

## "A Short Autobiography"

by

by **T. Townsend Brown**

### Childhood:

When only 8 or 10 years old - I would walk around my neighborhood carrying a large umbrella (wired) listening to "Humoresque" which was being played in my home on Victrola and broadcast. I was able to pick up the music one block from his home. There were few records to be had in those early days.

I built a workshop in my backyard. It was a clubhouse - a meeting place for my friends and playmates where I arranged many innovations to surprise his friends. I rigged up the light so when I opened the door and said "light on," the light would come on!! I also put a large hook in the ceiling - pulley and rope attached to the hook. I made a chair and put little Wilbur Smith in it, and proceeded to hoist him to the ceiling. The only trouble here was for the hook, which broke and down came little Wilbur!

At the beginning and during the first World War, an officer of the Post Office came to call on me at home and requested that I remove the antenna I had on top of my home. It was known that I was able to receive the call signal NAVEN Germany, the call signal being POZ. I was able to pick it up regularly on the radio I had built. The authorities were afraid I was also able to send messages. At this same time I had built a searchlight (made from a lard can) and would flash the light thru the sky - neighbors reported it to the police, and I had to cease and desist!!

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### Dr. Lee DeForest - Inventor of the Radio-Telephone and Vacuum Tubes:

After Dr. DeForest had built his first vacuum tube - I was using on my radio a crystal detector, which was incidentally, the forerunner of the transistor. I used galena material instead of silicon, although I did have a silicon detector, because I found the galena to be better. I felt intuitively that DeForest's vacuum tube would be better. So I bought from a New York source on Park Place a DeForest audion and used it successfully. One advantage of the DeForest vacuum tube, which the galena could not do, was to transmit as well as receive. So I became interested in obtaining a DeForest Vacuum tube.

On a trip to New York with my mother, and while at the hotel, I got the idea of talking with DeForest about using the tube as a transistor which, no doubt, he had already considered. I found his name in the telephone book and called the number. The phone was answered by someone, perhaps a servant, and when I asked for Dr. DeForest, was told he was in his bath - was there a message for him? I replied that I wanted to buy one or more tubes to set up a transmitting broadcasting station in Ohio. This would have been one of the 1st, if not the first Broadcasting stations (certainly in Ohio)...DeForest came to the telephone immediately. he said he would supply the tube and gave me a price which, incidentally, was not exhorborant (I was 16 yrs. of age), and I went back to Ohio to make plans for such a station.

It ended up being a Radio Telephone, operated by a DeForest tube. Even with the small (10 watts) amount of energy, I got a postcard that I was heard in California. Then every Sat. nite we had an orchestra called "Green Imps." We broadcasted beyond 10 pm., usually until 11 pm. Dennison University turned off the lights at 10 pm when the University generator was turned off, so I devised an emergency Delco System that carried the broadcast to 11 pm. The call signal of our station was WJD. There was not a great surge at that time for building broadcasting stations - the next ones to us, to my knowledge, were WJZ of New York and KDKA of Pittsburgh.

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### Cal Tech:

At Cal Tech I failed in Chemistry and Physics! My other grades were good. Reason I failed - I disagreed with the policies of the Institution limiting time spent on experiments in the laboratory. As soon as I'd get my experiment set up, the bell would ring and I would have to disassemble everything. I never could finish an experiment. That's when I became determined to have the lab at home, where I could take my time and do the kind of job I felt should be done. At this point my father agreed. He went with me downtown Los Angeles to the Braun Corp. and made arrangements with them to outfit a laboratory equivalent to what I had at Cal Tech - installed in a large room on the 2nd floor of our house at 805 Arden Road, Pasadena, Ca. the expense must have been substantial. During this period I was tutored in Chemistry at the house by Arnold Beckman, 23 years old, an Assistant in the Chemistry Dept. at Cal Tech. An interesting side-light in this connection, was our motorcycle accident. It had been raining and California Street (asphalt) was slippery. Beckman occupied the Buddy seat. We were not going fast, but we skidded nevertheless. We both sat on the hot exhaust pipe which made quite an impression on our memory. In a subsequent letter from Arnold Beckman - after he became famous and head of the giant Beckman Industries, he recalled the incident with considerable amusement. During this period I not only made considerable progress in Chemistry, but in Physics devised an X-ray spectrometer for astronomical measurements - specifically the Sun - and began to cultivate the thesis that a radiation (other than light) prevailed in the Universe, independent of our Solar System. I felt that this radiation could be gravitation. Such a theory called for gravitation being a "push" and not a "pull." This seemed logical in that Nature abhors a vacuum. A mechanism for the transmission of gravitation theoretically was needed.

