P.M. the electrifying first message calling for relief--"Worst flood in history. . . . We need everything"--was sent from N8DYY via Pittsburgh to Washington.

That was the start. From then on traffic and news moved in a swift stream through these and other Johnstown stations, for and to the Red Cross, Coast Guard, National Guard, the telephone and telegraph companies and the ordinary residents of Johnstown. At N8DYY alone some eight hundred Western Union telegrams were forwarded before the National Guard took the station over for its own uses. Francis Duffy, W8FAK, Dr Clarke Olney, N8LNZ, Milton Hanson, W8KRF, Rexford Ackley, W8LZS--these amateurs handled thousands of messages, including Red Cross traffic relative to blamkets, cots, medicines, information on road and railroad conditions for the

state police and "requisitions" for doctors, nurses and supplies.

Dixon, N8DYY, and Jerry Coleman, W8FRC, agreed before the emergency to split the assignment. N8DYY (assisted by his next-door neighbor, Bill Bossler, W8GYB) used code in the naval-reserve channel, while Coleman worked in a widespread radiotelephone network that covered the entire state of Pennsylvania.

As the water rose anxious citizens flocked to the Coleman home to send messages. Jerry's parents supplied them with blank forms and explained repeatedly, "No, there is no charge." "No, Jerry is an amateur--he can't take pay for helping you." At times the stream of people overflowed the downstairs rooms of the house, as many as thirty persons filing messages to friends and relatives at one time.

On two occasions Coleman's station was picked up and rebroadcast over the N.B.C. networks as he gave firsthand accounts of flood conditions in the city. At other times station KDKA in Pittsburgh rebroadcast his transmissions. The rising tide of the flood crisis was recorded in these transmissions from Coleman's station.

The gathering clouds of dusk found the city under water several feet deep, rising at a rate of two feet every hour, with the rain still pelting down relentlessly and no relief in sight.

An hour later Coleman reported: "Not a light in the city. Water rising at the rate of three feet an hour. We are completely isolated from the outside world. . . ."

Hour by hour the crisis grew. At eight-twenty: "Nine feet of water in the main streets. All highways blocked off. Many persons, most of them store clerks, are marooned in business houses downtown. . . ."

At nine-thirty: "Fifteen feet of water, three feet less than the flood of 1889. Steel plants are covered with water, and hundreds of families are fleeing their homes. . . ."

At ten-fifteen: "Wilmore Dam is reported broken, and if the Quemahoning Dam doesn't hold it's curtains for Johnstown. Three reported dead in Punxsutawney. On dead in Johnstown. . . ."

By midnight Johnstown lay at the bottom of an eighteen-foot sea. But up to then power had been maintained without interruption in the Moxham section where W8FRC was located, a suburban area on higher ground three miles from the center of the city. At 12:10 A.M. W8FRC reported: "The water is now two blocks from my home. There is danger of the power failing here. . . ."

The power did fail, and Coleman was off the air until the following morning. But Herculean work by utilities men restored the broken lines, and by daylight power was available again.

W8FRC went back on the air at 5 A.M., and Coleman stayed at his microphone from then until past noon. Then he went downtown to gather eyewitness data for further reports.

The crest of the flood had passed, he found. The water was flowing out of the city. But it left behind damage and destruction exceeding even that of the terrible 1889 flood--fifty million dollars worth of damage, it was later estimated. And in the wreckage relief workers found the bodies of seven persons.

Shortly after two o'clock, while Coleman was still in the business district, he heard fire and police sirens begin to sound. Tension filled the air; he could feel it grow, People looked at each other questioningly. Then a fireman appeared, yelling, "Get to the hills! The Quemahoning Dam has

bursted!"

People started running up and down, screaming the report that the dam had gone. "Run for your lives! The dam has burst!"

To Johnstown resident, bred with the legend of the tragic flood of 1889, that cry was the signal for a frenzied dash for the hills. They knew that in '89 the city's thirty-thousand citizens, wearied after ten years of false alarms, had not heeded the warning that the big earth dam ten miles above the gorge might soon burst. Then in the middle of the afternoon the dam's whole center had given way with a roar. A wall of water forty feet high and half a mile wide came thundering down the gorge. Many an aging survivor of that disaster recalled the old story of the freight train rocketing down the valley under full steam, the bank of water right behind it. As the engine roared along in its race to warn the city, according to that story, its whistle sent a steady chilling screach echoing through the valley. Then the churning sea caught up with it and swallowed it and rushed on to fling its swirling burden of trees, houses, locomotives like battering rams against the defenseless village.

At least twenty-two hundred lives were lost that day in 1889 in the hurtling wall of water, in the giant whirlpool that formed when the water rushed back upon itself and ground to bits the buildings that had escaped the first impact, in the flames when oil-smeared wreckage piled against the Pennsylvania Railroad bridge ignited and the tangled mass covering sixty acres burned for twelve hours.

In the face of that recollection the inhabitants of Johnstown became panic-stricken when they heard the report of a new dam break.

The rumor spread like wildfire. Insane with terror, people rushed pell-mell through the streets and trampled one another in the effort to get out of town. Women with babies in their arms, men whose legs were too short to carry them--all fled in wild, crazed panic. Like a herd of animals suddenly frightened, the crowd stampeded wildly toward the hills, fleeing from what they felt to be certain death.

Coleman started for home. A man picked him up in an automobile and gave him a lift for part of the distance. He ran the rest of the way.

When he arrived he put his station on the air and transmitted reports he had heard downtown: that the water was rising, that the Quemahoning Dam was said to have burst. In Pittsburgh KDKA--and toward the end the entire N.B.C. chain--picked up the report and broadcast it. He described the havoc that the bursting of the dam, if true, would cause in Johnstown. From his radio room he could see people running to the hills and a steady stream of cars moving to higher ground. The local telephone exchange which had been giving him priority on telephone calls over the few lines still functioning called to report that all the remaining telephone operators had been ordered out because the dam had broken.

At this point Coleman's parents and neighbors urged him to abandon the station before it was too late. In the street below police and firemen were hastening the evacuation. He concluded his transmission: "It will be necessary to vacate the house here, and should things recede here I will be back on the air, but it is necessary that I leave the house. Police and firemen are making everybody leave, so W8FRC is leaving."

His parents were waiting in the family car. They drove to the hills at the edge of the city.

Half an hour passed, but the wall of water did not come. Yet in 1889 it had traveled the ten miles in seven minutes. "False alarm," people began saying to each other. Slowly the terrified citizenry straggled back to town. Coleman returned to his station and went back on the air.

The panic was over but it had taken its toll. In the mad flight one aged woman had lost her life; other persons had been injured.

Soon the town was ringing with charges and countercharges laying the blame for the false report. Most of Johnstown's citizens had got there first word from the police and firemen. Where had they got it? This question went unanswered.

It was on Friday that the sensational development which rocked all Johnstown came.

At 10 A.M. two policemen appeared at Coleman's home where he was still on the air handling Red Cross traffic. They told him their orders were to take him in to the mayor's office. They refused to answer his questions.

Puzzled, unable to account for this mysterious order, but more curious than alarmed, Coleman finally agreed to accompany the policemen. They took him before burly, hard-shelled Mayor Daniel J. Shields. The mayor asked him one question: "Did you broadcast about the Quemahoning Dam breaking?" he demanded.

"Yes sir," Coleman replied.

At that the mayor launched into an angry tirade, concluding by ordering Coleman not to operate his radio station any more.

"This town is under martial law," he stormed, "and if you don't obey that order I'll have you thrown in jail."

Coleman opened his mouth to protest but before he could speak he was ordered out of the room. As he left he was told the case was being placed in the hands of the district attorney of Cambria County and that a charge of involuntary manslaughter would be preferred against him in connection with the deaths that occured through fright or injury during the panic.

Coleman was dazed by this blow. But it was only the beginning.

Before the day was ended Mayor Shields extended his order to apply to all amateur stations in the city.

The Johnstown *Democrat* carried this story:

Mayor Orders Amateur Operators Off Air After Running Down "Que" Report

Mayor Daniel J. Shields ordered all amateur radio stations to close here yesterday after one operator allegedly had admitted he was responsible for the report that Quemahoning Dam had broken, which caused a panic last Wednesday.

The mayor said the order closing all amateur stations had been issued to prevent possible spread of further alarming rumors through their broadcasts. He warned operators would be jailed and held without bail if they ignored the warning.

Gerald Coleman of 528 Highland Avenue was the operator who, Mayor Shields said, admitted responsibility for the false alarm last Wednesday. According to the mayor, Coleman later apologized publicly for the warning which was sent to radio station KDKA in Pittsburgh and rebroadcast. Coleman was not held however.

"He is the man who caused that unreasonable panic here," Mayor Shields said, scoring Coleman roundly.

A storm of controversy followed. The case of "the Mayor vs. the Hams" became a national *cause celebre* that echoed in the press and on the air rialtos.

Rumors of Coleman's arrest and the subsequent order banning amateurs from the air spread swiftly throughout the amateur fraternity, and as a body they rose in arms. The A.R.R.L. immediately sent a message to the mayor pointing out that amateur stations were federally licensed and he had no authority to regulate them. Milton Hanson, W8KRF, called on the mayor and attempted to deliver the message. "There is no reply," he radioed the League. "Mayor Shields was very abusive and threatened me with arrest. He then threatened to send someone out here to put me in jail if I went on the air Sunday night."

But the amateurs of Johnstown resolved to defy the mayor's edict and they continued operating. Relief messages were coming in by the hundreds, and they felt it was their duty to handle them. Even Coleman went back on the air and worked continuously through the next week, operating the naval reserve net.

Popular feeling against Coleman rose to dangerous heights as gossip and rumor spread malicious tales of his activities during the crisis. Pool-hall hangers-on in downtown Johnstown talked of lynching parties. The other amateur operators in the city were treated as pariahs on the occasion when they did leave their posts. Outside Johnstown, too, the battle waged. Radio editors and editorial writers featured the case in their columns. Walter Winchell, Edwin C. Hill, Boake Carter and other columnists and commentators scored the mayor for his action. "It is palpably absurd for officials to pick on this operator for the sake of finding a convenient goat," Boake Carter said. "This same operator is the one who sat gallantly at his post for hours on end, keeping the world informed on Johnstown's plight. Is the reward for that to be an official kicking around because of overwrought nerves letting go?"

Developments came swiftly. There was discussion about getting a movement underway to finance legal aid for Coleman through contributions through contributions by individual amateurs. Mayor Shields went to Washington. On returning, he announced that he had appeared before the Federal Communications Commission and lodged a complaint against Coleman and that the Commission had promised action. The F.C.C. denied that a formal complaint had been filed.

Other theories were presented. One version held that newsreel cameramen had started the rumor in order that they might film the resulting panic scenes. Another story was to the effect that a broadcasting crew setting up for a spot broadcast near Johnstown had left a microphone circuit open and picked up voices from the street shouting the false report. But these stories were quickly discredited.

The actual source of the rumor was never determined. Whatever its initial origin, however, it was established that members of the state and city police, as well as firemen and other municipal employees, had spread the warning that the dam had burst and urged people to take to the hills.

There was a long and bitter battle in the press, but Coleman's innocence of the charges placed against him was eventually accepted in the minds of Johnstown's citizens. The A.R.R.L.'s investigation had established that his transmissions could not have caused or even encouraged the panic because he was in the heart of the city when it began, and, moreover, there was no radio reception in downtown Johnstown at that time, since all power was off. Therefore his transmissions, regardless of their character, could not have been heard.

Finally evidence was gathered establishing that Coleman's later broadcasts had been as factual a report of the rumors and the resulting panic as could have been expected in that time of stress.

Gradually popular sentiment shifted from antagonism to sympathy. Civic leaders and ministers of the gospel took up cudgels in his behalf. From some of those who had been loudest in their denunciations came grudging admissions of error.

But still Mayor Shields and the Johnstown newspapers continued to press the issue, refusing to exonerate Coleman. Finally Coleman's friends called upon Governor Earle to make an official investigation.

Deputy Attorney General Thomas A. Bender took depositions in Johnstown and Pittsburgh and secured a transcript of a recording of a portion of Coleman's transmissions made by N.B.C. in New York. At last, on May nineteenth, Coleman was finally officially absolved by Governor Earle of blame in the Johnstown panic.

Gerald Coleman was subsequently honored for his performance during the flood crisis in various ways. He was brought to New York City and there secured employment in radio sales work. Rising rapidly, he transferred first to television research organization and then to the broadcasting division of a large electrical manufacturing corporation. Following that he became chief engineer of a Pennsylvania broadcasting station.

And so the story of the mayor and the ham has its happy ending. Inadvertantly the mayor had opened the gates of opportunity, and with characteristic amateur enterprise the ham walked right in.

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previous | next

Chapter Nine -

The Arm of the Law

by Clinton B. DeSoto

AMATEUR RADIO often has served as a valuable aid to beleagured law-enforcement agencies.

In recent years municipal police radio systems have become so universal and effective it is difficult to realize that prior to 1932 or 1933 police radio was a rarity rather than the rule. Before then amateur radio operators were not infrequently called on to aid in police work.

Perhaps the oldest municipal police radio installation is that of the New York Police Department which began regular broadcasts of police information in 1921. But concurrently with the installation of this station amateurs in cities such as Hartford, Dallas and St Louis co-operated with local officials by sending QSTs (broadcasts) of crime information for local use. New York and Boston soon installed special experimental stations operated by the police and used to communicate with amateurs, but in many other cities the hams themselves carried on all of the work. In Ohio amateurs were given appointments as special police officers with an extensive network under a state supervisor. A similar network existed in California, including most of the larger cities. Throughout the country amateurs co-operated with the authorities in broadcasting police information.

Of course, there were no radio-equipped squad cars or motorcycles in those days. It was not until about 1927 that police radio cars were introduced. At that time Chicago police cruised the city listening to broadcasting station WGN for crime flashes which occasionally interrupted the programs.

In the early twenties the police transmissions by amateurs were about crimes that had occurred, rather than those in the making, and were directed at the law-enforcement agencies of adjacent communities rather than officers in the municipality itself.

Stolen automobiles and escaped convicts were the principal subjects of these flashes. The office of every police chief, sheriff, constable and peace officer in adjoining communities was equipped with a receiver tuned to the transmitting wave length used by the amateur station. When an alarm was sounded all streets and highways would be guarded and a sharp lookout kept for cars or persons answering the broadcast description.

They achieved results too. Shortly after Dallas transmissions were inaugurated a stolen car was recovered at Mobile, over seven hundred miles away. The thief was an ex-convict wanted on a number of charges. Ordinarily the broadcasts were most effective over a smaller radius however. As an example, the driver of a car stolen in Oakland was picked up in San Jose, fifty miles away, in just two and one half hours as a result of one of the broadcasts.

The pioneer step in this movement was taken in Hartford by the American Radio Relay League during the summer of 1920. The purpose of the system as initially set up was to transmit immediately to all parts of New England details of stolen automobiles.

