BUSIGNIES RECEIVES EDISON MEDAL

Dr. Henri Busignies, a Director and Fellow of the Radio Club, has been awarded the Edison Medal of the Institute of Electrical and Electronic Engineers (IEEE) with the citation: *"for technical contributions and leadership in the fields of radar, radio communication and radio navigation."*

The Award is given for a career of meritorious achievements in electrical science, electrical engineering or electrical arts. It consists of a gold medal, a small gold replica, a certificate and $10,000. The medal is to be presented to Dr. Busignies at the Institute's Annual Banquet April 18, 1977, during the Institute's convention and exhibition, ELECTRO, held in New York City at the time.

Dr. Busignies is possibly more than any other man responsible for our present development of radio navigation. In 1926, while still a student, he took out his first patent on an automatic direction finder. During World War II his most dramatic invention, the instant automatic direction finder, called "Huff-Duff.., was a dominant factor in wiping out the German submarine "wolf packs" that were preying on Allied merchant shipping.

For necessary communication with their bases, the subs used a "squirting" system in which messages were taped, then transmitted in a single very brief burst, too short for conventional direction finders to home in on. "Huff-Duff" pointed them out in the first few microseconds of transmission.

After the war, Dr. Busignies worked on instrument landing systems and navigational aids, doing important work on the systems known as ILS, VOR-DME, Tacan and Vortac, which are now used by military and civil aircraft the world over.

ORIENTAL APPROACH TO TRANSPACIFIC TRANSMISSION

By Don de Neuf
Formerly President, Press Wireless
Fellow, Radio Club of America

The use of a unique-facsimile telegraph system to transmit to the United States by HF radio, Japanese and Chinese news dispatches in their original characters from 1956 to about 1970 has not received the attention it deserves.

Transmitting these language in written (phonetic) form does not lend itself to the use of conventional "morse-like" forms. An adequate Chinese vocabulary, for example, requires some 6,000 ideographic characters. A simple character that looks like an inverted English "Y" stands for "man." Another square box-like character stands for "mouth." Small strokes above the box indicate "word" (presumably something by word). To compile a practical telegraphic character code that could be handled by manual telegraph operators to transmit and receive these 6,000-odd characters was virtually impossible.

In the early 1900's, when a few Morse telegraph circuits were established in China, a simple "telegraph dictionary" was devised by Chinese businessmen. Regular Arabic 4-digit number groups were assigned to represent thousands of Chinese characters. The operators and the circuits themselves had no difficulty transmitting, for example, a group like "6537," which might mean "transfer money." The problem was the delay in coding and decoding the message by the originator and the recipient.

Attempts to translate these languages, particularly Japanese, into Roman letters (Romanji) enjoyed some success. [Chinese is almost impossible to transmit in phonetic symbols. A language of no long words, each one has multiple

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meanings. The words pronounced "chang," for example, take up several pages in Mathew's Chinese-English Dictionary.]

The Japanese word for "goodbye" was in Roman letters spelled "sayonara" (which is about the way it would sound to a Western ear). But the system was hampered by its inability to transmit many words exactly with only Roman letter combinations. Translation into English, then back into the original, has been tried, often with weird results, as in once case of the Anglo-American idiom "Out of sight, out of mind." The third time around it came out in English as "invisible idiot!"

Newsmen considered it vital to be able to reproduce, information accurately and completely in the Chinese language newspaper published in San Francisco, and finally adopted the facsimile approach.

The basic tape-facsimile system was based on the so-called "Hell Schreiber" invented in the early 1930's by Dr. Rudolph Hell, for ordinary code transmission. This tape printing system was especially useful on HF radio circuits. The characters were formed through a cylindrical rotating segment commutator type of drum, over which rode a number of contact fingers. Each revolution of the drum was accompanied by finger contacts pressing against the commutator in an arrangement set up by an operators keyboard. This formed long and short pulses to produce alphanumeric characters over one revolution. At the receiving terminal the long and short pulses were impressed on paper tape through a hammer-like solenoid arm forcing the moving tape up against an inked rotating spiral wheel.