Word of this got out among my classmates and although shunned and made fun of by the Professors, was nevertheless called to the attention of Dr. Robert Andrew Milikin, Director of Cal Tech and, incidentally, my first Physics teacher, who explained to me in great detail, why such an explanation of gravitation was utterly impossible and not to be considered. He admonished me to continue my education before I gave any thought to such things.

A few days prior to my conversation with Dr. Milikin - word had leaked out and had come to the attention of the Editors of the L.A. Evening Express and the Pasadena Star News, who proceeded forthwith to write articles about the theory I had expressed. This, inevitably got into the wire services and spread throughout the East, in the New York Times and in my hometown newspaper (Zanesville, Ohio) and that of Dennison University (Granville, Ohio). It did not cause the derision I had by that time expected. The matter appeared to stand on its own merits.

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### U.S. Navy:

As a very young boy, I had always been interested in boats and the Navy. Anything made for the Navy, which bore the name or the insignia of the U.S. Navy was invaluable to me. Everything from a flashlight to a steel-hulled life boat (which I had converted to a cruiser and lived aboard during summers as a boy) seemed to form the focal point of my interest in life.

Finally in September of 1930 I joined the Navy as an apprentice Seaman (the lowest grade), took basic training at the Great Lakes Naval Station in Illinois. My enthusiasm spilled over so that I became Honor recruit and had no difficulty being assigned to the Naval Radio School in San Diego, California, a duty and a type of life that I enjoyed enormously.

On one occasion in talking with the Chaplain, I mentioned that I had given up my laboratory in Ohio in which I had been conducting private research for years, to join the Navy....a life long dream. Apparently the Chaplain was impressed, for only a short time elapsed when I was given

orders endorsed by Captain Sinclair Gannon, Commandant of the San Diego base, to report forthwith to the Naval Research Laboratory in Washington, D.C. (instead of being transferred to a ship as would have been customary.

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#### Naval Research Laboratory - Washington, D.C.:

My arrival at N.R.L. was a happy event for me. It combined my two interests in life...the Navy and scientific research. I was welcomed at the Naval Lab by the Commandant, Captain Almy, who I learned later, was glad to see the Navy represented in the establishment which was almost entirely civilian. He treated me as a Jr. Physicist and not as an Apprentice Seaman, which, of course, I was at the time.

Commander Almy asked that I spend whatever time that it took to get acquainted with the N.R.L. and its civilian personnel, virtually all of whom were Ph.D.'s.

In due course I selected the Heat and Light Division under Dr. Edwin Hulbert. My reason for doing so stemmed from my interest in radiation, especially cosmic radiation, which was Dr. Hulbert's specialty. My life at the laboratory from that point on was euphorous. I wore the standard white lab coat, had my own room with name on the door, carried on experiments and continued experiments I had started in Zanesville, Ohio, years before. Experiments were conducted which seemed to prove the concept of Gravitation which I had hypothesized at Cal Tech in 1923.

Equipment was built and all manner of tests were conducted. But, as the history of science always seems to show, the results were controversial, even with Dr. Hulbert and his assistant Dr. Ross Gunn. (who remarked at one point that "Browns' work wasn't worth the powder to blow it up!" I never quite knew the reason for his opinion.)

