CHIEF ENGINEER

Pick-Ups Presents His Composite Picture

Nation-Wide Survey Reveals Average Height, 5 Feet, 10 Inches; Weight, 163; Age, 32; Technical Training, Ability, Rank High

By M. M. BEARD

Back of the elaborate and intricate machinery which turns the wheels of radio broadcasting stands that guardian of the air channels — The Chief Engineer. Over 82 million listeners in this country and millions more in foreign lands reap the benefits of his handiwork yet only a comparative few realize that there is such a person. What of this fellow who spends long days and many weary nights in an isolated transmitter building shooting a barrage of voices and music over the ether?

Although these men shoulder tremendous responsibilities in the radio industry and are called upon time and time again to meet the most dramatic emergencies, they seldom are brought to the public's attention. *Pick-Ups,* therefore, decided to tell their story, material for which has been gleaned from a nationwide survey. One objective of the survey was to draw up a composite picture of the Chief Engineer. To obtain a cross-sectional view of him sounds like a major operation. It was. But it was performed without a twinge in so far as the patient was concerned — for the instruments used were a stack of questionnaires, an adding machine and a lot of gray matter contributed by an expert statistician.

Although the operation proved to be a painless one for the engineers it resulted in a terrific headache for the statistician. Out of the 700 and some odd questionnaires distributed, 293 replies were received. Since a number of men replying are responsible for two, three or more stations, the completed survey represents more than 50 per cent of the chief engineers in the country.

Armed with this mass of information, the statistician set to work to record ages, personal appearance, schooling, marital status and numerous interesting highlights in the lives of these radio experts. Into the adding machine went the various ingredients mentioned. Out of the machine, like the genii of Aladdin's lamp, rose the face and form of the typical Chief Engineer.

Here he is — ladies and gentlemen of the radio audience — a most personable representative for America's great Broadcasting industry. He is 32 years old — he measures five feet ten inches in height — weighs 163½ pounds. Brown hair and blue eyes predominate. Our color chart lists 216 brown heads, 33 blonds, 26 black haired chiefs, 7 sandy heads, 3 auburn, 2 red heads and 7 distinguished gray heads. Blue eyes lead the race with a total of 132. Brown eyes, numbering 102, take second place. Coming up in the rear are 40 gray eyes, 10 hazel, 8 green and one lone black eyed engineer. Our typical chief is married and has one child. Bundling the offsprings into the adding machine en masse the statistician found that they number 258. On the basis of those who reported the sex of their children 53 per cent are boys. One chief offered the information that he is the proud granddaddy of two.

Our chief has spent six years at his present station and four and one half years as head of the engineering staff. And a typical American he is, as only seven out of 293 were foreign born. Travel has colored his background and broadened the scope of his knowledge for he has visited 19 states and three foreign countries.

Evidently it is ability rather than age

←— To portray the Chief Engineer of American Broadcasting, "Pick-Ups" commissioned the eminent artist S. J. Woolf, who rendered the sketch on the opposite page after making a critical study of more than 100 photographs of Chief Engineers and a statistical report covering approximately 300 Chiefs. Mr. Woolf has probably interviewed — sketched more world celebrities than any other living person. His great insight into human character gives him the rare dual ability to portray people in both words and charcoal.

According to "Who's Who," his work has hung in most important galleries here and abroad. For years he has sketched and interviewed the world's notables for the "New York Times" and "Time Magazine" has commissioned him to do many of its covers.

"Pick-Ups" is proud to present Mr. Woolf's charcoal conception of The Chief Engineer of American Broadcasting.

AMERICA'S CHIEF ENGINEER

SKETCHED BY S. J. WOOLF

that tips the scales in the broadcasting business as the youngest chief, out in Texas, is a mere fledgling of 19 summers while the oldest, in Missouri, will shortly celebrate his 75th birthday. Ages listed range this way — 130 between 20 and 30; 138 between 30 and 40; 20 between 40 and 50; two between 50 and 60 and two over the 60 mark.

Retracing their steps through the days of reading, writing and arithmetic, it was discovered that 278 completed high school — 93 received college degrees, 65 had from one to three years of college training, 185 took supplementary courses in radio engineering. The survey shows a grand total of 261 out of 293 with either college or supplementary education. These amazing figures would indicate that broadcasting engineers as a class have reached a decidedly higher level of education than the average technical employee or for that matter than the average business executive in the United States. For many of the engineers, education has meant more than burning the midnight oil — it has meant working at almost any old trade to earn an education. According to the survey 136 worked their way through high school or college — 46 worked part of the time during school years.

