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The Editor is always responsible for the opinions expressed in the editorial columns, and the Managing Editor for the matter which appears in the news columns.

Although communications may be published unsigned if so requested, the name of the writer must in every case be submitted to the editor. **THE TECH** assumes no responsibility, however, for the facts as stated nor for opinions expressed.

IN CHARGE THIS ISSUE

Harrison D. Folinsbee, Jr. '22 Willard B. Purinton '22

WEDNESDAY, JUNE 25, 1919

SHALL WE DEBAR FRESHMEN?

THE Alumni Advisory Council is confronted with the question of whether or not freshmen should be allowed to compete in Intercollegiate Athletics. It is highly desirable to get the general opinion of the student body, particularly those interested and active in athletics.

Among the many New England Colleges it is the tendency either to debar freshmen entirely or for the first half year. Among the colleges having the freshman ruling are Yale, Harvard, and Dartmouth. Amherst, Wesleyan and Williams debar freshmen the half year.

In this respect Technology does not rank among the leaders, for we have held back with those schools which enter freshmen without restraint.

The primary object of this rule is to eliminate the subsidized athlete. Such a rule together with one requiring one year's residence for men transferring from college before they are entitled to compete would do so.

Those who have advocated placing freshmen in intercollegiate competitions assume that no man comes to Technology primarily for athletic considerations. There is, therefore, no need of such a ruling according to them. It would also tend to lower the varsity standing.

Temporarily the varsity standing would be lowered, but we believe that in the long run it would do athletics at the Institute more good. There would be an immediate rise in the standing of freshman athletics, larger interest in first year sports, and the development of large freshman teams of high calibre for future use.

The real aim of athletics at Technology is to develop as many men as possible and create interest in sports, rather than train a limited number of intercollegiate champions.

In regard to this question as well as on all other matters of general student interest **THE TECH** welcomes communications from its readers.

THE TECH takes pleasure in announcing the following elections: To be News Editor, Eugene L. Harlin '20; To the News Staff, Charles G. Ball '22, Willard B. Purinton '22, and James D. Sarros '22.

To the Editorial Staff, Hazen C. Pratt '20, John D. Rockefeller '20, and Leonard J. Siff '22.

To be Assistant Circulation Manager, Wesley G. Thompson '22.

In the absence of Milton A. Loucks '19, Oswald Cammann '19 has been appointed Acting Treasurer.

COMMUNICATION

June 23, 1919.

To the Editor of **THE TECH**:
The workroom of the M. I. T. War Service Auxiliary is most anxious to find some one going abroad one who will take a final trunk to Mr. Gibbs at the Technology Bureau of the Union. Mr. Gibbs has written recently for a few supplies and trunks and this will be the last request he will have to make. Hence the workroom is anxious to respond promptly. I shall be most grateful for any publicity you can give this notice and glad to confer with any one who is able to help me in the matter.
(Signed) Mrs. Robert T. Bigelow.
Treasurer Technology Workroom.

WAR DEVELOPS RADIO PHONE FOR AIRPLANES

Famous Aviator Explains Many Sensations Accompanying Use Of Latest Adaptation of Wireless Telephony

WORK IS DONE OVER 10 MILES

One of the wonderful developments in connection with the war was the perfecting of the wireless telephone for use as a means of oral communication between airplanes in flight or with someone on the ground and miles away at the time. This invention, like the airplane itself, is wholly American—the fruit of the work conducted by a notable body of telephone engineers connected with the Bell System under John J. Carty and Col. F. B. Jewett, chief engineer of the Western Electric Company.

This device is simply a development of the wireless telephone which astonished the world a few years ago when oral communication was had between Arlington, Va., and Paris and other distant points, and when at a notable dinner Pres. T. N. Vail, of the Bell Company, spoke with Mr. Carty who was thousands of miles away.

Among the first of the aviators to use this new airplane wireless was Lieut. James C. Fair, commandant of cadets at Ebbetts Field in Arkansas, although most of the experimental work was done at Langley Field, Va. Lieut. Fair, before he entered the flying service, was collection manager of the Metropolitan District of the New England Telephone & Telegraph Company, and he has resumed that position.

Sound of Voice in Ear

"The first thing that strikes you when you hear the sound of a voice in your ear while you are flying at a speed of 100 miles an hour and 6000 feet in the air is the uncanniness of the thing," said Lieut. Fair to the writer. "There is something impersonal about the sound of the voice, too, that impresses you as strange. What I mean is that you miss that intimate, personal quality in the voice that you get in the regular telephone."