The following year the laboratory was visited by a distinguished scientist from the Netherlands who was interested in gravitation. (Dr. Vening F. Meinesz) Dr. Meinesz, along with the Geology Department of Princeton University, was interested in carrying on and performing a gravity survey of the South Atlantic for the value it had in geophysics and theories relating to the origins of the Earth.

It had already been arranged that a U.S. submarine would be assigned to his project for whatever length would be required. These orders were endorsed by Admiral Ghardi of the Navy Department and sailing was scheduled within two weeks with a submarine crew especially selected for the long, arduous and presumably dangerous assignment. (Interesting to note here that Hyman Rickover....now the celebrated retired Admiral of nuclear fame, was a member of the submarine crew.)

The submarine rescue vessel U.S.S. Chewink was designated to accompany the submarine wherever it went to be on hand to assist in rescue operations if such were needed. Unfortunately, it was recognized, however, that most of the anticipated (years quota) dives the submarine was scheduled to make were in the deepest part of the Atlantic. Depths up to 4 1/4 miles (4,862 fathoms) were in water far too deep for any rescue operation whatever to be effective.

Nevertheless the "Chewink" followed its orders.

Dr. Meinesz came to the Naval Research Laboratory to obtain an assistant for the trip. The invitation was published on the bulletin board. There were no takers. At this point, Commandant Almy stepped into the picture and nominated me. Needless to say, I was delighted at the opportunity, not only to go on a history making expedition with World renown, but to be a seagoing sailor at last.

Submarine life, as it turned out was not exactly a bed of roses. Although in my case most of the hardship of extended dives, several times a day, was largely overlooked. The simple enthusiasm as I look back on it now, stemmed from my love of the Navy and my interest in what we were doing.

We were measuring Gravity!! This could only have been done where the pendulums were vigorously steady and their periods accurate. This meant that it could not be done on a surface ship - but only in a submarine, well below the level of the ground swell. Most dives, therefore, when measurements were made at a depth closely approaching the crushing depth of the submarine (water pressure increases at the rate of 1/2 lb. per foot of depth and is exerted thru the entire hull of the submarine. There were several instances in this trip where, due to automatic valves out of control, the computed crushing depth was exceeded. These dangers made such an impression on Capt. Benehoff that he ordered the submarine into the Navy Yard at Key West to effect repairs.

The laborious statistics "Isostatic Compensation" and other technical details were prepared jointly by Dr. Meinesz and myself and others which were published by the Hydrographic Office of the Navy and forms a valuable addition to the Geophysics of this part of the Earth's surface. Upon returning to the N.R.L. I devoted most of my time to the computations included in the above book and little additional time was available to continue my chosen field of Gravitation radiation. This work was, to some extent, picked up by Dr. H. G. Maris who helped design recorders which were manufactured by the Navy to assist in my "Sidereal" radiation project.

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#### Johnson-Smithsonian Expedition:

Early the next year following the submarine trip with Dr. Meinesz, I was selected to join the Smithsonian as physicist for the upcoming Smithsonian Deep Sea Expedition. This work was sponsored by the Institute to collect, sequester and catalog the missing portions of the marine (crustacean) life of the West Indies. It was endowed by a grant from Eldridge Reeves Johnson (Founder of Victor Talking Machine Co.) to use his palatial Yacht "Caroline" and a crew of 65 men for the duration of the Expedition.

I served as physicist specializing in the depths of the ocean and the location of rift zones in the water throughout the West Indies. This work required a great part of the year 1934 and, again, was included in the Annals of the Smithsonian.

The experience was as social as it was scientific. Eldridge Johnson himself together with his son Fenimore, were aboard, as was the former Vice-President of Victor Company, Leon F. Douglas of Menlo Park, Calif. And the long and arduous (almost continuous deep sea sounding, I was assisted by Fenimore Johnson and the two daughters of Douglas - Ena and Florence who seemed to be more than happy to serve some useful purpose that would be of value to the Expedition. It is to be noted that life aboard the Caroline was luxurious beyond belief - 8 staterooms and baths, a library, main dining room (5 stewards to attend), completely laundry and radio room, drawing room with fireplace and an after deck almost large enough to play tennis. The ship was 285 ft. long and considered to be the second largest yacht in America. The J.P. Morgan Yacht "Cosair" was 1 ft. longer.