On a few questionnaires there appeared a rather wistful note indicating that the writers regretted not having had a more thorough technical training. Says one chief, "When visiting technical schools and watching some of the young men at their various experimental procedures, it occured to me that if these future engineers could realize how important these facts are which the instructors are trying to drive into their heads, they would give their schooling more serious thought instead of rushing through as if education were a necessary evil in their lives."

The comparative few who were denied higher education have certainly proved that this handicap can be overcome. One man in particular who never had a day of high school training has climbed to top rank in his profession. Today he is known among radio experts throughout the country as an outstanding authority on broadcasting technique.

What some of these men have lacked in so-called formal education they have acquired in that well attended Hall of Learning — Amateur Radio. One hundred and seven of our chiefs-on-parade were hams. And very tender hams they were, having succumbed to the deadly bite of the bug at an early age. Our Typical Chief started experimenting with his tubes and wires about the time he first donned long pants. More than a few were tinkering around radio sets at eight, nine and ten years of age.

The survey discloses one young ham who got his start at four. Another chap explains his early interest in radio this way, "I've been interested in things electrical from the day I took out my first library card and found a book on electricity. I bought a 500 mile two slider tuner with crystal detector and have been at it ever since." Still another contracted the fever when he read a copy of Hugo Gernsback's "How to Build Wireless Receiving Sets." "I built one," he writes, "and I've never been cured." One young man "just hung around the transmitter at a college radio station doing odd jobs until they took me on." And here's a chief who blames it all on heredity — says he, "I come from a family of Radio Nuts." But most of these men were drawn to radio because of its mystery and fascination. They just can't help themselves — it's in their blood.

Although the majority have spent most of their time at broadcasting or in some kindred work, many sampled various jobs in alien fields. In the ranks are ex-teachers, bank clerks, bus greasers, airport mechanics, medical students, truck drivers, factory workers, type setters, druggists, grocery clerks, prospectors, janitors.

As a class they have wandered far over the face of the globe — 47 having sailed the seven seas pounding brass as ships' operators. Our most travelled chief chalks up the record of 47 states and 25 foreign countries. Close at his heels are many of his colleagues, missing the high mark by one or two states and countries.

the ARTIST says

"Give us your impression of America's Chief Engineer," PICK-UPS *asked S. J. Woolf, world famous artist who drew his conception of the engineer. Here's what he says after examining more than 100 photographs.*

Before drawing this portrait of my conception of a typical radio engineer, I studied the photographs of over 100 men engaged in this profession. The most salient characteristic of all of them seemed to me to be a seriousness of purpose. They all looked as if they realized the importance of their jobs and were doing their best to fill them.

As a class they are not handsome men, on the other hand they looked like strong ones — strong in the mental sense of the word. Appearances are often misleading, moreover I am not sure that a college education leaves any impress upon the physical make up, nevertheless I should say that the majority of these engineers have gained much of their general knowledge through self instruction.

To get down to more definite details, most of them seemed to be in their early thirties, more of them had light eyes than dark ones and few of them were bald. Not many appeared to be heavy and many had athletic figures.

It is difficult, if not impossible, to combine all the looks and qualities of many varied men in one portrait. Accordingly all I could do was to try to express the impression produced upon me by all of the pictures. I have tried to show a serious young man, eager for advancement, possessing a studious nature and who finds both enjoyment and contentment in his chosen profession.

S. J. WOOLF.

a GRAPHOLOGIST says

PICK-UPS *submitted many handwriting specimens of Chief Engineers to one of the country's leading handwriting experts. "Tell us what the owners of these hands are like," we asked him. Here is his report.*

For the purpose of a broad survey, all persons may be classed under two main types, the "Intuitive" and the "Logical."

The Intuitive type is impulsive and often full of ideas but they invariably judge by first impressions and are incapable of extended study of any one subject. They are guessers and often critical. They take things as they come and rely upon themselves to overcome any difficulty if it can not be side-stepped. Such persons are generally popular and good mixers, making friends easily.

Of the specimens of the handwritings submitted I find that less than 11 per cent are of the Intuitive type. This type is easily recognized—the letters are chopped apart (printing out an answer has no significance except a desire for clarity).