The creation of similiar systems in other cities was urged, and by the end of 1921 the police departments of many of the principal cities were utilizing amateur co-operation. Whether as a direct result of this campaign or not, the total number of thefts of automobiles, which had reached

alarming proportions in some localities, soon decreased sharply.

A decade later municipally owned radio systems were instituted and found highly effective as a crime deterrent. But even now occasions arise when radio amateurs can still aid the law.

There is one story they tell, a somber story of feud and sudden death on Minnesota's last frontier--the fastnesses and wilderness of that part of the deep North Woods known as the Northwest Angle. That little island of U.S. territory, jutting up into Canada, is the first break in the smooth contour of the twelve hundred miles of boundary east of the Straits of Georgia. Its few square miles of forest-covered land are set apart from the rest of the country by the Lake of the Woods.

Sunday in the Northwest Angle is a day of rest, a day when the country people lay down the burdens of the week and spend the day in quiet contentment, visiting each other, talking, reviewing the week that is past and telling of plans for the week to come.

This was the Sunday of Labor Day week end. On that day Elos Bergstrom, a settler, went to pay a visit to his neighbor, Paul Melhorn. A thirty-year-old trapper, Melhorn had a newly built cabin facing the wind-whipped waters of the Lake of the Woods.

Bergstrom strode steadily along the forest trail, breasting the strong north wind. There was the nip of approaching autumn in the air, and his thoughts were on the winter to come.

But when he rounded the corner of the trapper's shack he was shocked back to the present. For there in the doorway, lying face down, half in and half out, was Melhorn's body.

Bergstrom hurried forward and knelt beside his friend's body. It was stiff and cold in death. A dark, stiff stain spoiled the design of the red-plaid flannel shirt.

"He's dead!" Bergstrom exclaimed in amazement. "Shot through the heart!"

It was murder--no doubt of that. The trapper had been shot in the back as he was entering his cabin. The thought of vengeance entered Bergstrom's mind. He looked about him wildly for an instant. Then he realized the killer had long gone. This was a matter for the law; he must notify the authorities at once.

But how could this be done? Bergstrom thought the matter over. The sheriff was at Baudette, forty miles away across the lake. There were no telephone lines from Baudette into the Angle. The only way to get there was by boat.

He looked across at the Lake of the Woods. Its waters were being churned to a foam by the high wind. It would be dangerous out there in a small boat, and the wind was against him.

Bergstrom pondered the problem. It seemed insoluble. But ingenuity and quickwittedness are essential qualities in the North Woods, and soon an idea came. He could reach Oak Island, even with the wind. Fred Petersen lived on Oak Island and Petersen had one of those amateur radio outfits. Petersen could get word to the county seat. . . .

Stepping carefully in order not to disturb the body, Bergstrom got Melhorn's oars from inside the cabin. He walked down to the beach and pushed the small rowboat into the water. Then he started rowing to Oak Island.

The cross wind whipped the water into choppy waves, but Bergstrom's shoulders were strong from long hours of ax swinging, and he drove the small boat vigorously across the ruffled lake.

In time he reached Oak Island and W9CYY. When Fred Petersen, the operator, heard the story he opened his station and called KIKJ at Baudette. This was the aircraft station of Peter Klimek, a young aviator of the border country.

By a stroke of luck Mrs O.P. Klimek, the flier's mother, was sitting at the receiver when the call came through. She called her son. He rounded up Sheriff Slind and Coroner Don Burrows, and within an hour the trio were in the air.

Klimek whisked them across the lake in his plane and landed near the cabin. Bergstrom and Petersen joined them there. The coroner examined the body while the sheriff questioned the settler.

From then on the story is one of short and merciless pursuit. They learned that Melhorn had a bitter enemy, a man named Lewis Payne, forty-eight years old, all his life a shacker and trapper of the Canadian border country.

He was the killer. Sullenly nursing his bitter enmity, he had hidden within rifleshot of Melhorn's cabin. When the trapper made his appearance Payne shot him. There was just one shot; he didn't even approach the body to see if Melhorn was dead. When he shot 'em they stayed shot! Quietly, like a shadow in the gathering dusk, he left the scene of his crime and slipped off down the trail.

Unaware of the instruments of modern civilization, radio, airplane, motorboat, in relentless pursuit behind him, Payne traveled leisurely. He even stopped to visit awhile at the isolated cabin of Jonas Johnson, far up in the Angle.

It was there the forces of law and order overtook him, a self-confessed murderer.

"Yes, I killed him," he snarled. "I shot him the minute he showed himself."

Then they asked him why he had done it, but that he wouldn't tell. He would only say, "I didn't like that man. He talked out of turn."

And so they took Lewis Payne to the lonely north-country jail to await the beginning of the district-court term two months later. And as they saw him sitting there in his cell, sullen and still, day after day, they wondered whether he brooded most on his hate or on the incomprehensible powers of modern civilization that had frustrated his escape.

Walter Wallace and Herb Scmitt didn't get their man but they did foil an attempted drugstore burglary early one morning in Milwaukee.

It was a clear, cold Sunday morning three days after Christmas. Walter Wallace pulled back his chair from the operating table. "Guess I'd better get to bed or I'll never get up in the morning." He sighed. It was 3 A.M. as he sat down on the edge of the bed in the small upstairs apartment at 964 North Thirty-fifth Street. Slowly putting on his pajamas, in his mind he relived the contacts he had made during the night.

Across the hall in the adjoining apartment Fabian Clements stirred restlessly in his sleep. There was something unfamiliar--some noise--that disturbed him. Suddenly he sat up straight in bed. A sharp, unaccustomed sound had awakened him. It was the sound of breaking glass.

Clements shook his head and rubbed his eyes. He pushed the bedcovers aside and went to the window.

In the shadowy darkness below his window he could distinguish the rear entrance to the Haertlein drugstore next door at 966 North Thirty-fifth and near the door the dim outlines of two men bending over a basement window.

"Burglars!" This was the first thought that flashed through his mind. The second was that he must call the police. But there was no telephone in the rooming house, none to be found at this hour of the night for a distance of several blocks.

Clements left the window and looked into the hallway. A light showed under Walter Wallace's door across the hall. In an instant Clements was tapping urgently on the door.

"They're robbing the store!" he said when Wallace stuck his head out. "We've got to do something!"

Wallace came to the window. His quick mind added the problem and came out with the same answer. No telephone . . . the police must be notified . . . something must be done quickly.

Without a word he turned back to his room, sat down at the operating table and threw the power switch. The tubes were still warm; the receiver came to life swiftly. As his hand turned the tuning dial a strong, rhythmic code signal started up. Luck was with them. It was Herb Scmitt, W9VZJ, also in Milwaukee, calling CQ.

Seconds passed that seemed like minutes. Still Scmitt did not sign. Wallace could hear Clements in the background impatiently shuffling around the room. Finally W9VZJ said "K [Go ahead]," and Wallace gave him a short, urgent call. In a matter of seconds contact was established, and Wallace's fingers waggled the bug with nervous precision.

"W9VZJ de W9EYH. Notify police a burglary is being committed at drugstore at Thirty-fifth and State streets."

"W9EYH de W9VZJ. *Are you kidding?*"

"No kidding! It's the real thing. Call the police at once."

"O.K. I'll call them."

Wallace leaned back and took off his headphones. Clements was back in his own room. Hearing a shout, Walter crossed the hall and looked in.

Clements had decided to take matters into his own hands. Impatient and excited, he had hauled his rifle out of its case in the closet. Opening the window, he shoved the barrel out.

There was a shadowy figure in the alley. Pointing his rifle, Clements yelled, "Get out of here, or I'll plug you!"

The man ran down the alley. A second later he was followed by his companion. Then they heard a car speed away.

A few seconds later the police car arrived on the scene. The patrolmen listened to Clement's hurried story and poked inquisitive flashlights around the areaway behind the drugstore. There

they found two basement windows shattered. They saw that an effort had been made to remove the iron grating over one. Then they came upstairs and looked at Walter Wallace's little forty-watt transmitter and homemade superheterodyne receiver, and one grizzled cop shook his head.

"Begorra," he said, "and a crook sure ain't got a chance when it gets so they even ring in one of these here amature radio sets to tip off the cops with!"

There is one kind of police work that hams are carrying on all the time. It is the policing of their own territory in the air. They are constantly vigilant in tracking down "pirate" stations and "bootleggers"--operators using transmitting apparatus without proper license authority. Some of these violations are sinister in purpose, typical among them being concealed transmitters carried by race-track gamblers. Others are more innocent offenses. But all are relentlessly tracked down, for all unlicensed operation is contrary to law, a law that is purposely made strict because transmitting apparatus in the hands of unqualified persons might well be the cause of disastrous interference to a vital service at a critical time.

Michael Zeigler of St Louis discovered that fact when his "bootleg" transmitter, operated under calls stolen from licensed stations, drifted into the police bands and jammed police radio calls. The St Louis *Post-Dispatch* in its issue of August 9, 1939, carried this story about his subsequent capture:

AMATEURS RUN DOWN ILLEGAL BROADCAST SET

They Prepare Way for Arrest of Man as Operator of Unlicensed Sending Station in City.

HE PLEADS GUILTY AT U.S. HEARING

Michael Zeigler Admits Using Others' Call Letters--Interfered with Police Radio.

Michael Zeigler, unemployed organ builder whose unauthorized broadcasts over his twelve-dollar homemade radio station had caused considerable interference with police radio calls recently, was held in jail today following his arrest made possible by the clever detective work of amateur radio operators in the city.

Zeigler, thirty-one years old, was arrested by Department of Justice Agent Jack Brennan, himself an amateur radio operator, as Zeigler was operating his unlicensed transmission set yesterday at his home at 2219 Indiana Avenue.

Today at the Federal Building where he pleaded guilty before United States Commissioner John A. Burke of operating an unlicensed radio station and broadcasting without an operator's license Zeigler told a *Post-Dispatch* reporter that he did not know until recently that he was required to obtain a Federal license to operate his equipment.

ZEIGLER'S EXPLANATION

"I understood that the way to qualify for an operator's license was to build your own set and practice," he said. "I've been fooling around with this since I lost my job with the Kilgen Organ Company about eight months ago and I built my own set from used parts that cost me about twelve dollars."

Zeigler said he had not been broadcasting regularly since completing his equipment but when

when he did use it he generally carried on conversations with other local amateur operators. As a rule he used station call letters assigned to other local amateur stations when broadcasting.

Police and amateur operators had been complaining recently about interference from a local station which they knew was operating illegally because of the interference. The fake radio distress calls last week from a purported sinking ship off the Florida coast prompted local amateurs to attempt to clean up the situation here.

The matter was taken up by members of the O.B.P. Radio Club, a group of licensed amateur operators, of which Brennan is a member, Henry Eschrick, secretary of the club, who operates an amateur station at his home, 3524 Gravois Avenue, decided with five other club members to find the origin of the illegal broadcasts.

DIRECTION FINDER USED

Tuning to the mysterious station, they used a direction finder and after working several days they thought they had located the approximate position of the unlicensed station. They reported their findings to Brennan who obtained a search warrant from Commissioner Burke and set out with Deputy Marshal Tilden Delaney to find the source of the interference.

After getting into Brennan's automobile at a parking lot near the Federal Building they turned on the car radio and found that the illegal broadcasting was going on. Brennan drove to the neighborhood indicated by the tests made by the amateurs, and the broadcast became louder as they approached Zeigler's home.

Finally Brennan saw the aerial of the station and went into Zeigler's home and found him operating the set. At the time Zeigler was talking to an East St Louis amateur. Brennan arrested him and confiscated his equipment.

Operating an unlicensed radio transmission set and broadcasting without an operator's license is punishable by a maximum penalty of two years' imprisonment and ten thousand dollars fine for each offense. Commissioner Burke set Zeigler's bond at one thousand dollars.

The chief engineer of one of the larger Chicago broadcasting stations was only trying to be a good fellow when he engaged the nervous young violinist in conversation. He didn't know that potentially he was saving a man's life.

The violinist was Dr Philip Weintraub, a clever young Chicago dental surgeon with a musical bent who was making his debut over the station that night. The engineer noticed his tension and tried to help by talking casually about anything that came to mind. He mentioned his amateur radio station.

"It seemed pretty much like a postman's holiday to me at first," said Dr Weintraub later, "but then he began to explain some of the varied and enticing phases of his hobby. Within half an hour the bug bit; I, too, would be a ham."

It turned out that of the two careers launched that night, radio and music, the ham radio one was the more successful. After a time in which Philip Weintraub struggled grimly with the elusive "dits" and "dahs" of the radiotelegraph code he finally found himself seated between a jolly little man of sixty and a boy of thirteen in the Chicago office of what was then the Federal Radio Commission, waiting for his official code test. In due course his license arrived, and the powerful station he had installed in his penthouse apartment made its baptismal transmission.

Simultaneously there appeared a radio widow in the Weintraub household. At first Evelyn Weintraub was a bit annoyed when her husband spent so much time with his new hobby. But soon she, too, became interested and in time even learned to tune the receiver.

As for Philip Weintraub, it seemed he couldn't get enough radio. Not content with operating outside office hours, he installed a second, smaller, station in his office. There he would make an occasional contact at odd moments. Often his wife would be listening to him on the home-station receiver.

It was this station he was operating one cold Thursday evening in late January. At home Evelyn Weintraub was sitting by the fireplace listening.

"I'll be a little late for dinner tonight," he had said as he left that morning. "Want to try out the new speech amplifier."

"Oh? And what will I be doing? Waiting for you while dinner gets stone cold?" Evelyn was dark haired, with a sultry beauty that glowed with the effort to be stern. But there was a teasing note in her voice that belied her scolding words, and her husband only smiled with quiet affection.

"You'll be sitting here listening to me as usual," he said, kissing her. As he went to the door he called, "I should be through by eight o'clock. Don't forget to listen!"

At seven twenty-five Phil Weintraub sat down at the operating position and began twisting the dial of his receiver. The large office building was almost deserted. Down in the street the life of the city moved along, its smoke and steam rising in the still, cold air. Inside a few late workers hastened to finish their daily chores. An occasional straggler or two lingered in the solitary corridors.

A voice moved smoothly into the loudspeaker. "CQ--CQ--CQ," Phil heard. "Hello CQ--calling CQ. This is W9JJF calling CQ."

Weintraub smiled with satisfaction. Here was his chance to try out with the new rig. Everything was "on the nose"! The final adjustments had all been made. The new speech amplifier possessed tremendous gain; with it full on he could modulate the transmitter from all the way across the room.

W9JFF said, "Go ahead," and Phil threw the switch. For a brief minute he spoke into the microphone and then stood by. There was the Iowa station all ready to talk with him.

"Good evening, old man," W9JFF said. "Thanks for the call. Your signals are coming in here QSA 5 R 9 this evening--very fine business indeed."

They exchanged greetings, reports, and had just reached the usual topic of weather when there was a knock at Dr Weintraub's door. "Wait a minute," he said. "I'll have to see who it is. Stand by for just a minute."