The rotation of the sending terminal cylinder and the receiving wheel ran roughly in synchronization through simple mechanical speed governors. If they did go out of sync there was no problem, because the recording was composed of two identical lines of intelligence, one above the other. When the scan speeds varies, the recording merely drifted up or down. When one line of copy began to disappear off the tape, the second one began to appear. Loss of copy was practically impossible. Because of this redundancy factor, a static crash or sharp fade on HF radio circuits often destroyed only part of a letter or figure, which could usually be reconstructed by a reader without much difficulty.

Copy was usually transferred from the "Hell" tape to some other medium. Otherwise the recipient had to pull the tape through his fingers to read it—just like a stock market ticker tape. Press Wireless used this system from New York to its station in Montevideo, Uruguay. An operator, reading the tape pulled automatically in front of him, punched a teletype keyboard directly into the addressee's office.

A Japanese company. Toho Denki (Eastern Electric) developed system that used the same general approach as the Hell for the recording end, but substituted a photoelectric scanner for the fixed-character cylinder commutator used by Hell at the transmitting terminal. The photocell scanning permitted the use of any ideographic language, alphabet or symbols, printed or written by hand. Both the Japanese and the Chinese press used the system extensively to deliver to the HF radio point of reception the ideographs in their original precise form, permitting the Oriental-language newspapers in the United States to reproduce the dispatches exactly.

OBITUARY

Two members and a long-time former member of the Club died recently: Pierre Boucheron (F 1920). Stanley L. Hawkins (M1969) and Wayne Nelson (M 1963, F 1973, L1975).

Of Pierre Boucheron, E.J. Quinby says:

Capt. Pierre H. Boucheron, USN (Ret.) died at his home in Fort Wayne, Indiana on Sept. 28, 1976 after a protracted illness. Born in Paris, France, "Pete" came to the United States in his youth. He started his rise to fame as a Marconi wireless operator aboard Ward Line passenger ships in 1913 and began writing for technical publications. Upon the birth of the Radio Corporation of America, he became manager of its Public Relations department, reporting directly to David Sarnoff, former fellow operator. Upon the acquisition of the Victor Talking Machine Company at Camden, N.J. as the RCA-Victor manufacturing division, he became Manager of Sales Promotion.

His duty at sea during World War I as Ensign in the Naval Reserve aboard the Yacht ALOHA was a preview to his duties in Europe and Africa during World War II with the rank of Captain. In his retirement, he authored the book entitled *How To Enjoy Life After 60.* Those of us whose privilege it was to know him personally realize what an authority he was on the subject.

About Stanley Hawkins, Fred Link says:

The shock of Stan's death had its impact on several affairs of the Fall. Stan had planned participating in the APCO National Conference scheduled for August but health prevented his carrying out this plan. Later, he not only hoped to be at our 67th Annual Banquet in November but had sent for tickets and definitely hoped to be on hand November 19. Fate changed all that as Stan died just prior to the Banquet—and many of us were not even aware of this tragedy at banquet time.

Hawkins, in addition to being a loyal Radio Club member, was a staunch APCO supporter, and in the past few years had been the cornerstone that helped hold together the rather strange organization known as the CCC. ("Confederate Communications Commission") The CCC held its first meeting without Stan January 21 in Ft. Lauderdale and Stan was greatly missed.

Another of the more distinguished of the old-time members of the Club who passed on last year was Wayne M. Nelson, W4AA, of Concord, NC. Holder of the first license issued in the Fourth District since November 1919, he also held a commercial/broadcast First Class operator license, and during his career professionally planned, constructed, managed and owned seven standard broadcast stations in North Carolina. His collection of early wireless equipment and especially radio periodicals, is unsurpassed, and includes one of the very few complete files of *QST*.