The Logical type includes all who think out the problem — reason by cause and effect — and plan their moves. Lawyers and research workers are of this type.

Of the specimens submitted I find almost 90 per cent are of the Logical type. They can take the ideas of the Intuitive type and by dissection and logic produce results or give reasons for rejection.

Ninety five per cent show perseverance and the power of decision. Five per cent react to their surroundings and are likely to be discouraged when conditions are not congenial — for example when the superiors lack appreciation. They might hesitate even when they are morally sure that they are right. One noticeable feature in the specimens is the evident wish to state facts and in a manner which cannot be misunderstood.

Practically all writings show good animal spirits. They probably eat and play with the same vigor as they perform their professional duties. The sentimental type is conspicuous by its absence.

And what strange and exciting tales these travelers can spin as they keep watch at transmitters during long tedious night hours! Adventure still dogs their footsteps for one never knows what dramatic emergency may tumble upon their broad shoulders.

Here's a chap who worked inside a burning transmitter building trying to save the equipment until he was forced to dive through a window a few minutes before the roof caved in. They piped the show through the local time sharing station and lost only 40 minutes on the air.

Another tells of spending 80 hours in the Pennsylvania mountains using short wave equipment in an attempt to locate a lost child. Antennas had to be sent up with kites and balloons to get a signal out of the mountain area.

A third describes the handling of a shortwave plane job off Barnegat Light Ship when the dirigible "Akron" sank. A fourth aided in the capture of a bank bandit as he followed the chase with a mobile unit.

An exciting tale comes from New Hampshire recalling the 1938 flood. It is told by the engineer who spent four days and nights without sleep operating a transmitter with a temporary generator and Fordson tractor. Another thriller from Oregon describes this happening at Coulee Dam — a huge gasoline scoop shovel exploded, throwing burning oil around the engineer who was arranging a microphone for a broadcast of the construction work at the dam.

Yes, any old emergency is apt to happen and here's a unique one. While operating a relay station from a Japanese rancher's barn, a 60 mile gale took the roof off and sailed it down the hill like a kite. Then came the rains. By piling bales of hay around and over the transmitter the engineer kept the station on the air.

One man broadcasting the approach of a cyclone from the top of a 100 foot tower saw a passenger train lifted from its tracks and completely wrecked. The cyclone missed the transmitter house by a close margin. Pinch-hitting for an announcer who got buck fever had its thrills for the engineer who interviewed four steel workers atop a 440 foot antenna. The five men stood on a narrow platform passing the mike around. Hi — those were dizzy moments!

Flood waters may submerge stations, hurricanes tear down antennas, sleet cripple wires, lightning shatter transmitters but it's all in the day's work for a chief engineer. It is his job to get his signal back on the air and back he gets it in record time.

So much for emergencies. But what about the ordinary problems which accompany any job? Here's the biggest headache of them all, say our engineers in unison — SELLING THE MANAGEMENT THE NEED FOR NEW AND UP-TO-DATE EQUIPMENT. This is where technical and non-technical minds clash. The chief engineer follows new developments like a hawk. Sensing the keen competition among stations to win the public's patronage, he realizes that you can't perform miracles with an old, out-dated "rig." He knows that quality programs without quality transmission do not amount to a hill of beans. Therefore, he is constantly striving to improve the quality and range of his signal — while the management is inclined to keep its eye steadily focused on programs, sponsors and the budget.

Second on the problem list is rebuilding old equipment and trying to make it work like new.

These men growl too, about night work — but who can blame them for that! One chap has difficulty in convincing his wife that staying at the transmitter in the wee sma' hours is really necessary. Other problems are: meeting FCC regulations — keeping within the budget — trouble shooting — climbing

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Chief Engineer

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towers — keeping a semi-technical boss happy though frustrated — pleasing the program department — being a diplomat — and strange as it may sound — keeping busy. (Can this be a Western Electric equipped station?)

Now for the sunny side of the picture. Designing and installing new equipment brings the keenest enjoyment, as does working with new equipment. These chiefs are on top of the world when the station receives good reports from the FCC or when sponsors compliment them on smooth operation. A few gluttons for punishment actually enjoy trouble shooting. Underneath their joking and nonchalance, these men take their jobs very seriously and detive the greatest satisfaction in the thought that they are serving the public.