"But that is not to be wondered at. The wonder is that the thing can be done at all, and done so simply. For you must bear in mind that the roar of the engine and propeller of a flying machine going 100 miles an hour is something awful. Yet the sound waves of the voice go through that roar and disturbance as if it didn't exist."

"To receive the voice all you have is a rubber helmet in which are the receivers, and this is connected with a switchboard beside you in the machine. The switchboard is connected by wires with a little generator in front of the machine under the center of the chassis and this in turn is connected with a few wire antennae that trail from the machine as it flies. The power for the generator is derived from the little propeller turned rapidly by the rush of air as the machine flies."

"The transmitter is fastened to your chest in front so it is opposite the mouth all the time, and is connected with switchboard, generator and antennae as is the receiver. With this mechanism they talk to each other in the air when they are ten miles apart or with someone on the ground who may be even farther away."

"The man on the ground is equipped in the same way, except that he is connected with a regular generator in a shack somewhere near, and the antennae float away from the roof of the shack. I understand this wireless telephone we used on our flying machines on the Western front mystified the Germans a great deal. Yet we know the Germans had been working on a somewhat similar device, but had not been able to perfect it."

The history of the development of this airplane wireless telephone is rather interesting, for besides the work done by the Bell engineers much credit is due Col. Culver of the United States Army, who was one of the first to see the great advantage that would accrue from a machine by means of which orders could be sent by voice from the

ground to fliers.

His intense interest in the subject and his experiments had much to do with the keen interest taken in the subject by the War Department. However, the basis of the whole thing was in the work done by Carty, Col. Jewett and the other Bell engineers some years ago.

Baker Writes to Vail

The following letter, Dec. 9, 1918, from Sec. of War Newton D. Baker to Theodore N. Vail explains this: "My Dear Mr. Vail—The chief signal officer Gen. Squier has called to my attention the splendid spirit of cooperation and helpfulness which has been evinced during the war by the wonderful engineering organization of the American Telephone and Telegraph Company. The airplane radio telephone set, which has proven so satisfactory to the air service and which has brought about entirely new methods of military use of airplanes, is a particular example of the result of this cooperation. The evolution and development of this and other important apparatus was made possible only because your engineering staff freely furnished the highly technical knowledge and skill necessary in the development, design and manufacture of the sets."

"Please express to your engineers my appreciation of the splendid service rendered."

To this Mr. Vail replied as follows: "Dear Mr. Secretary—For all connected with the Bell System, by which the American Telephone and Telegraph, its associated operating and Western Electric companies are known, please accept our hearty appreciation of your commendatory words."

(TO BE CONTINUED)

INSTITUTE GRADUATES AIDED IN AIR CRISIS (Continued from page 1)

been at a minimum during the decade preceding the war, the faculty of Technology knew for certain that there must be a future reaction, so it kept steadily at its duty of preparing men in naval architecture. The department was costly to maintain and the number of students necessarily small. If it had been in a manufacturing establishment, the superintendent would long ago have reported it as a non-paying part of the plant which ought to be discontinued. Technology looked at it, however, from a different viewpoint and maintained its department of Naval Architecture for the future value that it was sure sooner or later to develop. It continued, therefore, graduating its six or eight marine engineers a year, and it is on these men that has largely rested the burden and responsibility of ship construction in the enormous expansion of the business which the past two years has witnessed.

With precisely the same kind of foresight Technology saw in the future certain need of aerodynamical engineers, men who having been educated in the principles, could undertake the development and construction of airplanes. In the nineties, it established its first wind tunnel, a modest affair in the Mechanical Engineering Laboratory, a conduit two feet square with the possibility of a wind through it of twelve miles an hour. This had been used for experiments with air currents, and in addition, some researches were made with reference to forms of air propellers. It is interesting to note that of the graduates of the Institute of the class of 1912 no less than ten selected for thesis subjects some phase of the aviation problem, two of them engaged at once in professional aeronautical work, while another devoted himself to military aviation. In the group of graduation theses of 1913, two were on aeronautical subjects, with others discussing motors and fuels. This serves to show how early the Institute began to think in terms of aerodynamics.

"It was in March, 1913," said President MacLaurin in this interview "that I had some conversation with the Secretary of the Navy, to discuss whether it might not be practicable to undertake something in the way of the study of aerodynamics by naval officers. Already in compliance with an act of Congress, all naval constructors graduated at Annapolis were detailed to the Institute for finishing studies. Thus it is that all the younger men in this division are former students of Technology and members of its alumni body. The Navy had not up to that time," continued Dr. MacLaurin, "made any suggestions with reference to including aerodynamics in any of the courses, but it seemed to me, and I expressed the idea to the Secretary, that it was time for the Government to be devoting attention to the scientific designing of aircraft. Already the faculty of the Institute had very seriously discussed the question of establishing post-graduate courses in the subject."