Leaving the transmitter running and the microphone alive, he rose and swung open the office door. Two men stepped in, two particularly tough and dangerous-looking men with guns in their hands, guns that were pointed straight at the dentist's stomach.

"Put up your hands," the larger of the two ordered thickly. Phil noticed through his astonishment that this one, older and more heavily built than the other, was the leader. The second man was nervous, even afraid. The big fellow pushed his way into the room forcing Weintraub against the desk.

After the first moment of stunned astonishment Phil's mind began to function again. "I don't keep money here in the office," he said. "It's all gone to the bank."

"Shut up!" the bandit snarled. "Are you alone here?"

"Yes, I am, but-----"

"O.K. Hold still." He pushed his gun into the doctor's ribs and ran a hand swiftly over his clothing. He found Weintraub's wallet in an inside cost pocket and with one motion transferred it to his own.

The gunman spoke to his companion. "Look in that box there," he said, nodding toward a green cashbox lying on the desk. "See if there is anything in it."

The younger man's hand shook as he reached for the box. His face was white, and his lips were taut with fear. He was badly frightened.

"Don't be scared, Joe," the older gunman encouraged him. "This guy can't hurt you. See, I got him covered." And Weintraub flinched with pain as the bandit shoved the muzzle of the pistol hard into his abdomen.

The kid was young, and his face was weak. He plunged his hand into the cashbox, but all it contained was a few stamps.

"You can have 'em," the older thug grunted. He emptied Weintraub's pocketbook onto the table.

"Why, you--------" he roared. "All you got here is five bucks!"

"I told you I didn't have any money here," the dentist replied steadily.

"Why, for a plugged nickel I'd--------" He raised the gun threateningly. "But that ain't what we came for anyway. Where do you keep your gold?"

"My gold? What do you mean---gold?"

"The stuff you fill teeth with, ya dope." The bandit's eyes were tight with strain.

"I haven't any left--it's all used up," Weintraub replied anxiously.

"Stop stalling! Come on--give. Where is it?"

"I tell you I haven't got any more. See, the cabinet's empty." The cabinet was hastily ransacked, but there was nothing there.

"You----- I'm gonna give it to you!" the gunman grated. The muzzle of his gun jerked up, and Weintraub saw death in those piggish eyes.

Then the younger hoodlum edged forward. "No, Joe, not that. D-don't do that. We---we done enough already. Come on, let's get out of here."

"We-ell, O.K.," the leader acceded unwillingly. "But we gotta tie this guy up first. Here, give me a hand."

There was a sharp curse, scuffling, a thud. . . .

The sensitive microphone, still running, picked up the noises; through the amplifier and out over the air they went as had all that had gone on before. W9JFF, frantic but impotent, listened with his heart pounding madly. Evelyn Weintraub sat numb with horror as the action moved swiftly forward.

The sounds of the struggle subsided. The harsh voice of the leader, breathing hard, was heard again. "Lock him in that closet."

"What if he croaks in there?" asked another, a husky, uncertain voice.

"Let him croak," was the answer. "Let's get out of here."

But Evelyn Weintraub was not hearing that. Into her horror had pierced the thought that her husband needed her, that at any minute she might hear a shot that would mean his life. With that thought her muscles worked again. She ran to the telephone, dialed the police. The call went to the squad cars. "Calling Car 16. . . . Calling Car 16. . . . Holdup at 3860 West Harrison Street. . . ."

It was after seven o'clock on a cold evening in January, but there were crowds on the street. There are always crowds on the streets in Chicago, worldly-wise, incurious folk, impervious to surprise. But that evening the crowd stopped and stared in amazement. For down the street, running madly, they saw a young woman without a coat or hat but with an expression of horror on her face.

Around the corner to West Harrison she ran, around the entrance at 3860. Then up the stairs she flew, outdistancing the police. The office door was open, the office itself deserted. She leaned against the desk for a moment, regaining her breath. Then she saw the closet door. It was locked, and the key was gone. Inside there was a faint scraping. "He's in there!" she screamed, and wrenched frantically at the doorknob. Her futile fists were hammering desperatlely at the door panels when a pounding of feet sounded outside, and two squad-car patrolmen dashed in.

It was a matter of moments before the door of the airtight closet came off its hinges. The gag and the ropes were removed, and Weintraub, already half suffocated, gasped air back into his lungs.

"Where are they?" he demanded when he could talk again. But the bandits were gone; they had ransacked the office and disappeared.

"You'd be a widow right now if you hadn't heard those holdup men and reported it," the police sergeant told Evelyn Weintraub. She was still sobbing softly from the fear and shock that had gripped her but she lifted her head then to smile thankfully at her husband.

Dr Philip Weintraub smiled back. Then his eyes shifted to the gleaming microphone perched alertly on its slim stand. He walked, a bit unsteadily, to the operating table. "W9SZW signing off and clear with W9JFF. Good night, old man."

His fingers reached down, and he threw the big switch.

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previous | next

Chapter Ten-

Radio Nomads

by Clinton B. DeSoto

FOR A CLAN who boast that they roam the world in their armchairs, radio amateurs are a remarkably active lot.

Not all of them manage to visit in person the exotic spots they call at in fancy. But there are a few radio nomads whose customary ports of call bear the strange names that are found in a DX man's log.

Tales of their peripatetic adventures are among the more exciting pages of short-wave radio.

George W. Polk is a newspaper correspondent who has operated amateur stations in Alaska and Shanghai. A foot-loose free lance, he roams the world at will and can usually be found wherever there is trouble and excitement.

It was in Aden, near the mouth of the Red Sea, while chasing down a war yarn that Polk met Rex Purcell. Purcell was one of the crew of the Pang Jin, a Chinese junk in which three adventurous Americans set out from Hong Kong to sail to the New York World's Fair.

This is the story of the cruise of the Pang Jin as told to George Polk by Rex Purcell:

" 'QST de VS6BF, QST de VS6BF, QST de VS6BF, AR K.' Over and over I pounded my call. The heavy crashing of the junk sounded dangerous and labored down in the shack. Waves cascaded over the deck, thundering and smashing. The barometer was dropping alarmingly and had already passed a figure lower than I had ever seen before.

"I tuned through the twenty-meter band in the hope that someone had heard my call; traffic was heavy. Suddenly the mounting tone of a stronger carrier whistled into the headphones. I tuned into it, heard nothing and then gradually dialed past. Slowly I tuned back. Sharply a voice was saying, 'Hello, VS6BF, calling VS6BF, Venezuela-Spain-six-Boston-France. ZS6DY, Johannesburg, South Africa, is answering your QST and standing by. Go ahead, please.'

"I flipped my generator switch and keyed out my reply. 'ZS6DY de VS6BF. Chinese junk, Pang Jin, in severe storm off east central coast Madagascar. Urgently need weather reports and forecasts on direction of cyclone this vicinity. Can you arrange? AR K.'

"The 'phone came right back. 'ZS6DY to VS6BF. Will try to obtain weather info for you imeediately. PLease QRX while I check.'

"The sea was so rough that my receiver would not hold its frequency setting steadily, but I heard bits of ZS6DY's rapid-fire calls for weather data. There was one to Durban, another to Cape Town. Then he asked a local station in Delagora Bay to telephone the local Coast Guard and weather stations. I did not hear the answers, for I was afraid of losing ZS6DY, constant tuning being necessary. Overhead the shouts of the men battling with wind and waves were dimly audible. Conditions were undoubtedly becoming worse. After what seemed hours but was actually only

minutes I heard my call. 'Calling VS6BF, VS6BF, VS6BF. ZS6DY is calling and standing by.'

"I immediately answered. This message came through: 'Cyclone off east central coast of Madagascar plotted as progressing east to west, speed twenty-eight miles per hour. Weather bureau advises you proceed northwest in order to escape danger zone. Can stand by for you long as necessary or will arrange sked for later contact. Go ahead, please.'

"A few seconds later my thanks had been acknowledged by ZS6DY and he agreed to a contact for that evening, at which time he would furnish me with further storm reports. Twelve hours later we had sailed far enough to the northwest to be in much calmer waters. Thus was our Hong Kong-to-New York voyage interrupted. We had planned on exhibiting the Pang Jin at the New York World's Fair by July first; the cyclone was but the first of a series of misadventures which threw us farther and farther behind schedule.

"Eight months before Jim Peterson, Homer Merrill and I had met in Hong Kong to build the Pang Jin. Months of planning and preparation had gone into the making of our ship. We personally selected each piece of timber, coil of rope and bucket of paint used in its construction. While we were building another junk was on the ways in a near-by shipyard. This second junk was the Green Dragon, owned by Richard Halliburton. The Green Dragon sailed from Hong Kong on March eight carrying a crew of twelve Americans, her destination the San Francsico World's Fair. Since March twenty-fourth, when her radio failed during a storm, the Green Dragon has been unreported. She is now given up for lost.

"When plans for our trip to New York had become definite I appealed to Leroy Lewis, radio engineer for the Philippine Aerial Taxi Company, for technical advice and practical assistance on the radio equipment we planned to install. He designed a compact portable transmitter which operated on phone or c.w. from a motor generator; output was forty-five watts. The single wire antenna was stretched from mast to mast, but since the booms rose above the tops it frequently broke as the sails were shifted.

"I was familiar with radio communication, both phone and c.w., because of my experience in the U.S. Army Air Corps. For the past four years I have been flying for the Philippine Aerial Taxi Company and, as much of our communication was handled through the medium of aircraft radio, I felt capable of assuming the role of operator aboard the Pang Jin.

"The British Government agreed to grant me a special license assigning the call VS6BF. Power was limited to fifty watts, and the license was to become void upon arrival in New York. Little did any of us imagine how important those forty-five watts at work on 14,136 kc. would become during a cyclone in the Indian Ocean...

"An amusing feature of a few of these QSOs has been the sounds of civilization which have been heard yet not experienced. As we roll and dip our way across various oceans and seas toward America the noise of an auto's horn or the ringing of a telephone bell emanating from the loudspeaker sound strangely out of place. So long unheard are they that they are practically forgotten. Our longest at-sea stretch has been seventy-seven days. Almost at the end of this period we heard Lowe (ZS6DY) talking with his wife and family. Again we recognized the splash of a tub being filled. How we longed for a hot bath, we of the dirty fingernails and long, flowing beards! The unattainable pleasures of civilization can be trying at times.

"Originally our route had been planned to take us from Hong Kong through the Straits of Malacca and on to the southern tip of the island of Ceylon. Here we expected to take advantage of the northeast monsoon season and sail to the southwest across the Indian Ocean to the Cape of

Good Hope. From Good Hope we were to continue to New York over the waters of the Atlantic. These plans have been altered, however, because of the cyclone which drove us from our course in monsoon season.

"The monsoons of the Indian Ocean are steady winds which blow from the northeast to the southwest from December to June and then turn and blow in the opposite direction for the next six months. A sailing ship finds beating against a monsoon all but impossible. We took the chance of completing our passage to Cape Town before the change in season although we realized how late our start had been. We figured without the gale off Madagascar. The monsoon turned and blew against us after the storm. We then decided to attempt to reach the United States via the Seychelle Islands, Aden, the Red Sea, the Mediterranean and the Atlantic Ocean.

"Here in Aden at the southern tip of Arabia we are still faced with adverse winds in the Red Sea. New York is yet thousands of miles distant, but we are determined. It is New York or bust!"

And so ended Rex Purcell's account of the cruise of the Pang Jin as told to George Polk at Aden. The sequel to the story was told in this news bulletin in the London *Times* a few days later:

> Five days out of Aden, Arabia, the Chinese junk, Pang Jin, bound Hong Kong to New York, sank in the Red Sea. All members of the crew were saved by the Greek freighter SS Olga E. Embiricos. Due to extremely rough seas and high winds the survivors were unable to salvage anything but a few personal belongings.

There was another of these radio nomads behind a mystery radio station on the air on winter a dozen or more years ago with the call sj5BX. The station was operated by an adventurous young Texan named Haskell Watson. He went to Mexico to hunt gold and operate a short-wave radio station. He got out too. He had literally to shoot his way out but he got out.

Actually very few of the amateurs who worked sj5BX ever learned he was in Mexico. Over the air and on his QSL card he gave his location as "Pablo Island--ninety degrees west, six degrees south." At first this puzzled a good many in the fraternity, since there is no Pablo Island in that part of the world--in fact, no island of any kind. A glance at the map will show that ninety degrees west and six degrees south lies in open ocean about five hundred miles west of the coast of Peru. Before long it was rumored that sj5BX was really in Peru, that the prefix "sj" signified Peru, or rather its old Spanish name of Juinan. The official identification prefix for Peruvian stations was "sp" but someone recalled that a few of the old aristocracy of the country preferred the ancient name and persisted in its use.

So that became the accepted version--that sj5BX was a blue-blooded Peruvian, too stiff necked to use a prefix based on the hated modern name for his country.

A version farther from the truth would be hard to imagine. The real operator of sj5BX was a hard-boiled, devil-may-care *yanqui* adventurer with a complete disregard for tradition or custom or even the law.

That, in fact, was why he was in Mexico. He and his party were down there in the mountainous regions of southern Mexico searching for gold. And they were finding it, too--finding it at the bottom of an extinct volcano.

The expedition made its camp in the dead crater of the old volcano. The crater was little more than a huge well, its walls in most places a sheer three thousand feet high. Considering the

inaccessibility of the place, the camp was a good one too. The living quarters were in an adobe hut, with rooms and even a porch. This was where Watson lived, and Paul, the only other American in the party. And Watson's wife, Donna. It would not do to overlook Donna Watson. Not only was she as pretty as a picture and a crackerjack radio operator, but when the shooting began she proved herself as gallant and self-reliant as her husband. However, that's getting ahead of the story.

They found the gold they sought. That part of their plans worked out well enough; the trouble lay in the radio end of the project.

Haskell had bought a collection of radio parts back in the United States when he began accumulating equipment for the expedition, but there hadn't been time to assemble the stuff into a working unit before leaving. As soon as they had organized the camp and the mining operations were under way he started building a transmitter.

But when it was finished the obstreperous outfit refused to get a signal out of the crater. Try as he might, he could not work another station. Haskell had a fair knowledge of radio. He had been a ham before the war and had picked up more experience overseas. Friends of his in Texas were active in radio and they had instructed him in current practices.

But they hadn't told him enough to enable him to solve this problem. He had an idea what was wrong; he came to the conclusion finally that he was trying to transmit from the bottom of a well three thousand feet deep and that it just couldn't be done.

There were other complications too. They were in a brigand-infested district. As autumn passed and winter came on it grew cold in the mountains, and some of the bandits got the habit of hanging around the cabin where it was warmer. Watson had reason to believe that a few of his own helpers belonged to the gang.

Late one afternoon when he was working on the transmitter a shadow fell across the littered table. A rasping voice with a heavy accent spoke. "Steeck 'em up, gringo," it said.