While the work is extremely confining and although when off the job they invatiably remain on call, they find time for a varied assortment of hobbies — some riding two, three or more. Yet even in such moments of relaxation the old bug hangs on, for 138 go in for ham radio. Next popular on the hobby list is photogtaphy with 81 clicking cameras. Then there ate 33 fishermen, 26 huntsmen, 16 golfers, 7 amateut movie enthusiasts. Othets go in for philosophy, psychology, minerology, chemistry, physics, meteorology. And astronomy has turned four of our chiefs into star gazers. The collecting instinct bobs up in the form of stamps, old weapons, match covers, clocks, pipes, trade magazines and Indian telics. Sport lovers seek diversion in boating, baseball, skiing, tennis, bowling, ping-pong, atchery. In the tanks too ate railway, airplane and boat modellers — metal and wood workers. One man raises dogs, another guinea pigs and a third chickens. An engineer in Indiana is trying out different systems for locating oil, gas, lead and spar — he's been experimenting five years. Another has just completed building a 17 foot cabin cruiser. And there's a chief who reads in five languages.

Relaxation, too, comes to these men "when and if" vacation rolls around (according to many replies, vacations are uncertain quantities). The wanderlust creeps into their veins at such times. Ninety five spend these precious interludes traveling. A runner up in popularity is fishing with 41 seeking mountain streams, lakes and the deep sea. Radio still rears its intrusive head — enticing 25 chiefs to drop in at vatious broadcasting stations and have a look at the other fellow's equipment. Others find their fun camping, farming, flying, swimming, boating and golfing.

Unfortunately, choice of a vacation does not always rest in their hands — time, money and sometimes wives being the determining factots. But they build their air castles and dream of the following ideal holidays: A far-away place with no alarm clocks, no telephones, no radio (this Utopia is going to be an over-crowded resort if wishes come true) — sleep and more sleep — big game hunt in Alaska — two weeks at Bell Telephone Laboratories with free admittance to all departments (we'll have to stretch the Laboratories to get them all in) — a horse, a pack outfit and lots of time — a visit to every broadcasting station in the country — time for experimenting. And travel, how they long for it! By freighter, trailer, car, steamer, plane they would seek new places, new faces, new adventure. Europe, The Tropics, Florida, Alaska, West Coast, East Coast, The New York World's Fair, Treasure Island, South Sea Isles are on their itineraries.

Calling them back from these phantom voyages, *Pick-Ups* asked them — "What do you consider the most worthwhile development in broadcasting during the past ten years?" Their votes run this way: Stabilized Feedback—44; 110A Amplifier—39; Vertical Radiator—34; Doherty Circuit—27; Modern Mictophones—26; Modern Tubes—20; Cyrstal Control —18; Class B Modulation—18; Directional Antenna —12; 100 pet cent Modulation—11; Facsimile—8; Network Broadcasts—7; Shunt Excited Antenna —5; Television—5; Automatic Volume Control—3; Coaxial Antenna—3; Armsttong Frequency Modulation—2; Concentric Transmission Lines—2; 500 KW Power—1.

What a landslide vote this is for Bell Telephone Laboratories and Western Electric! Check them off and see how many of these developments came from the Laboratories and were first introduced by Westetn Electric. With the possible exception of two developments mentioned, this winning pair has a cleat cut case of being the papa, or of having contributed most to the commercial application of these developments.

Looking ahead to the futute of broadcasting, our chiefs predict the following advancements: Single Band Transmission; Chain Broadcasting of Television using Broadcast Band simultaneously; Binaural System; Radiating systems confined to angles below 5 degrees from the Horizon; Precision Frequency Control without Quartz Crystal or Temperature Controlled Circuits; High Fidelity Tubes large enough to develop 5 megowatts power; Electric Energy by Radio; Television in Color; Broadcasting Odors; Polyphase Transmission; Antenna System which will radiate ground waves only; Two Channels on One Carrier; Long Distance Concentric Lines and a 1000 watt transmitter for $1000.

Some of the men answered the question on future developments with — "Ask Bell Labs — they ought to know."

Back from the future into the past again the survey took them, asking "If you had your life to live over would you be a radio engineer?" What a foolish question *that* was! In chorus, almost unanimously, they answer "Yes."

And so we leave our chiefs, tending their signals backstage in broadcasting's big show — chained with chains of their own forging to the great love of their lives, "Radio."