

LANGLEY MEMORIAL AERONAUTICAL LABORATORY

APRIL 20 DATE FOR "DIPLOMATS' BALL"

Word has been carefully allowed to leak out of Green Cow Headquarters that the Green Cow's second annual Diplomats' Ball will be held Friday night, April 20, 1945 in the Embassy Room of Hampton Armory. The first annual affair scheduled for last year at Buenos Aires was cancelled because the Grand Ballroom at La Palacio Internacionale had been reserved for an indoor gas model contest.

Inasmuch as most full-time professional diplomats are busily preparing for or traveling to the Diplomats' Convention sponsored by Green Cow West Coast subsidiary at San Francisco, LMAL Green Cow members have been asked to attend the affair as honorary representatives of the various branches of the family of nations. Dress for the occasion may consist of anything that will identify the wearer as an ambassador, consul, military attache, envoy, or messenger from any foreign land - France, Turkey, Pago-Pago, Lapland, North Carolina, Afghanistan, etc., etc., etc. Costumes may be as elaborate or as simple as desired - a fez, a turban, a shako or the forehead brand of an untouchable; medals, ribbons or epaulets; wooden shoes, siberian boots or bare feet curved to navigate palm-tree trunks. The rest is left to the imagination of the individual dignitaries with, however, the one stipulation that the nation represented be civilized at least to the extent of a loin cloth or a sarong as the case may be.

Last minute details will be given in next week's Air Scoop.

SOFTBALL CAPTAINS MEET MONDAY NIGHT

Dale Burrows, chairman of the Men's Softball League, announced that a meeting of league captains will be held at the Symes-Eaton Community Center on Monday at 7:45 p.m. It is important that every team be represented.

RECREATION COUNCIL GETS GOING AGAIN

The Laboratory Temporary Recreation Council held its first meeting since August last Thursday to assist in the formulation of plans for the recreation center in the West Area. Pete Korycinski presided and ten council members and Melvin Butler, Tom Hulcher, and George B. Colonna were present.

Colonna reported to the group that the local architectural firm of Williams, Coile, and Pipino had been engaged to design the building. He also announced that work had already been begun on two softball diamonds adjacent to the Impact Basin. It is hoped to have both diamonds available for use by May 1.

Korycinski appointed three committees to coordinate suggestions for the building and grounds and to help formulate plans for a permanent recreation association. Dave Goldenbaum was named chairman of the Aims and Objects Committee with Si Diskin, Art Vogeley, Annie Young, and Bewitt Phillips as members. Diskin heads the Grounds Committee of Phillips, Harry Silver, Young, Tiny Hutton, Irwin Schumacher, and Vogeley. John Houbolt was made chairman of the Building Committee, whose members are Frank Read, Charlie Folk, Shirley Huxter, Hank Fedziuk, Goldenbaum, and Charlie Kelly.

Also at the meeting the council suggested to Laboratory officials that someone be employed as a full-time recreation director as soon as possible.

PLAN SOFTBALL CLINIC FOR GIRLS

Lauretta Muir, Assistant Director of the Hampton Industrial USO, announced that arrangements have been completed for a girls' softball clinic, which will be held Friday, April 27, at 5:30 p.m. Faculty members of the Physical Educational Department of William and Mary College will be here to conduct the clinic which will include a discussion of the current softball rules, plays, techniques, umpiring, and other pertinent subjects. The meeting place will be announced in next week's Air Scoop.

STAFF HELP ASKED TO RECRUIT CLERKS

Laboratory officials are now confronted with an acute shortage of clerical workers due to the fact that service families are being transferred and that a small number of qualified applications are being received from personnel to fill these positions. Invaluable aid has been and is still being received from employees in securing additional personnel; however, officials are asking that the staff lend their aid in obtaining persons for these particular positions.

At the present time, positions are open for clerks, clerk-typists, and clerk-stenographers, and the number of vacancies will increase since the number of separations per day are exceeding appointments.

On several occasions Laboratory officials have called upon the staff to assist in obtaining new recruits and the response has always been cooper-

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HOW TO OBSERVE RETREAT EACH DAY

The ceremony of retreat is observed every afternoon at five o'clock. At that time, all persons in sight of the flag or within hearing of the music should show the proper courtesy to the Stars and Stripes.

Normally a band is present. When this is true, the bugler sounds 'Retreat' prior to the playing of 'The Star Spangled Banner.' If no band is present, the bugler blows 'To The Colors.'

During the sounding of 'Retreat' everyone should stand at attention and during the playing of 'To The Colors' or 'The Star Spangled Banner' civilians should follow a certain procedure of courtesy to the flag.