Watson looked up sharply, shading his eyes to see a huge Mexican with an equally huge revolver.

"Oh, it's you, Sandoval," Watson said. "What's the big idea?"

"What you are making, eh? Ees eet somet'ing of thees what they call the rad-ee-o? Queek now, tell me!"

"Radio? What do you know about a radio? Where have you heard that?"

"*Caramba*--I know. Some business weeth the evil spirits. I have hear José and one other who have been to Mexico City tell of thees. *¡Vamos!*--ees eet *el radio?* Queek, or, by damn, I shoot!"

"No, this is no radio. I know nothing about a radio. What makes you think it is? And what difference does it make?"

"I no weel have such a thing someplace by me. Eef weeth thees radio you can talk for a many miles, *Madre de Dios,* could you not tell them that I, Sandoval, am here?--that same who has keeled a many men? *Sacristo,* I t'ink yet that ees radio. I take no chance. I break eet up."

The hulking Mexican moved gingerly toward the littered table strewn with apparatus. Haskell, by now genuinely alarmed, began talking rapidly.

"No--no! This is no radio. This is--it's equipment to assay metals with. Tells where there is gold, you know. I don't know anything about a radio, I tell you!"

Sandoval paused. His attention was attracted by the phrase, "to assay metals." He had heard about such apparatus before, and Haskell was soon able to convince him that he had no cause for alarm.

It was shortly after this incident that Watson mounted a telescope trained on the one entrance to the crater. The crater was like a huge hole in the top of the mountain, approachable only in one direction, with a solitary twisting trail. By keeping watch on this trail they had an hour's warning of the approach of any doubtful character, ample time to hide the radio gear and other valuable equipment.

After finishing the wiring of the transmitter and trying for days to work someone Haskell came to the conclusion that he had told Sandoval no lie when he said he knew nothing about radio. Finally he wrote back to the States for help, enclosing detailed sketches of his location and a complete list of parts.

In the course of time instructions arrived from his amateur friends in Texas. Explicit instructions that told him how to assemble the parts he had on hand for maximum efficiency, how to string a line across the crater from wall to wall, how to hang a radiating system on it, how far it must be located from the side wall of the crater--everything.

Haskell followed the instructions to the letter, and they worked. Soon sj5BX was one of the most consistent stations on the air. When Haskell wasn't able to operate his wife would be at the key. He had started to teach her the game when they first landed in Mexico and he insisted that she become letter-perfect before he allowed her on the air. So perfect, in fact, that soon she was a better operator than he. "She was the Helen Wills of the key," Colonel Clair Foster, W6HM, wrote in tribute, "and you didn't have to soften your game for her! How she liked to bawl a feller out for sending double or for sending slow when he could go faster."

The Watsons made a good showing with the station from the operating standpoint. They worked all districts of the United States and every continent but Africa. The station was operated primarily as a hobby outlet but it served them in more tangible ways as well. The nearest telegraph station and post office were six days away, a hazardous burro ride over a treacherous trail. Moreover, a strict censorship prevailed, and everything was scrutinized. Whether for reasons of stupidity or suspicion, their mail and messages were often delayed and occasionally witheld. Radio was invaluable in this situation, for it aided in keeping them in touch with their headquarters in Texas.

But, apart from radio, the expedition had hard going, and the vicissitudes and exciting episodes surrounding it were many. Their relationship with Sandoval's bandit gang gradually developed into a feud and finally broke into actual guerrllia warfare. The later phase was reached when Watson arranged with the leader of the brigands for the purchase of dynamite which was badly needed in their operations. The fact that the bandits had probably acquired the explosive originally by the process of holding up a mine did not disturb him too much, but when they attempted to hijack him on the trip back it became a different story.

Making his way along the treacherous trail out of the crater with a string of three burros early one morning, Haskell led his reluctant pack train to the rendezvous of the bandits. There the three animals were loaded with the dangerous explosive. When the specified sum had changed hands he started back.

But along the return route another lot of the brown-skinned Mexican outlaws lay in ambush for him, their object to reclaim the merchandise he had just bought. Watson, keenly alert, saw them as he rounded a bend in the trail. Outnumbered, he took refuge behind a jutting rock. Bullets chattered against the rock and chipped off fine bits of stone that showered down on him. Frightened, the burros bucked and plunged. Finally one broke away and went trotting stiffly down the trail.

Then it happened. A stray bullet caught the dynamite packed on the animal. The hot lead detonated the explosive and it blew up just as the animal passed the point where the bandits lay in ambush. Beast and men were blown down the slope in a mighty, shattering burst of cataclysmic wind.

Sickened, but unharmed, Haskell marshaled his two remaining burros and drove them hurriedly the rest of the way down the trail to the mine.

From then on the trio were constantly on the *qui vive,* in frequent danger of ambush. They dared not venture out at night for fear of attack. One dark night Haskell and Paul were caught just outside the camp and had a dangerously close escape. Two of the bandits died, but the Texans escaped unscathed. Another time a lone bandit assaulted the houseboy, but the servant's frightened screams brought Haskell and Paul on the run, and they dissuaded the dark-complexioned gentleman from his larcenous habits--permanently. After that they made a habit of staying home nights.

Then came the June afternoon when the bandit gang attacked en masse. There were nine of them. They surrounded the house and made a surprise attack from behind plenty of cover and under a heavy barrage of rifle fire. Ordinarily the Mexicans were chary of wasting ammunition, for cartrideges cost them a dollar apiece, but this time they were staking everything on a major assault and they went at it all out.

The Watsons, although outnumbered, were not unprepared. They returned the fire liberally and, for a time, with good effect. Haskell and Paul flipped .45s as fast as they could finger the triggers, and Donna filled the guns as fast as they were emptied. Paul screened the front porch of the hut with a curtain of stinging lead while Haskell covered the segment leading up the trail. The rear should have been protected by the sheer walls of the crater against which the shack was built.

But toward the end of the afternoon one exceptionally enterprising bandit lowered himself down the wall and attacked them from the rear. This proved their undoing. When the smoke cleared away two of the attacking party were dead, others were wounded, and the three Americans were overpowered.

Roped up too tight for comfort, they were imprisoned temporarily in the adobe hut. There they were left undisturbed to ponder their probable fate. Nothing seemed more certain than that when nightfall came they would be taken out and shot.

Instead, when darkness came Manuel, the houseboy, who had sneaked quietly away when the shooting started, slipped them out into the rubble where he had hidden their horses, all saddled and ready to go.

It took the trio seven days to reach the nearest town, riding over the bandit-infested trail only in pitch darkness to avoid being seen. They had nothing except their clothing, Haskell's pistol and a few pesos with which they bought two cans of sardines from a native. Together with three quail that Watson shot this was the only food they had during that seven-day ride.

At last they arrived at the Mexican town--and food and water and safety. At least, they thought they were safe. But shortly after they arrived Haskell learned that news of the battle at the mine had preceded them. Moreover, they were being accused of having murdered the dead Mexicans in cold blood.

The prospect of being thrown into a filthy jail to await the decision of the law in a region where that law might well be controlled by the bandit gang they had escaped did not appeal, particularly since their own status in conducting mining operations there was uncertain.

At this point a stranger called on them. He was a fellow Texan, and he had heard of their plight. When they told him their story he agreed to help. "But if I do it'll be found out, and I'll have to beat it out of town myself," he said. "Here's some money. I'll line up a car or something for you, and then you'll have to give me a few hours to get away."

That night they made good their escape. Their benefactor had provided a Chevrolet truck, and they hired an armed guard of eight men, mercenaries who could be trusted as long as there was prospect of payment.

With these they slipped out into the night, headed for a larger city on the coast. The journey was eighteen hours long, most of it spent extricating the truck when it became mired along the trail or pushing it up steep grades that only a burro could negotiate under its own power.

With the liberal exercise of bribery and brawn they finally reached the coast and a ship bound north.

And there the story of sj5BX ends. Haskell and Donna Watson returned to the United States sans gold, sans equipment, sans radio, but alive and safe and ready to go again the next time adventure should call.

Out on the edge of the world, at 77° 31' east and 38° 43' south, in the middle of the south Indian Ocean, approximately equidistant from Australia, Africa and Antarctica, there lies a barren rock called St Paul Island.

Sailors call it "the accursed island." Of volcanic origin, the island is actually the peak of an old volcano jutting up from the ocean floor. The rim is broken on one side, the result of an ancient explosion, and the sea forms a natural harbor within the crater.

Nothing green grows on this volcanic rock which has a total area of less than three square miles, but the surrounding waters abound in spawning lobsters. Few fishing grounds are richer. They have long been a challenge to fishermen, and at least four expeditions have been organized to cash in on the bonanza.

But every attempt has ended in failure. The Austral disappeared into the fog that constantly hovers around St Paul. A 1931 attempt b the French to colonize the island ended in tragedy, rescue ships finding a dozen persons dead and fifty others suffering from malnutrition. There is nothing to eat on St Paul but lobsters and fish, and such a diet can only end in scurvy. The survivors of the 1931 expedition were repatriated to Brittany. Of two other expeditions there were no survivors.

Yet in all the world there is no chance so long nor spot so dangerous but that somewhere humans will be found to brave it. In 1938 it was a Dutchman, John de Boers, who resolved to defy the dangers of St Paul Island once again, dreaming of the fortune in lobsters he might take out of its

cold waters.

He bought a Newfoundland trawler, L'Île Bourbon, and with the blessing of the French Government he spent a small fortune transforming it into a floating refrigerator. The equipment for storing and preserving the expected crustacean harvest was magnificient.

But there De Boers' care in making preparations ended. For the rest of the expedition was badly organized, poorly supplied and poorly manned. There was not even enough coal in the bunkers for the voyage to the island and return, it developed.

A motley and ill-assorted crew it was that walked up the gangplank as L'Île Bourbon prepared to sail from St Malo, France, in May of 1938. There was John de Boers himself, the avaricious, visionary Dutchman. There was his wife, a buxom, motherly woman who had once lived with natives in Madagascar. There was the ship's doctor and his wife and a Turkish engineer. There was a blond artist (niece of Paul Chabas, a painter of *September Morn*) and a Parisian hairdresser who filled her trunk with useless sport clothes. There was a Breton radio operator (a professional) and his bitter-tongued fishwife and a mechanic and his wife. Finally, there were twenty-five common seamen and lobstermen.

They sailed away from sunny St Malo harbor out of the English Channel and through Gibralter into the Mediterranean. By the time they reached the Suez Canal the womenfolk were bickering fretfully in the scorching heat. They fought their way through the Red Sea with hair pullings and caterwaulings, and at Djibouti the radio operator and ship's doctor and their wives were driven ashore by the unbearable strife.

De Boers finally took aboard a doctor whom he found in French Somaliland, and the trawler steamed on to Madagascar. There most of the white crew mutinied, and blacks were signed in their places.

There, too, he replaced the radio operator--replaced him with an ardent young French amateur named F. Paul Bour. Just why Bour should leave his comfortable life in Tananarive and his lovely wife and family and go on this expedition remains a mystery, a mystery not solved even by Bour himself. Perhaps the chance to go on a journey to an uninhabited island was an overpowering lure to a confirmed DX hound. Possibly other factors not so obvious melted his sounder judgement. Nevertheless, Bour sailed with the De Boers expedition when it set out again for frigid St Paul and the fabulous fortune in lobsters....

The time and the scene change now to a point two months later and eleven thousand miles away. It was eight forty-five on the morning of December eighteenth in Bremerton, Wash. At the Bremerton Navy Yard Dispensary, Chief Pharmacist's Mate Edwin R. Gibson was on duty. But at that hour of the morning the dispensary was quiet, and Gibson, a radio amateur, was passing the time by listening in on his short-wave receiver.

As he turned the dial idly from signal to signal he almost passed a husky whisper in the background at 7015 kilocycles. Turning back and straining to read the weak signal, he pieced together a strange message:

> QST DE XFB8AB AND PARTY OF FORTY-EIGHT ARE STRANDED HERE AT ST PAUL ISLAND AND WILL BE GRATEFUL TO ALL OF YOU TO QSP AS EARLY AS POSSIBLE TO MADAGASCAR THAT WE RAN SHORT OF COAL THRU BAD WEATHER AND WE DID NOT HAVE ANY CHANCE TO FIND COAL AT THE ISLAND STOP WE BEEN CALLING MADAGASCAR BU NO LUCK OF REPLY STOP WE CAN

HEAR TANANRIVE BROADCAST FAIRLY WELL AT FIFTEEN GMT SO WOULD LIKE TO SUGGEST THAT CALL US HERE TOMORROW AND DAYS AFTER STOP WE WILL BE LISTENING FOR ANY MESSAGE OR NEWS STOP HAD PLENTY WORRY SINCE WE LEFT AND HAD MY RECEIVER BURNED STOP NOW USING SMALL SCHNELL SET HARD COPY PLENTY QRN STOP KEEP ON LOOKOUT FOR ME AGAIN STOP CONFIRM THAT WE ARE ON STEAMSHIP ILE BOURBON

Gibson tried vainly to communicate with the mysterious XFB8AB but he could not hear the faint signal again. Shifting his transmitter over rapidly to the naval reserve channel, he forwarded the message to the commandant of the Third Naval District who informed Naval Operations at Washington, D.C. Adding strings to his bow, Gibson also telephoned the Coast Guard at Seattle and notified the French Consul at San Francisco via the Army amateur net.

Meanwhile, down in the mists of desolate St Paul Island, Paul Bour did not know that his appeal had been heard. He sat patiently at his key, hour after hour, repeating his interminable plea. Early the next morning, at six-twenty Pacific time, Paul heard the first answer to his call. It was from Neil Taylor at Coronado Beach, Calif. Almost overcome with relief and gratitude, Paul told Taylor that his was the first station worked by the ship in thirty-three days and then repeated his tale. Other amateurs were listening by then, including Airways Operator Irving Astman on Donner's Summit near Norden, Calif. Mate Gibson, too, up in Bremerton, was again spending his early shift at his receiver and heard the contact.

Taylor told Paul Bour that he would do everything he could to help and then talked it over with Astman. The latter telegraphed the Coast Guard at San Francisco, asking the French Consul and the steamship lines be notified.

Meanwhile the Navy Department was acting on the message originally intercepted by Gibson. From Washington it was radioed to Rear Admiral Henry E. Lackey on the American cruiser Omaha, commander of Squadron 40-T in the Mediterranean. Admiral Lackey was instructed to transmit the message to the nearest French radio station, since the L'Île Bourbon was of French registry.

On receiving the message in Paris the French Colonial Ministry immediately ordered a French warship to speed at once to St Paul Island from Madagascar to rescue the ill-starred expedition.

The relief ship arrived at the island with fuel and provisions before any serious consequences resulted, and the De Boers expedition limped slowly back to Europe, another broken and beaten victim of grim St Paul Island.