At this time there was a young naval constructor Jerome C. Hunsaker, who had been regularly graduated, receiving his M. S. in 1912, and still continuing with special work. At the suggestion of Dr. MacLaurin, Lieutenant Hunsaker was detailed by the Navy to visit the aeronautic centres of instruction and laboratories in Europe, and returning in 1914. Since an airplane is virtually a boat

so far as lines, strains, and propulsion are concerned, the new work was made a part of the department of Naval Architecture under the direction of Professor C. H. Peabody, head of that department. The special instruction was given by three men, Lieut. Hunsaker, whose specialty was air craft design and theory of construction; Professor E. B. Wilson, who taught the mathematical and physical principles involved, and Professor (now Major) J. C. Riley, who was an expert in motors. These three men developed with the war, the first to be in charge of airplane design in the Navy under Admiral Taylor; the second to be a valued advisor of the Council of Defense and the Government, and Major Riley, to important work over seas in the perfecting of motors, in which he is still engaged.

It was this experience with the Institute which was the stepping stone to that complete confidence which later caused the only Naval Detachment School to be established at Cambridge within the Institute walls, where the men received from Technology professors the principles of construction and flight. It was on this firm foundation which Lieutenant Commander Hunsaker built in that work of navy plane construction that has culminated with successful trans-Atlantic flight. The foundation was the clear discernment of President MacLaurin and his associates, which furnished for the right men an elaborate preparation in the principles of aerodynamics, and for this Technology is entitled to full credit.

It is of further interest to know that at the very beginning of the cooperation between the Navy and the Institute the latter equipped an aerodynamical laboratory, fitted with a six-foot wind tunnel and special measuring devices unique in the country, whereby experiments of highest value were carried on. This apparatus, formerly in a little shed on the Cambridge grounds, is now installed in the duPont Laboratory, and in condition to furnish further valuable theoretical results.

One of the remarkable features of the whole story of Technology and airplanes is the number of alumni who have become famous in aeronautical work, exclusive of the fliers, some of whom like Dinsmore Ely '18, Cyril M. Angell '18 gave their lives in battle to the service of their country. Earle L. Ovington '04 and Harry Atwood, '05, are among the pre-war aviators of popular fame; in the Navy, Hunsaker with his students in aerodynamics from Technology; in the army, Henry Seuther '87, who till his death was in the highest place that a civilian could reach, Captains Clark, '08, Harms '15, Jones '16 and Gorrell and Martin '17. Some fifty other graduates of Technology are in the work of constructing airplanes or their materials of fittings, and all of these men were in the group that in the emergency gave their skill and experience for the salvation of their country. Technology may well feel proud of its record.

THE CLIPPER SHIP "LIGHTNING"

Perhaps the most gratifying chapter in the history of the American Merchant Marine was made by the Yankee built clipper ships when they undertook to and succeeded in monopolizing the transatlantic passenger service. These were the days when Salem rivaled Boston as a seaport and a salty tar considered himself highly flattered and very lucky when he recovered from an application of the "shanghai" and found himself starting up into the bewhiskered face of a Maine-made skipper.

The clipper ship was entirely of American development and at that time represented the acme of speed and comfort in ocean going vessels. Mahogany was used lavishly and even the steerage passengers were able to travel in a great deal of comfort. The skipper of the boat was necessarily a well blended combination of Greek god, hotel manager, and consulting general. On one hand he had to control a husky crew with such strength and coolness that there could be no thought of mutiny and on the other he must be at ease in the presence of the members of his table where at various times would be representatives of the gentry of many different countries. Small wonder that the company used as much care in picking its captains as the government did in picking its ambassadors.

Among the clipper ships of that period there was one which established her reputation for all time by raising the speed record to such a height that it remained untouched by either steam or sailing vessel for twenty-five years. The "Lightning" was built in East Boston by Donald McKay and was launched in 1854. She measured 244 feet in length, 44 feet beam, and her height from the deck to the mainmast was 164 feet. Her maiden voyage was to England. She showed her thoroughbred qualities from the start but the real event of the voyage occurred as she was rounding the north of Ireland. With a favorable wind she developed and maintained for twenty-four hours an average speed of eighteen knots an hour. That was sixty-five years ago and at the present day there are not more than thirty liners able to do better.