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#### Degaussing Cable:

While I was assigned to Section Acoustic and Magnetic Mine Sweeping in the Navy - the need arose for protection against magnetic mines which were being planted by Germans. Some way was needed to sweep mines from the channel, and this required exploding them where they were

to be rid of them. To do this job one way was placing a huge coil on a barge and passing current thru the coil to produce a magnetic field which spread to the bottom of the estuary, river Thames. The trouble was, when blowing up the mine, it was invariably under the barge and blew up the barge and coil - there seemed to be no way to create a field (magnetic) and outsmart the Germans.

Someone suggested that if we would trail a wire behind a boat, which, of course, was called a mine sweeper, and put current in that wire of several hundred amperes, that it would do the job. But, the wire being heavier than water, it would sink to the bottom and become ineffective. A way had to be found to keep the wire at the surface. Plastic floats were tried, only when the mine was detonated it blew up all the floats and the wire sank to the bottom. That is when I got the idea of putting floats inside the wire. Like sausages - wire wrapped around sausages at a net density of about 9.8 and therefore, the cable floated on water of density 1. So the cable floated. It was 3 1/2" inches diameter and conducted 300 amperes, which was more than enough to blow up the mines. When the mines blew up, the cable was merely tossed into the air and did not damage it.

I took out a patent on this idea, which was immediately classified, but I heard nothing more. I understand it is in use today. It is accepted as the best method of minesweeping on modern minesweepers due to clear mine fields.

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#### U.S. Navy - Trip to Europe on U.S. Nashville (Maiden Voyage):

Chamberlain was trying to stop Hitler - visited Stockholm, Sweden, Goteberg, Germany on U.S. Nashville on her maiden voyage. We listened to gun-fire of Germans at practice, getting ready for World War II. We were exposed to the German Navy while we were in the Baltic sea, but no incidents occurred. We then went to Portsmouth, England. Of course, it was while we were there that the pending war became so hot we were told to leave for safety's sake, in dead of night - which we did. Before we left they loaded 50 million dollars worth of gold aboard. It was gold brought from London (Bank of England) and it arrived at ship side in 3 garbage trucks - no escort, motorcycles or convoy. We had it carried aboard and placed in the magazines of the ship. It was in ingots encased in wooden boxes. Each gold nugget in wooden box with numbers boldly stamped on each box. Each box worth 1/4 million and weighed so much it was all one man could do to carry it. One man was at the foot of gangway making entries in large ledger as it was unloaded from the trucks - a check-off-list - and another man with a similar ledger at the head of the elevator/conveyor which lowered the gold into the magazines. These two ledgers had to check. This gold was consigned to the Chase Manhattan Bank in New York.

We had barely returned from leave in London when we were on full alert and ordered to set sail immediately. Out in the Atlantic, South of Iceland, we ran into the tail of a hurricane up from the West Indies - with mountainous seas. The forward deck of the ship was 10 ft. underwater between waves!! The officers amused themselves by saying that this might be the "Golden Gallion" never to be discovered in water so deep, let alone salvaged.

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#### Lockheed:

I was assigned to the Advanced Project Division at Lockheed, at the time when P-38's were being manufactured - they were having trouble because it made a high-pitched "scream" as it flew, plus a lot of other problems due to the vibrating of the fuselage. Ways were sought to eliminate these problems, and I came up with the idea of a vibration damper upon which a patent was drawn up by Lockheed's attorney. Since I was an employee it was patented and assigned to

Lockheed. Shortly after that, the "screaming" stopped and the vibration of the fuselage was eliminated. I was not part of the application of the patent and knew nothing of the steps they took to apply the patent.