Paul Boer at length returned to Madagascar, a poorer and wiser ham, his health impaired and his resources drained. His lust for adventure was sated--temporarily, at least.

previous | next

Chapter Eleven-

On the Frontiers of Science

by Clinton B. DeSoto

NOT ALONE on the frontiers of civilization where men go to enlarge their knowledge of the earth but also on the frontiers of science where men seek to pierce the veil of infinity the radio amateur ventures into the unknown.

"The reason for our wonderful advances in radio and other scientific fields is beacuse we allow our youngsters to play with new ideas and inventions. We encourage them to experiment with radio by making them licensed operators, giving them our blessings and telling them to go ahead. Every great advancement that has been made in wireless and radio was discovered by youngsters. All that our great scientific laboratories have done and are doing is merely refining what the young fellows have discovered."

This was said by the president of one of America's largest radio-manufacturing firms.

His point of view, characteristically, is the utilitarian one. It was expressed differently and, again, characteristically by a newspaper writer:

"Man's subjugation of the frontiers of science calls for the same clear-eyed persistence, the personal courage to overcome the bitterness of disappointment, and the ability to transmute the filmy stuff of dreams into the obsidian hardness of fact that marked man's conquest of new lands.

"The onward sweep of amateur radio has been attended by these qualities. In three decades the hams, working without renumeration, without hope of personal profit, seized the ether spectrum and forcibly bent it to their will."

The amateur himself, of course, has another viewpoint still. He's just doing what he wants to do because it's fun and he likes to do it.

He is by nature an ingenius fellow. The fact that he frequently suffers the handicap of lack of money and apparatus, that he does not have well-equipped laboratories in which to work or, often, the advantages of a good technical education, only whets his intensity of purpose.

There was a young amateur in the Middle West who can be cited as an example. This lad's parents were very poor; in fact, they lived almost in poverty. Yet he had an outstanding station, and his signals were well known on the air. He reached out long distances, and his signal had many of the qualities that indicate good engineering design and precise adjustment.

This boy had little formal education. He had attended grammar school until he was able to work and then he had assisted in the support of his family. They were very poor indeed. Despite this he had an exceptionally complete and effective station installed in a tiny closet in his mother's kitchen.

How had he done it? The answer is that he had constructed every last detail of the station himself. Even such complex and intricate structures as headphones and vacuum tubes, the products of specialists, were homemade. He had located the dump of a wholesale drug house and there he

found scraps of glass that could be blown. On the electric-light company's dump he picked up bits of broken tungsten filament wire from burned-out bulbs. With these he made his vacuum tubes. To exhaust the tubes he built his own mercury pump from broken test tubes found on the drug company's dump. His greatest problem was to secure mercury for the pump; he could not make that. But he finally found another amateur who had some and begged enough to complete his pump.

His headphones, built from bits of wood and wire, displayed the most ingenius construction. Similarly, everything else in the station was cleverly handmade. In fact, the greatest financial expenditure this young lad made in building his station was twenty-five cents for a pair of combination pliers.

Hiram Percy Maxim once said, "THere is no way to hold down such passionate purpose. No penalty suffices. Death is the only cure." And to illustate his point:

"I know of one young chap in a Middle Western city who secured his first information on radio from the contents of an ash barrel. On one occasion he had found an article on wireless in a discarded copy of the *Scientific American* which had been thrown into an ash barrel. He read it until it was worn out and undecipherable except to himself. He hungered for more knowledge. He wondered where he might find it. He went to the lady who ran the public library. She had never heard of wireless and treated him with suspicion. He went to the telegraph operator at the railroad station. But nobody knew as much as he did, and so he was compelled to return to the ash barrels which he watched carefully thereafter."

This youngster continued to pick up scraps of knowledge wherever he could find them and throughout his later life he always seemed to know just a bit more than those about him did. What is more, he learned to apply his knowledge. In the course of time he became one of the outstanding figures in the radio industry.

Many of radio's leaders began in just such a way. At first their progress was slow because there was little information. But gradually these attic experimenters, these basement laboratorians, learned the art of wireless.

At first the distances they covered were small, a few blocks or a mile or two at most. But gradually they improved, until by 1912 distances of several hundred miles were being spanned. In that year the first radio law was passed, relegating amateurs to what was then considered the useless wavelength of two hundred meters.

Eventually transcontinental records were made, and the amateurs began to talk about bridging the Atlantic by wireless in 1901, using tremendous power and long wavelengths. Commercial communications companies not long afterward duplicated the feat, using the same tactics: prodigious power and mile-long antenna systems resembling cross-country distribution lines. Amateurs, on the other hand, were sure it could be done with low power and short wavelengths. The war interfered with their plans, however, and by late 1921 they still had not succeeded. The reason for this, some said, was that European ability was not on a par with that of the American hams.

In February of 1921 the A.R.R.L. sponsored tests in which some two dozen selected American amateurs transmitted prearranged signals. Despite intense interest on both sides of the water the tests failed. So large was the number of English listeners with their regenerative or self-radiating receivers that they jammed each other. No American signals were heard.

A second series of tests was planned for December. This time, in order that no possible deficiencies in British receiving apparatus could imperil their success, the American amateurs decided to send their best qualified member overseas with their own hard-earned funds and with him the best American equipment. Not that the ability of the English was seriously doubted, but--well, they had not succeeded before, and this time the Americans were going to be sure.

This was a big venture for a group of amateurs, with no prospect of material reward. In fact, it has been called "the greatest sporting event in scientific history."

The whole project was carefully planned and executed. Paul F. Godley, probably the foremost receiving expert in America at that time, was chosen for the job. Elaborate arrangements were made with the amateur organizations and radio publications across the water, and "Paragon Paul" (as he was called because of his famous "Paragon" receiver) began hectic, sleepless weeks of building special amplifiers, testing various tuning arrangements and experimenting with different antennas.

On November fifteenth, exhausted from the strain of his preparations, but convinced that his equipment was perfect, Godley sailed from New York on the Aquitania. The night before, at a testimonial dinner given him at the Engineer's Club, a sealed packet containing the secret codes and final schedules for the tests had been handed him.

At noon the great liner was backed out of her berth, and Godley started on the second stage of his remarkable journey. Amid the pandemonium and confusion the radio hams who came down to see Godley off solved the problem of being heard above the din by holding their arms up above the crowd and then opening and closing their hands to form the continental code in heliograph style. They talked to Godley on the boat dock that way for half an hour, rather to the perplexity of the surrounding crowd.

It happened that H.H. Beverage, an engineer of the Radio Corporation of America, also an amateur, was sailing on the same boat. Beverage was discovered leaning over the rail on the same deck, watching the proceedings with great interest. This information was relayed to Godley by "hand radio," and he thereupon walked over to Beverage and introduced himself. Beverage grinned and as he shook hands with Godley with his right hand he formed a nonchalant "OK" with his left. The two kindred spirits thereafter spent the greater part of the voyage together.

This kind of spirit followed Godley throughout his trip. Radiograms from amateurs which reached him on shipboard were filled with it. "At no time had I viewed the trip as anything even remotely approaching a lark, for there were sacrifices which had to be made," he said later. "But it was these radiograms, each bubbling over with sincerity and a *will* for success, that first brought home to me the extent to which all those eyes reddened by long watches on the relay routes must be following me."

A month, lacking only a few days, went by. Paul Godley arrived in England and was royally feted in London. He set up his apparatus for preliminary tests but found conditions in the city wholly unsatisfactory. Then he traveled to Scotland in search of a suitable location on the moors near Androssan.

The weather was abominable; the temperature hovered close to freezing, and there was a chilling fog. After hours of tramping the beaches in rain and wet he finally located two sites that seemed favorable. But when he returned at high tide they were almost completely covered with water.

There were other disheartening experiences, but at last, in the midst of an overpowering

downpour, a satisfactory field was found.

Time was growing very short, for days had been spent searching for a suitable site. At noon of the day preceding the opening of the tests huge bundles of gear, together with a tent, storage batteries, trunks, floor boards and poles for the antenna, were hauled onto this field in a one-horse wagon. The ten antenna poles were scattered down the field at 125-foot intervals. Floor boards were spread on the ground, and the trunks and paraphernalia placed on them. A laborer began digging holes for the poles, and Godley and two others started erecting the tent. They had just nicely raised it into position when a gust of wind lifted the whole affair and carried it away, ending operations for that day.

The following day additional labor was enlisted. The weather was warmer, with high winds and driving rain. By noon the rain had slackened to a drizzle. The tent was erected, and the side walls were up. Darkness found the antenna poles installed, and the wire, a phosphor bronze strand twelve hundred feet long, was strung. Godley, together with Pearson, the official checking operator, and the two laborers, continued to work after dark, burying ground plates four and one half feet deep in the wet, sandy soil.

Godley and Pearson returned to the hotel for a late supper and then resumed their preparations in the big tent. Working by lantern light, a table was improvised of boards and trestles. Boxes became chairs, and an apparatus trunk served as a back rest for the operator. Tubes, accesories, high-tension battery--all were unpacked and connected in place.

Outside the tent the rain beat down relentlessly. A small oilstove inside did its best to provide warmth but it struggled against heavy odds.

By 11:30 P.M. the three-thousand-meter amplifier, to be used in conjunction with the superheterodyne receiver, was functioning, and station FL in Paris was picked up with no antenna connection. At midnight time signals from POZ in Nauen were used to check the timepieces.

Godley's log picks up the story:

". . . By about 1 A.M. we were on Beverage wire and feeling for short-wave signals and picking up harmonics from FL's spark and many high-powered continuous-wave stations, although harmonics much less severe than near London, with the exception of Clifden-Ireland's which are very strong.

"At 1:33 A.M. picked up a sixty-cycle synchronous spark at about 270 meters chewing rag. Adjusted for him and was able to hear him say, 'CUL,' and sign off what we took to be 1AEP, but atmospherics made sign doubtful. That this was an American ham there was no doubt! I was greatly elated and felt very confident that we would soon be hearing many others! Chill winds and cold rains, wet clothes and the discouraging vision of long vigils under the most trying conditions were forgotten amidst the overwhelming joy of the moment--a joy which I was struggling to hold within! I suggested hot coffee at once, and Pearson volunteered to warm it on our stove. He had a pot and bottle in his hands when I called sharply to him to resume watch! Our welcome American friend was at it again with a short call for an eight district station! His signal had doubled in strength, and he was booming through the heavy static and signed off clearly 1AAW at 1:42 A.M.!"

The thing had been done. An American amateur station had been heard across the Atlantic Ocean!

Actually, this was not an official reception since, the tests had not formally begun. It was not until 12:50 A.M. on the morning of December tenth--twenty-four hours later--that Godley heard the first

official amateur transmission from 1BCG, an elaborate special station set up for the tests at Greenwich, Conn., by half a dozen New York amateurs led by Major Edwin H. Armstrong, working as a unit.

Before the tests were over Godley heard the signals of more than thirty other American amateur stations. For ten bitter cold and rainy days he made his home in that drafty tent, headphones glued to his ears and fingers taut on the dials of his receiver, usually with just one official witness at his side, while the twenty-seven stations transmitted during the reserved periods and every American amateur who could get a set on the air shot signals at him during the open time.

The thought of a warm corner by the open fire in the lounge of the hotel was strongly tempting at times when the wind whistled through the tent walls at Godley's feet and blew down in gusts around his head. But he carried on until the triumphant end of the tests, logging new signals every night. That amateur signals transmitted with the meager maximum power of one kilowatt on the despised wavelength of two hundred meters could be successfully received across the Atlantic Ocean had been demonstrated for all time. The A.R.R.L.'s transatlantic message bill, incurred in obtaining daily reports of the tests, proved that. Arrangements had been made for representitives in each country to cable collect a daily report of each American amateur station heard and the foreign station that had reported it. So many European amateurs reported that the bill was nineteen hundred dollars!

Godley returned to America on the Olympic on December twenty-eight, a conquering hero. "His niche in the Radio Hall of Fame is secure forever," said *QST*.

Having proved that the two-hundred-meter wavelength, discarded by the professionals as worthless, could be made to span the broad Atlantic, amateurs started trending downward into still shorter waves. They were to prove that the theoreticians had been right on one point: the two-hundred-meter wavelength itself was the poorest in all the radio spectrum for transmitting over long distances--a fact which made their accomplishment all the more remarkable. But they proved, too, that wavelengths *shorter* than two hundred meters were even better than the long waves, that they would reach thousands of miles with tiny transmitters and a few watts of power.

It was two years later that the amateur exodus to the short waves began. The feat of spanning the Atlantic--this time in *two-way* amateur communication--provided the tangible evidence needed to demonstrate their worth. In November 1923, after months of careful preparation, Fred Schnell and John Reinartz, from their stations in Hartford and Manchester, Conn,. talked with Leon Deloy in Nice, France--the first two-way transatlantic amateur contacts, accomplished on a wavelength of one hundred meters!

The precision with which the 1MO-8AB contact was planned and carried off makes an inspiring picture. Under the plan Deloy at 8AB agreed to call Schnell at 1MO on exactly one hundred meters at precisely 9:30 P.M. Eastern standard time on the evening of November twenty-seventh. Early in the evening the receiver in Hartford was tuned accurately to one hundred meters, and Schnell did not touch the dial thereafter. Precisely as the clock struck nine-thirty the strangely stirring twenty-five-cycle gargle from faraway France was heard calling 1MO. It might have been a neighbor lad next door with a key and buzzer, but instead four thousand miles of lonely black ocean separated the Frenchman, sitting with hand on key in the library of his home in Nice waiting for the second hand to cross the mark, and the Americans in their little stations in New England silently listening and watching the time until, synchronized, the thoughts from the one flowed to the others in the form of electromagnetic waves traveling high over the miles of trackless sea.

In the next few months adventurous amateurs dropped down to forty meters, and communication with Australia and South Africa became a reality. Then twenty meters was tried and it responded by making long-distance *daylight* communication. Soon amateurs the world over were chatting with each other like next-door neighbors.

Such amazing performances by the amateurs with their short waves aroused the interest of commercial and government people alike. These impudent youngsters with their attic stations and their backyard aerials and a hundred dollars' worth of junk were outperforming the gigantic long-wave coastal stations with antennas strung on eight-mile-long rows of steel masts hundreds of feet high and massive plants that consumed power enough to supply a small city.

The U.S. Navy decided this state of affairs was worth looking into. In 1925 the Navy Department came to the A.R.R.L. to ask the loan of Fred Schnell, traffic manager of the League, to conduct tests on short waves during a seven-month Pacific cruise. The Navy had been impressed by the astounding results the amateurs were getting with short waves; it wanted to investigate and, if possible, to adapt. What better way to obtain a demonstration than to take a typical amateur along on maneuvers and have him show how it was done?

Schnell, by reason of his position with the League and the fact that he was the first amateur to work two-way across the Atlantic, was regarded as the outstanding short-wave amateur of the time. He was offered a free hand in showing what might be done with short waves over long distances.

The arrangements were worked out. Schnell was already a lieutenant in the U.S. Naval Reserve; all he needed was a white uniform. He built a special amateur c.w. transmitter and receiver of the most modern type, packed them into a pair of boxes and reported aboard the U.S.S. Seattle, flagship of Admiral Coontz.

"Lieutenant Schnell reporting for duty, sir," he said.

"You're late," the fleet radio officer greeted him brusquely. "Where is your equipment?"

Schnell pointed at the two large cases he had brought with him. "There it is, sir."

The radio officer muttered something plainly derogatory under his breath about "pin boxes" and "in the Navy!" But Schnell was quickly accepted as a proper member of the services because of his obvious sincerity and ability.

His first problem was installation of the station, or, more correctly, finding a spot to install it. The radio officer warned him that the Seattle was already overcrowded and that he would have to find a place where he would not be in the way. After searching from stern to stern it became apparent that there was only one available location, the compass shack. This was the structure just forward of the mainmast on the boat deck, about fifty-three feet above the water line. It was about six feet square and completely surrounded by heavy boiler plate except for five small portholes.

Fred had his equipment installed and the antenna strung by the time the fleet sailed for Honolulu on April 14, 1925. Maneuvers were carried on in Hawaiian waters intil the end of June. During this time Schnell made many contacts on the air, but his real work was yet to begin.

Promptly at 9 A.M. on July first the fleet shoved off on the Australian good-will cruise. It was then he had to show the Navy what his short-wave set could do, that it could move traffic when all the other radio transmitters failed.

Operating conditions in the compass room were far from agreeable. The temperature, product of two uptakes from the engine room which ran along the compass shack on either side, coupled with the tropical weather, ranged between 126 and 130 degrees. Fred perspired so much while he operated that frequently he was forced to tape the headphones to his head to keep them from slipping off.

He had made it understood beforehand that he was to be permitted to handle his Navy traffic through amateur stations. The hams, in turn, had been asked to lend a helping hand. This meant that thousands of them would be sitting up all night if necessary, their headphones glued to their ears, standing by to get Schnell's traffic through to Washington. All he had to do was to announce his presence on the air and a hundred voices clamored for his call. Indeed at times he needed only to press the key once, without signing or otherwise declaring his identity, and so distinguishing was the signal from NRRL and so intent the listening hams that invariably he logged from two to five stations calling in reply!

This convincing demonstration of the utility of the short waves and the unquenchable amateur spirit proved a revelation to the skeptical naval officers.

During the greater part of the cruise beyond Hawaii it was Fred's responsibility to handle all of the fleet's official traffic, for the long-wave transmitters were beyond the range at that distance. Even the gigantic eight-thousand-watt main transmitter had a reliable range of only sixteen hundred miles. But Schnell maintained direct communication between the fleet and the American continent through amateur and naval stations with his two-hundred-watt transmitter even when his ship was anchored in Australian and New Zealand harbors, seven thousand miles or more from home.

"Schnell had only to touch the key at NRRL, and his signals were heard around the world," a naval officer later said. Fred Schnell covered himself with glory. Naval men were greatly impressed by the amateur enthusiasm and organization as well as by the amazing performance of the short waves. Since that time the Navy has been consistently in the fore of short-wave practice and progress.

Not every amateur, of course, is fertile with ideas that will revolutionize the structure of radio. As in every field, amateur radio has its leaders and dominant figures. Some are specialists in specific fields, others are dilettanti who try everything under the sun and occasionally hit on something new. But each has that spark of unselfish interest that makes his work with radio a labor of love in contrast to the professional with whom it is labor for a day's pay.

One of the most brilliant and ingenious of all the simon-pure radio amateurs was the late Ross A. Hull. Possessed of a restless, inquiring mind and limitless enthusiasm and energy, he spent his brief lifetime in a constant and indefatigable assault on the frontiers of man's knowledge.

Ross Hull was born in Melbourne, Australia, in 1902. His early training was in the field of architecture. Before his schooling was ended, however, the fascination of radio gripped him, and by 1922 he was one of Australia's outstanding amateurs. He was, in fact, the first Australian to hear American amateur signals across the Pacific Ocean.

His ability brought Hull a position as technical editor of the leading Australian popular magazine dealing with "wireless." When Fred Schnell landed at Sydney during the Pacific cruise in 1925 Hull met him at the dock, and the two began to talk about radio and America. Then and there Ross Hull resolved that someday he would come to the country where radio amateurs were enabled to do such fascinating and worth-while things.

This compelling urge did not subside, and in 1926 Hull left his job in Sydney and his post as secretary of the Wireless Institute of Australia to begin his American tour. After a leisurely journey across the United States he arrived for a visit with the headquarters staff of the A.R.R.L. in Hartford. It happened that there was a vacancy in the technical-information-service post on the League's staff at that moment. This was an admirable vantage point from which to survey the American radio scene, and Hull asked for and got the job.

What was first intended to be a visit of a few months' duration extended into a semi-permanent stay. When the time set for his visitor's permit expired Ross secured first one extension and then another. He became assistant technical editor of *QST*, the amateurs' magazine. He found time also to do other technical writing and played a significant part in reincarnating the model-airplane-building hobby in this country by introducing the balsa wood technique which had already become popular "down under."

So Hull stayed in the United States through 1927 and into 1928. The latter year was a critical one for amateur radio. Representitives from the principal nations of the world had assembled in Washington during the last months of 1927 and drawn up an international treaty regulating all of radio's shortwave branches. When the negotiations and the compromises were concluded the international regulations finally adopted imposed new standards and restrictions more severe than those which had grown up haphazardly under domestic regulation. These new rules were to go into effect on January 1, 1929. American amateurs had just one year to get ready.

Foreseeing the necessity for developing new equipment and methods to meet the problems imposed by the new regulations, the A.R.R.L. inaugurated a special Technical Development Program. Hull was chosen to head that program. With a small group of assistants he plunged into the problem of compressing years of technical research into a few short months.

The brillant success of the A.R.R.L. Technical Development Program is one of the epochal achievements of amateur radio. Hull's studies over that period revolutionized the entire technique of the amateur game. Exploring every phase of amateur equipment, he analyzed weaknesses, established new requirements and devised electrical or mechanical modifications to meet those requirements.

The program ended in early 1929. Shortly afterward, unable to secure further extensions of his temporary visitor's permit from the immigration authorities, Hull returned to Australia and resumed his post as technical editor of *Wireless Weekly*. But the lure of American life had got under his skin, and a year and a half later he was back in the United States, this time permanently, under the quota.

Almost immediately his interest turned to the ultra-short waves or ultra-high frequencies, then radio's newest frontier. For some years this field had been lying fallow; it was ripe for an abundant harvest.

The development of the u.h.f. field was carried on as a step-by-step program in which Hull collaborated with his associates on the technical staff of the League and other experimentally inclined amateurs. In 1930 simple, compact apparatus was devised that operated with extremely low power and yet was efficient and workable. Old circuits were adapted, and new circuits were devised. In 1931 countless field and point-to-point tests over a period of months thoroughly demonstrated the utility of this apparatus and charted its performance. In 1932 a further involved series of point-to-point tests, as well as several test flights of an experimental radio-equipped airplane over the Boston--New York route, provided data for determination of the laws governing the local transmission characteristics of the ultra-high frequencies.

It was then that general amateur participation began. By the hundreds hams loaded with experimental gear made for hilltops and observation towers--the highest points they could find--in order to participate in the tests. Beginning in early April of 1932, they climbed to mountaintops through mud, slush and fog to get in on the fun. Soon thousands of u.h.f. stations were on the air, an experimental laboratory so huge that it included all the more densely populated sections of the nation.

This popularization of the ultra-high frequencies by showing amateurs the fun to be had with local contacts both at home and from portable and mobile stations was one of Hull's outstanding accomplishments.

But that was only part of his work, for he continued to carry on extensive research of his own. The second floor of the old colonial farmhouse in West Hartford where he made his home was literally converted into a u.h.f. radio laboratory.

It was through his work there that he exploded the theory generally accepted until that time, and which he himself had helped establish, that the very short waves could not be transmitted over a horizon. Known as the "line-of-sight theory," it held that these waves, like light, would not bend and follow the curvature of the earth and were therefore useful only over distances as far as the eye could see, a maximum of ten or twenty miles in practice. The work of amateurs with ordinary equipment and antennas tended to confirm this theory.

But one night as the five-meter stations in the Boston area were holding their usual over-the-back-fence conversations they discovered an interloper in their midst, a "large, juicy signal" which claimed to originate in West Hartford, Conn., over a hundred miles away. At first they dismissed the signal as an obvious hoax; everyone knew the maximum range of five-meter signals was at most perhaps thirty miles.

When finally they were convinced of its genuineness, however, the wildest excitement broke out. For weeks it was the dominant topic of conversation in ham circles. There was just one question on everybody's mind: "How did Hull do it?"

A fundamental keynote of the amateur is his willingness to share his discoveries with others. Hull told immediately and freely how he had devised a directive antenna that concentrated the energy of his signals in a beam that gave the effect of multiplying the power used many times.

But this did not explain why the signals which were not supposed to return to earth did so at distances as great as three or four horizons away. Having demolished the traditional line-of-sight theory, Hull set about developing a new one.

Setting up an ingenius home-built signal-strength recorder utilizing photographic principles in his hill-top laboratory, he asked Harvard University's Blue Hill Observatory to send out hourly tones on an ultra-short wavelength. These signals he recorded every hour of each day over an initial period of twenty months. He had constructed a topographical map of the great-circle route between Blue Hill and West Hartford which showed that intervening ranges of hills and the earth's curvature formed four intermediate horizons between the two points. Despite the distance the transmissions were received day and night with scarcely ever a lapse.

Study of more than twelve thousand recordings showed definite daily and seasonal cycles that did not coincide with any of the recognized radio phenomena. It was apparent to Hull that some cause other than those hitherto known to affect radio transmissions was influencing these mysterious u.h.f. signals--some agency of the lower atmosphere rather than of the ionosphere. Hull cast

about for other natural phenomena that could be reconciled with the cycles he had observed.

Finally the whole involved structure of a new theory, lower-atmosphere bending of ultra-short waves, was worked out in detail. Comparisons with meteorological data, with temperature and humidity conditions, were made by using data secured on meterological airplane sounding flights made each morning at Mitchel Field, Long Island, and East Boston, Mass. It was found that temperature stratification inversions gave the ultra-short wavelengths their best performance. The most favorable conditions occurred when tropical air masses overran the cooler layers of polar air.

Such works, of course, ventures into the field of pure physics. It is the sort of thing more to be expected of a cloistered savant than of an amateur dabbling in his spare time. Yet there was a practical phase to the work, too, not only in analyzing and predicting u.h.f. performance, but as a possible tool for the meteorologist to use in weather forecasting.

Not content to stop there, Hull enlarged the scope of his research in the field, recording additional signals over other paths and on other frequencies, and devised an ingenius integrator, using a bank of ordinary electric clocks to simplify the laborious task of analyzing the thousands of recordings that resulted. With this data he was able to expand and elaborate on the refractive air-mass theory.

It might be emphasized that all this was purely amateur spare-time work, for it was conducted quite independently of Hull's editorial duties. Nor did it constitute the sum of his extracurricular activities. An insatiable hobbyist, possessed of a restless, inquiring mind and a determination to do a superlative job of anything he attempted, he poured an incredible number of hours and infinite enthusiasm into a multitude of other projects both in and out of radio. He was interested in various technical and artistic fields, photography, astronomy, music, painting, literature, into which he habitually threw himself with the energy of ten men, always to emerge with remarkable results.

In the spring of 1937 his interest in model-airplane building, dormant for nearly a decade, was revived. Coworkers broached the idea of building a model of moderate size that could be controlled in flight by radio, and Hull attacked the problem with his customary vigor. During the summer he flew the first successful radio-controlled soaring model and thus pioneered another new frontier in radio.

Late in 1937 his interest was attracted by television which had by then been successfully achieved in commercial laboratories. In earlier years he had been rather sharply critical of the television "industry," particularly of the stock-selling and promotional schemes surrounding much of it. He knew that the stage of its development prior to 1937 did not warrant the claims that were being made.

But when electronic television showed itself as a practical actuality he became intrigued by the possibilities of its application in amateur work. He admitted that the amateur had little opportunity to lead the way in the development of television, as had been done in radio, because of the greater complexity and cost of television equipment. But he was sure that if only these barriers could somehow be lifted amateurs could contribute usefully in television development.

Characteristically, Hull set about lifting these barriers. He constructed an elaborate collection of equipment and set it up at his new home situated on a higher hilltop a thousand feet above sea level. With his remarkable ability to scoop up ultra-short-wave signals he succeeded in receiving N.B.C.'s experimental television transmissions from New York City, more than one hundred miles away, almost as well as they were being received near by, much to the amazement of the N.B.C. engineers who believed the maximum range of their transmissions to be fifty miles. He built an

experimental television transmitter which was sufficiently promising to indicate that amateurs might one day expect two-way television communication on terms within their reach. He was in the midst of plans for further developments.

And then on the evening of September 13, 1938, following a small dinner party at his home, Hull left his guests to their coffee and retired to his laboratory to connect up his receiving equipment in order that he might show them television pictures about to be transmitted from New York. Wearing a pair of headphones connected to the sound-channel receiver, he reached over a high-voltage transformer in the experimental power supply on the floor in order to insert a plug into a wall socket. As he withdrew his hand it came in contact with the high-tension lead to the forty-four-hundred-volt transformer. Current from the transformer passed through his body. He fell, unconcious, his hand still touching the high-voltage lead, the headphones completing the electrical circuit to ground.

Among the dinner guests was a physician, an X-ray expert familiar with high voltages. The doctor sensed trouble from the next room and he ran to Hull's aid. Within thirty seconds he was dragged clear of the lethal voltage, and artificial respiration was applied. Other doctors arrived; adrenalin was administered; a pulmotor was brought.

But it was all to no avail. Death had been instantaneous. The career of Ross A. Hull, premier amateur experimenter, had ended on the firing line of a new frontier.

The immediate objective Ross Hull was seeking at the time of his death, two-way amateur television between individual experimenters with simple and inexpensive home-built equipment, was achieved two years later. Other experimenters took up the torch after his death and carried the work forward until success was finally realized.

On other fronts, too, the experimental work of the amateur continues. New frontiers of science are constantly beckoning him onward. Broad vistas open before him, not alone of refinements in technique and practice, but of whole new fields awaiting exploration. Embryo developments even now in prospect have within them potentialities for revolutionizing important phases of communication, electronics and the allied arts.

Step by step amateurs are climbing along the ladder of the electromagnetic waves. Leaving behind the conventional radio waves as measured in meters from thirty thousand to fifteen hundred, they have successfully mastered first the short waves and then the ultra-short waves down to a meter in length. Now they are on the brink of the microwaves, quasioptical vibrations that oscillate at the incredible rate of three billion cycles per second or more, waves measured not in meters, but in centimeters.

Beyond the microwaves lies another no man's land, a region that blends into the infrared heat waves which precede visible light. And beyond visible light in the electromagnetic spectrum there are the ultraviolet radiations and then the X rays and the gamma rays and, beyond them all, the cosmic rays. It does not require too much strain on the imagination to conceive that someday the new frontier for these amateur explorers of science will be those mysterious emanations from outer space, the cosmic rays.

"The amateur's workshop is the air," it was said by George W. Bailey, president of the American Radio Relay League. "His tools are the priceless attributes of ingenuity, resourcefulness, enthusiasm and love of his work, his coworkers some seventy-five thousand brethern scattered throughout the entire world. Together they are doing much toward writing the specifications for

radio communication of tomorrow."

previous | home

Chapter Twelve-

All Things to All Men

by Clinton B. DeSoto

THE LIFE of a laboring man is hard in the mines of northern Michigan. The work is heavy, and it takes a strong body to do it. Not a mature body--youngsters of fifteen and sixteen go to work in the mines--but a strong one.

Henry Luoma left the mines at the age of eighteen. He had to leave; he could no longer do the work. His spine had been injured in a mine accident, and although he walked out of the hospital on his own legs three months later all was not well. He tried to go back to his job as a miner, but it was no good. He had to quit; the work was too heavy. He founder a lighter job and then another but he lost them both. He was too slow, too clumsy; his back hurt too much.

It pained him more and more as the months went by. He couldn't join in the pleasures of his old friends, and one by one they dropped him. A few of the more faithful continued to call, but his hopelessness and disillusionment made him depressing company. Finally even they abandoned him, and that made him even more bitter. "The world was a poor place--nothing in it was worth a smile," he said. "So I left off smiling."

Three years passed, and a bit more. Henry's body regained some of its strength, although he still lived companionless and apart. He was able to move about more freely, even to take long solitary walks in the woods. That November, in fact, he went deer hunting, alone, in the woods behind his home.

It was a simple enough pleasure, just to go hunting once again. His mother had asked him not to, thought it too dangerous for him. It was wet and slippery in the slushy snow. . . . But he'd be all right, he assured her. He could handle himself all right now.

He thought of that the instant he slipped as he crawled over the wet log. It was a brief instant, for his feet shot out from under him, and his back came down across the heavy log with a sharp racking pain that blackened his senses and drove all thought from his mind.

He lay there for a while, barely conscious at first, while the pain gave way to numbness. He became vaguely aware that his back had been broken again. He tried to move his legs and could not. He realized that he could not lie there long, that to do so would mean sure death.

So Henry crawled home through the slush and snow for two miles, his legs useless, dragging himself hand over hand past knolls and around trees, until finally the fingers of his outstretched hand just touched the doorstep of his home.

Then he fainted and he did not regain consciousness until days later. He was in his own bed, but his body was so drained of strength that he could not even raise his hand to feed himself. His voice was gone; all that would come when he tried to speak to his mother or to the doctor was a husky croak.

It was two months before he was able to speak clearly enough to describe the nature of his fall, for pneumonia and bronchitis exacted their full penalty for his arduous journey home. By that time the

farm was snowed in, and it was April before he could be moved to a hospital.

At first the doctors gave him six months to live. Spondylitis and infection set into his spine. But he did live. His condition grew worse, but he lived. When four years had passed every joint in his back was locked solid. A cane a foot a foot long balanced him when he tried, now and then, to walk a few steps--so grotesquely was his spinal column deformed.

That deformation extended to his spirit. The doctors had saved his life but they could not cure him. There was no money to pay for that; medical attention is expensive, and the few dollars wrenched from the stubborn Michigan soil came hard and dear. And he could do nothing to help pay his way.

The living of an idle, useless life with his mother and stepfather seemed unendurable. When they moved to a farm some distance from their former home he had them put him in a cabin where he could be alone and out of sight. There he could avoid visitors whose pitying glances he abhorred. "I was young; I could not endure pity," he said.

In that cabin Henry Luoma found seclusion. No one came there except his mother when she brought his meals and his stepfather when he carried over the firewood. Summer and winter he was alone. "I was down to one hundred and eight pounds. I wanted to die."

Yet he lived on, eating, sleeping, reading. His back pained a great deal. Often he could neither read nor sleep because of the pain. On one such day the realization came to him that he had been living this way for five years, five lost, useless years. Was he to go on like this, accomplishing nothing, waiting for the end that never came? The thought aroused in him an overpowering horror, and he resolved that somehow he would find something worth while to do.

A friend had given his mother a collection of magazines for him to read. One was a copy of *QST*, the amateur radio magazine. He had glanced through it once and then put it aside as too technical. Now it caught his eye again, and as it did his resolve took form. "I would become an amateur radio operator," he said.

He had never asked his mother for money but now he asked her for a dollar. It was for a copy of the amateurs' *Handbook*, as advertised in the magazine. The handbook was supposed to give him a thorough start in radio fundamentals. "It did," he said.

After two months of intensive study he was ready for his license examination. It was a terrifying ordeal, one that took almost more courage than he possessed. He had not been outside his cabin in over a year, and the examining point was fifty miles away. "I was loathe to meet my examiner," he said. "But I found him very friendly and helpful."

So helpful, in fact, that the inspector gave Henry a defunct radio set from which he could salvage parts for use in his station. That was his first experience with the friendliness of the radio fraternity. It warmed him, yet even when his license arrived a few weeks later he was still apathetic. It all seemed so hopeless. "But I built my station and went on the air," he said.

His first transmitter was a one-tube affair using ordinary broadcast parts cut down to fit. His two-tube receiver was a haywire affair but it worked. These he had contrived almost wholly from the inspector's broken-down set; his only purchases had been a secondhand pair of headphones that cost him fifty cents, a pair of dry cells and two "B" batteries. The single antenna, used for both receiving and transmitting, was made up of odd bits of copper wire his stepfather had found for him pieced together.

FInally this hodgepodge of gear was all connected together, and Henry made his first call. Then--*mirable dictu!*-- the station he called came back; nore than that, the operator commented warmly on his sending!

"I was so flustered I had to sign off with him," he said. "My yell carried to the house, and my mother hurried over to see what was wrong with me. I told her my set worked and tried to show her, but my hand shook so I couldn't send coherently on the key, nor could I for the rest of that day."

That short chat with a man four hundred miles away broke his apathy. After that he was at his transmitter ten hours a day. Gradually his range extended, and soon he had "worked" eighteen states. Daytime was best, he found; at night his "peanut whistle" was drowned by the higher-powered stations. He would set his alarm for three o'clock in the morning when the band was clear and he could roam the land of space at will.

"I talked with doctors and undertakers, schoolboys and professors, laboring men and men of science. Voa the ether waves I met all kinds of people and found it increasingly easy to exchange views on all sorts of topics with them. For one thing, they could not see me. That helped enormously in establishing my self-confidence."

Some of those he talked with struck a common chord, and before long he was holding daily chats with a number of them, on schedule. One was an insurance man of fifty, another a college lad who had installed a station in his dormitory room. There was a high-school teacher, too, and another lad who worked in the iron mines and two commercial operators, one at a broadcasting station and the other on shipboard. There was even a YL, a young lady operator, among those he met on the common ground of the air.

"As we came to know each other better these friends I had never seen began to confide in me, came to me with problems important to them. The college lad asked me if after taken a girl to three dances it was permissible for him to kiss her 'good night' on their fourth date. I told him I saw no reason for her to be offended if he should ask her. Next day he was all afluster. He had asked her, she had hesitated, and he had taken the hesitation for consent. And she hadn't been angry; that was the paen he sang! The insurance man asked me whether I thought his wife would prefer some frivolous thing to a new vacuum cleaner for a birthday present. I prescribed a dozen American Beauty roses to be delivered to her breakfast table and a blank check drawn in favor of a millinery shop. It went over big!"

But Henry encountered other problems over the air that were more serious, even tragic. "They woke me up to the fact that I wasn't the only unfortunate one in the world. I came to see, too, that these distant friends rated me as a man worthy of their confidences, a friend, a human being. It was then I began to see that life still held much for me, that I *wasn't* finished. I began casting around for a means of livelihood. My schooling had been cut short because of economic circumstances which forced me to go to work at the age of fifteen, but I would teach myself to become a writer! I was still ashamed to have people see me, but a writer could work in solitude. So I started the long grind.

"I began a boy's adventure story, a book-length affair; and worked on it day and night. It took me three months to write the thirty thousand words, and when it was finished I searched for some means of getting it typewritten. My young lady friend of the radio told me in one of our chats that she owned a typewriter. I confided to her my ambition and my present need. She offered to help me. Over the radio she kept me apprised as to how the work was progressing. Then at last I received the typewritten script in the mail and examined it. How professional it looked! Surely it

would sell."

But success did not come that easily. Three editors in a row refused Henry's manuscript, and then he had no money for postage to mail it again. However, he earned a few odd dollars in the meantime by servicing the neighborhood radio sets, using the knowledge of radio he had gained while studying for his amateur license.

"I then wrote short stories that didn't cost so much to mail, but these, too, came back," he said. "My plots were good, but the construction was weak, for I knew nothing of the mechanics of story writing--of theme, continuity, characterization. Here the young lady friend helped me again. She secured for me books on grammar, expressive English, short-story writing. I began to find out my mistakes. I wrote stories and rewrote them and, though the editors still frowned on them, I could see that they were a decided improvement on my initial attempts.

"I saw that someday I would be a writer; then why not be a well one--if possible? It was the young lady friend who persuaded me to this point of view. (I had told her, of course, that I was crippled.) I went to a doctor for the first time in four years. He suggested that I see the mining company concerning my injury.

"They were friendliness personified. Of course they would help me. Why hadn't I come to them sooner? They sent me to the best clinic of its kind in the country for a thorough examination. The verdict was one month's treatment at the clinic, six months at my local hospital, and I would again be straight and strong and able to walk freely. I would remain a bit stiff, but----

"No one was happier than my radio friends. More mail than I could possibly answer poured in on me at the hospital, and after my treatments were completed my young lady friend invited me to her home, a famous summer resort, to visit and rest. In the bracing sea air that month stretched to six, and in her company I worked and studied harder than ever before."

With purpose in his mind and plenty of exercise for his body Henry Luoma fast returned to normal. Soon he was able to run and walk again. Then came the day when he sold his first story--and then another, and still another.

Plots buzzed in his head, crowding his pencil for utterance. At last it seemed that his hour of trial and tribulation had reached its end.

And, as far as his spirit was concerned, it had. For never again did he sink into the old hopelessness. A year after he was discharged from the hospital, however, he underwent an appendectomy operation complicated by adhesions. A couple of accidental falls followed, and then he was back on crutches again.

But the new determination in Henry's spirit did not let hom down. He found a job in social-welfare work, a worth-while job at which he could do a full day's work. He sold a few more stories and a poem. "My days were full," he said. "I had my writing and my radio friends to visit me. And I resolved that soon I would make a slight change in a certain YL's name!"

The climax of Henry Luoma's story was reached on OCtober 5, 1940. That day he made the long-awaited change in the name of his young lady friend of the air waves, and Violet Johnson of Isle Royale became Mrs Henry Luoma of Iron River. "Ham radio was the best man, and the wedding bells sounded sweeter to me than a South African pounding through like a ton of bricks!"

Occupational therapy, perhaps, a social worker would call it. But to Henry the radio hobby hobby has a far greater meaning than that. "I haven't had a gripe with the world since I got into ham

radio," he said. "It gave me confidence in myself, made me forget that I am bunged up and a little worse for wear and brought me the sweetest wife in the world.

"I haven't succeeded yet as some measure success--and yet I think in a way I have. For I have won health and friendship and I can see new hope in the future."

Health, friendship, new hope for the future--these are bounties that many a handicapped person has found through amateur radio. It is more satisfying to the handicapped than most hobbies because it affors human contacts otherwise denied. There are hundreds of invalid or crippled hams--so many, in fact, that at one time there was a separate Chair Warmers' Club with several hundred members in all parts of the world.

Each of these has his own story to tell, a story of struggle and accomplishment as interesting and impressive, perhaps, as that of Henry Luoma. Each of these stories is living, vibrant evidence that amateur radio is indeed "all things to all men." To Henry Luoma it was courage and the will to live. To a paralyzed Michigan amateur it meant having the use of his legs restored as the result of a friendship made over the air with an Indianapolis surgeon.

Until the time of his accident Howard Hatzenbuhler had been the successful and active owner of a thriving plumbing business in Mount Clemens, Mich. An ardent sportsman, he piloted his own plane on deer-hunting trips and enjoyed ice boating.

Then one day he fell thirty feet from a scaffold. He suffered a broken back which resulted in paralysis, and it seemed he might never walk again. But, with three children dependent on him, he could not give up and he continued to operate his plumbing business from his bed.

There were long, empty hours, however, and Howard took up radio as a hobby. Lying there in his bed, the invalid ham made contacts, and friends, all over the United States. Seldom did they realize that he was an invalid. In fact, he had talked for months with the Hoosier surgeon before his condition was ever discussed.

But once the doctor became interested in the case things began to happen. The Michigan amateur found himself shipped like an article of baggage on a cot in the baggage car to Indianapolis. His surgeon friend met him at the hospital, and the sequence of examinations and operations that was ultimately to restore to him the use of his legs began.

Jimmy Mohn is another Chair Warmer who, like Henry Luoma, owes his wife to amateur radio. Jimmy Mohn is blind but he sees the world every night when he spins the dial of his receiver from city to city, visiting his friends of the air.

"I found my wife over the ether," he will say, laughing with the great good humor for which he is noted among the fraternity. "We got acquainted over the short waves, and, do you know," he slyly adds, "it wasn't long until the wedding!"

Chair Warmers aren' the only hams who court by radio however. In fact, there are dozens of romances recorded in log books all over the country. Sometimes the girl is herself a licensed operator; at other times she may be the sister or a casual girl friend of a fellow amateur sending a lilting voice tripping along the air waves to some receptive ear. Correspondence--an exchange of photographs--perhaps a meeting at a hamfest or radio-club meeting--and the deed is done!

At times the chain of events becomes twisted, as is illustrated by the unfortunate experience of Edwin Williams. Edwin had his best girl stolen from him by his pal of the ether lanes, nearly four

thousand miles away!

Edwin was the typical radio "bug," always a bit shy with girls--with all girls, that is, except one: Eleanor Wolf from nearby Ormsby Street in the little Michigan city where they lived. Their eventual engagement seemed tacitly agreed--at least, so the story goes.

But then Fate stepped in. Cecil White of Leicester, England, a radio pal of Edwin's, suggested that they exchange the names of girls they knew with whom the other might correspond. He gave Williams the name of Rose Wilkinson, a vivacious brunette, the belle of Leicester town.

Edwin wanted to please his friend but, try as he might, he could think of only one girl he might suggest. Hesitantly, he gave White the name of Eleanor Wolf.

Well, to make a long story short, Miss Wolf and White first exchanged correspondence, then photographs and finally mutual vows of undying affection. The following year the Englishman came to this country to make the little American girl his bride.

Edwin Williams? He went back to his only true and faithful love, amateur radio.

All in all, amateur radio has proved a worthy assistant to young Dan Cupid, and usually there is a private moonbeam over which the romances of radio can whisper their secrets.

Even after the need for moonbeams has passed and a new bottle for the baby comes ahead of a new "bottle" for the transmitter amateur radio serves to build a stronger and more understanding partnership. Probably the majority of the two thousand or more active feminine operators are XYLs (ex-YLs) or YFs (wives).

Someone once observed, "A ham's wife either refuses to have anything to do with her husband's hobby and thereby classifies herself as a 'radio widow' or she shares his hobby and becomes a part of it."

Probably more radio wives belong in the first classification than in the second. They have difficulty seeing any value in radio as a hobby. But sometimes they change their minds, as did Mrs Edmund R. Fraser of West Haven, Conn.

A baby girl was born to Mrs Fraser at Grace Hospital in New Haven not long ago. Simultaneously, the two older Fraser children, Edmund, aged six, and Edna, seven, came down with the chicken pox at home.

The family doctor felt that the chicken pox and the newborn baby would not get along well together and to make sure that they were kept apart he quarantined the Fraser home. In consequence Mr and Mrs Fraser were unable to talk over all the things that had happened or even to see each other after the baby was born. Mrs Fraser was very unhappy about it all.

But her unhappiness changed to delight the following day when Paul Munzner, a family friend and also a radio ham, appeared in Grace Hospital's fourth-floor maternity pavilion with a portable transceiver. With this outfit which combined both transmitter and receiver in one compact unit she could talk as long as she liked to her husband similarly equipped and seated in his parked car below her window.

Mrs Fraser had been a bit skeptical about this radio hobby of her husband's until then but when her husband's voice came winging up from the street below she was converted into an enthusiast.

Such courtesy and willingness to help as Paul Munzner displayed are characteristic of the amateur wherever he is found. One afternoon a Chicago amateur went on the air with an urgent call for Beverly Hills, Calif. His wife's parents were gravely ill, and she was anxious to secure more detailed information concerning their condition than could readily be obtained by telegraph or even telephone.

Two stations answered the call, W6QUT and W6LIP. Both participated in the subsequent contact in which for nearly an hour the worried daughter was in direct personal touch with her parents and the hospital staff.

The fact that W6QUT happened to be Freeman Gosden (the "Amos" of "Amos 'n' Andy") and that W6LIP was the well-known actor, George P. Huntley, Jr. was only incidentally important to all concerned. What was important was that a couple of good hams had done a fellow ham a good turn.

Politics does not represent an issue within the hobby, since all recent administrations have been uniformly favorable toward amateur radio and hams generally avoid political discussions on the air.

There are exceptions however. One was a University of Washington student who was so energetic a supporter of President Roosevelt during a recent presidential campaign that he could not refrain from stumping for him over the air.

One of his contacts was with station W6ZH whose operator gave his location as Palo Alto, Calif. The New Deal supporter rushed through the customary greetings and began his argument. He did not get very far, however, before his listener broke in and suggested:

"You'd better look my call up in the amateurs' Call Book."

The student did. He found it listed under the name of Herbert Hoover, Jr.

The one thing that all amateurs have in common is a state of mind, a kindred curiosity in the field of physical science, a fraternity of spirit that leads them into a common aptitude for radio and a common liking for the contacts and activity that amateur radio affords.

Not that they all do the same things in the same way. Amateur radio is a highly diversified hobby--that is the reason why it is described as "all things to all men." The tinkerers, for example, experiment endlessly with their gadgets, building them up complete to the last screw and soldered joint and then tearing them down again, digging forever into the "why" of things. The rag chewers get together and talk everything under the sun; the ham bands are full of confirmed addicts of the conversational art.

The DXers, on the other hand, compete with each other in working distant stations. The topnotchers belong to the DX Century Club, a select group having verified contacts with a hundred or more countries. DXing is actually a glorified form of fishing; it takes endless patience and skill but to the true "fisherman" it has a zest nothing else in the world can equal. Every day of the week, every season of the year, there are ham Izaak Waltons fishing in the ether trying to get a nibble from a distant corner of the world.

Once each year they meet in the "Olympic Games" of radio, the annual International DX Competition, a hotly fought struggle in which for a week or eight days some thousands of amateurs in a hundred or more countries put everything they've got.

Once each year they met, that is, until the outbreak of war in 1939. Then most European stations

in the theatre of war ceased operating, and United States amateurs voluntarily forsook contacts with belligerant countries in the interest of American neutrality.

But even in the 1938 contest the ominous note of impending war could be heard if one were listening. The competition, held in March, was just nearing its end when the thud of marching feet resounded throughout the world as the German army crossed the Austrian border to incorporate Austria into the Reich.

The amateur operators, concentrating on their annual marathon, were at first only vaguely aware of the world-rocking events going on outside their ears. World news was no more than a conversational murmur intruded in the background of whispering, whistling DX by their wives and mothers along with the coffee and sandwiches.

No more, that is, until the coincidental significance of the news of Austria's disintegration and the continued pouring out of crisp, clean-cut operating labeled with the call OE3AH became apparent.

For every DXer knew that OE3AH was the station of His Royal Highness, the Archduke Anton of Hapsburg, first cousin of of Archduke Otto, pretender to the Hapsburg throne, and husband of the Princess Ileana of Rumania.

While the nation crumbled about his ears and the Austrian Nazis, long enemies of the ancient house of Hapsburg and the monarchist movement, scrambled into power Anton sat at his station in Schloss Sonnberg calmly adding points to an already weighty contest score!

That was about all that was known at first--that OE3AH had worked right on through almost to the end of the contest, apparently oblivious to the historic events occurring around him. Then rumors and fragmentary reports began to seep through. A week after the contest ended a London *Exchange Telegraph* dispatch from Budapest reported that Anton had been imprisoned in an Austrian Nazi concentration camp.

"The arrest and imprisonment of Archduke Anton followed discovery of a secret radio station in his Sonnberg Castle near Hollabrun," according to the International News Service version of the dispatch. Another Budapest dispatch reported that it was rumored in Vienna that ANton had been "taken into protective custody in his own interest."

If true these reports meant that, other than the Archduke Josef Ferdinand, Anton was the only member of the Hapsburg house molested by the Nazi regime. Even his wife, the Princess Ileana, was reported to have been allowed to leave the country for an exiles' refuge at Merano, Italy.

The reports meant further that it was his amateur operation, his insistence on participation in the DX contest until the closing minute, sticking to his key until his very safety was threatened just to add a few more entries to his log, that had cost the archduke his liberty, if indeed he was in custody.

What precipitated the reported arrest was not made clear. Perhaps constabulary forces had invaded the Schloss Sonnberg on a routine checkup, only to find this "secret radio station" in full operation. Their attitude toward an explanation of an international amateur DX contest can be imagined! Or perhaps, it was hinted, Austria's ruling Nazis seized upon Anton's long-pursued hobby of amateur experimentation as an excuse to strike at the house of Hapsburg.

In a month or two further reports began to trickle through, rumors that the provisional arrest had been terminated, that Anton was now allowed the freedom of his own estate. Finally there came

the first word from the archduke himself, a carbon copy of his original contest log constituting his report. This was dated nearly a month after the contest ended, on April fifth; it was received in the United States two weeks later. Although the state of Austria had been dissolved as a separate entity the bold signature to the sworn statement still read: "Anton Hapsburg, Archduke of Austria"!

When these reports were published in the United States they brought a prompt response from the Nazi counterpropaganda agencies. In a letter mailed from Berlin following a conference between the archduke and officials of the German propaganda ministry Anton denied that he had ever been arrested.

"A few days before the 1938 contest," he wrote, "I had been at Merano in Italy with my wife, the Archduchess Ileana, princess of Rumania, pay a visit to my mother-in-law, the Queen Marie. I returned alone to begin the contest and started to QSO U.S.A. and Canada. Day after day I only pressed the key and added scores to my log. On the night of Friday, the eleventh, I was told by a telephone call of the great event and therefore I immediately listened at the wireless to get the last news. I interrupted the contest, having worked seventy-nine hours, and I spent that night listening on the long waves. On Saturday, the twelfth, I had to drive with my car to Vienna, about forty miles from here, to fetch my wife who was arriving by train from Merano where I had left her. The train arrived normally, and after we returned home and after a night's rest from the many sleepless nights of the contest I began to operate my station on Sunday morning, the thirteenth, on until the end of the contest, making still 101 QSOs and so completing the ninety hours. I ask you, would this have been possible if there had been any intention of arresting me?

"Soon afterwards," he continued, "foreign newspapers published untrue reports about my imprisionment, and I was not able entirely to stop those invented stories. To convince even my relations that I was a free man was sometimes difficult, and therefore I drove with my car again to Italy with my wife, passing the frontier in less than three minutes, without having been stopped a single time during the journey. It was funny to hear during my drive on the motorcar's receiver from a station about my arrest and so on. . . ."

Anton concluded by saying that the Austrian amateur organization was being re-established under German direction, with himself as leader. But this letter was the last word heard from the Archduke Anton or his organization by his American friends of the air.

Kings and presidents, champions of sport and stars of stage and screen, leaders of industry and men of affairs--all have felt the compelling lure of the radio hobby.

The president of a Central American republic found relaxation and pleasure in his anonymous contacts over the air. The late King Ghazi of Iraq had one of the most elaborate short-wave installations known. Prince Abd el Moneim, cousing of the king of Egypt, and Prince Vinh-San of Annam, exiled by the French on lonely Reunion Island, were constantly active prior to the outbreak of war.

A royal hobby, indeed, but one practiced just as readily by a drugstore soda jerker or a suburban housewife as by a prince.

Perhaps the most impressive indication of the appeal of the radio hobby is the fact that it is a "postman's holiday" to so many people commercially engaged in the radio business.

In the radio art even the professionals are amateurs. A survey made some years ago showed that of ten thousand amateurs classified no less than fifteen hundred were engaged in radio

engineering work. Another survey indicated that perhaps 80 percent of the engineers and operators in radio broadcasting were amateurs--past and present. This applied to many of the executives as well.

Even in the early days of radio amateur and professional were considerably intermingled. There was no clear line of demarcation. Experimenters of all kinds, scientists, college professors, distinguished savants who played with radio as a hobby, electricians with the same idea--all were amateurs in the fundamental sense of the word. Later as some crossed over into professional ranks they retained their amateur spirit.

The late Gugliemo Marconi, generall regarded as the father of radio, was one who continued to refer to himslef as an amateur at heart. He said as much on various occasions, notably late one evening during the Chicago World's Fair in 1933.

It was the last day of the distinguished inventor's visit to the Fair, and the long round of dinners, broadcasts and receptions was at its end. The time was 11 P.M., and everyone in the party was tired. Everyone, too, was hoping that the next event would be the return to the hotel.

But they had not reckoned with Mr Marconi. "I hear there is an amateur station at the Fair," he said. "I want to see it."

Someone suggested that all the buildings had closed an hour before, but the great inventor was insistent. His big Cadillac turned in the narrow street before the Federal building and started slowly down the avenue toward the Travel and Transport building.

The building was not closed. Of all those on the grounds, perhaps, it alone remained open, with a welcome waiting up on the second floor for any wandering ham who might chance by. Up the blue-green-red-yellow escalator the party rode. Turning here and there on the floor above, they finally arrived at the amateur-radio exhibit.

The two operators on duty did not seem to know their distinguished visitor, but with easy informality he introduced himself and proceeded to inspect the equipment carefully. He seemed especially interested in one of the transmitters. Turning to the builder, he said: "That is a very fine piece of workmanship."

The amateur, overcome with pride, could only reply: "But it was built by--by just an amateur."

"Ah," said the illustrious Senatore, smiling, "but I am just an amateur myself."

Most amateurs who enter professional radio, either in the industry or in government service, share Marconi's pride in their original status.

A skeptical naval officer learned this in 1919, shortly after the end of the first World War. His attitude, characteristic of the Navy at that time, was something less than friendly toward the amateurs. Many of the youngsters who dabbled in wireless before the war had better and more efficient equipment than that used by the Navy in those days and time after time they brazenly outperformed the naval radio stations. Occasionally they cause interference, too, because the nonselective government stations did not have tuners that would reject signals on other wave lengths.

This led some to view the hams as the freebooters of the airways, a worthless, irresponsible lot from whom no good could come. The navy captain in question tended to share this view. He was not openly antagonistic but he did believe amateurs should be severely regimented. His opinion

counted for something, too, for he was in command of vital naval-communications work.

At the end of the war Representative Alexander of Missouri introduced into Congress a bill that would have given the Navy absolute control over radio, a government-communications monopoly forbidding private use of the air. Amateurs all over the country who were not in service rose in arms. Their strength was weakened by the fact that many of their numbers were still overseas however. In desperation the A.R.R.L. sent out appeals addressed: "To any member of the family of" every licensed amateur operator on the lists. Aided by the families of those still in service, an avalanche of protest was directed toward Washington, and the bill was defeated.

The naval captain, sitting there in his office in the nerve center of Navy wireless, was severely disappointed and at no pains to conceal the fact. A civilian visitor suggested that the amateurs had displayed commendable ingenuity in organizing the opposition that had killed the bill. But the predjudiced officer saw in this only additional evidence of low cunning and the general social and moral irresponsibility of the hams.

His visitor did not agree. "After all, Captain," he said, "you must admit that the amateurs helped a lot in winning the war."

"Ridiculous," the four-striper snapped. "What earthly reason have you got for saying that?"

"Why, the fact that most of the Navy's radio operators were amateurs," the civilian replied.

"What?" the captain barked. "I don't believe it. Have to look a long time before you'll find an amateur in the Navy."

"Don't you realize that many of your own staff are amateurs?" the visitor argued.

The officer snorted. "Stuff and nonsense!" he scoffed.

Then one of his own aides, a lieutenant who had been listening intently, spoke up, "Sir," said the lieutenant, "I was an amateur before I entered the service."

"Coincidence, that's all," the captain retorted. "Anyway, that's only one."

"I was also an amateur, sir," his other aide, an ensign, said.

"And a lot of the boys in the control room are former amateurs, too," the lieutenant added.

The captain was visibly annoyed. "Go out there and bring in any amateurs you can find!" he ordered scornfully. "If you can find just one amateur bring him up. I want to see him!"

One of the aides obediently left the office. There were thirty operators out in the control room, the finest in the service, each at a control position for one of the big coastal stations forming a part of a vast network linking the scattered ships at sea.

When the aide returned he was followed by twenty-nine--or perhaps it was only twenty-eight--of the thirty crack operators in the control room. The captain's office bulged with the horde of men who crowded in through the single door.

The captain looked at his men and then at his visitor. The old sea dog's face was too well trained to show surprise, but it was a long moment before he spoke.

"Well, boys," he said at last, "if that's the case I guess you've got another supporter. If it hadn't been for you and fellows like you this war might be a long ways from won right now, and if you're hams, why, then I'm for the hams!"