Male pedestrians who are wearing hats should take off their hats, hold them over their hearts, and face the music. If they are not wearing hats, they should stand at attention and face

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United States
of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 79th CONGRESS, FIRST SESSION

Keeping America First in the Air

EXTENSION OF REMARKS

OF

HON. CLIFTON A. WOODRUM

OF VIRGINIA

IN THE HOUSE OF REPRESENTATIVES

Saturday, March 24, 1945

ADDRESS

BY

MR. JOHN F. VICTORY

SECRETARY OF THE NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

Mr. WOODRUM of Virginia. Mr. Speaker, on Friday, March 23, at noon, before a notable audience, composed of members of the National Press Club, officers and members of the armed services, and Government officials, there was delivered an address which I think will be of great interest to Members of Congress and all others who are interested in aviation and its future. Mr. John F. Victory, secretary of the National Advisory Committee for Aeronautics, was the speaker and his subject Keeping America First in the Air.

It was my great pleasure and privilege to hear this splendid address and I take much satisfaction in knowing that as a member of the Appropriations Committee of the House, I have sponsored for many years appropriations for the National Advisory Committee for Aeronautics, which made possible their achievements. The House Select Committee on Post-War Military Policy, of which I am chairman, has just concluded interesting hearings on scientific research and development in the post-war period. This committee will be interested in Mr. Victory's address. The address follows:

Mr. President, members of the National Press Club, distinguished guests, and friends, the honor of being invited to address this distinguished organization is especially appreciated because to me it evidences your interest in keeping America first in the air. Your curiosity about the work of the National Advisory Committee for Aeronautics (N. A. C. A.), which I have the honor to represent, is encouraging.

The overwhelming influence of German air power during the first year of the war in Europe awakened the American people to the danger of having to pay taxes to the Axis. With the invasion of France and the Low Countries the President sounded the burglar alarm with his call for 100,000 airplanes, and American industry responded with the miracle of aircraft production. No single

measure has had more far-reaching effect in changing the whole course of the war.

Subsequently, in the battle of Britain there was a demonstration of the relative value of superior numbers on the German side, versus superior performance by Britain's aircraft. That test made it clear that the airplanes that America was destined to produce in great quantity must have superior performance. The dollar cost of the aircraft program was alone sufficient to require enormous expansion of the work of the N. A. C. A. in order to assure a sound return upon the investment. But in time of war money loses significance alongside the imperative military requirements for superior airplanes.

Although the Congress, too, can seemingly work miracles in its field, it cannot legislate superior performance into an American airplane. But it can set science to work. It did so, and that is where the N. A. C. A. comes into the picture.

There is no natural law known that today fixes a limit upon either the speed or the size of aircraft. All types of American airplanes in production today, and many foreign types, make use of fundamental design data from the laboratories of the N. A. C. A. Let me emphasize, however, that in the development of America's air power the N. A. C. A. has been only one member of the firm, a silent partner, so to speak, of the military services and of the aircraft industry. The over-all progress is the result of the organized effort of millions of Americans involving many organizations, governmental and private, including not only the military and manufacturing establishments directly concerning with aeronautics, but many supporting agencies and industries. Developments in aeronautics have been extremely rare, for which any single organization or individual, in or out of the Government, deserves all the credit.

The airplane and the tank were introduced in World War I, but it remained for the present war to develop their dominant role. In like manner, we may expect that the new weapons recently introduced in this war may be but the forerunners of a whole new line of weapons that may dominate the future.

Aviation is entering an era of revolutionary change resulting largely from the development of new methods of propulsion. Entirely new fields of research must be explored. The new propulsive systems open up extraordinary high speed possibilities which must be studied and evaluated.

At the close of World War No. 1 the top speed of a typically good pursuit airplane was 135 miles per hour; its ceiling, 22,000 feet; and, its maximum endurance 1 hour and 40 minutes. Scientific research gradually penetrated the veil of the unknown as it existed at the time and made possible in a single generation the remarkable improvements in aircraft performance which are now well-known to you. We are just piercing the veil in the field of gas turbine and jet pro-

pulsion development and can at this time but faintly glimpse the possibilities in the great unknown fields of guided missiles and supersonic aircraft.

Other nations may be succeeding better than we know. Present American developments as yet undisclosed would, alone, change the character of future warfare. It is staggering to contemplate the full potentialities of present reasonable probabilities as they may be developed for the future. Continuous scientific research is the best insurance that America shall not again fall behind. Neglect of research, even for one generation, may jeopardize freedom in the next.

It appears certain that never again will a nation considering aggression give us a year or more to prepare our offensive. We may expect that no nation considering aggression will attack America in the future, or provoke it into war, without having the capacity to hurt us at home, and to do so promptly and in great strength. What with self-propelled rocket bombs, and supersonic aircraft already looming on the horizon, it does not require much imagination to see, in the shape of things to come, no security against sudden attack by new scientific weapons, unless our defense is such as to discourage attack.

The favorable box score in aerial combat in this war, which has averaged upward of 4 to 1 in our favor, is, no doubt, due in large part to the careful selection, and to the fine fighting qualities and superb training and leadership of our airmen, but it also reflects superior performance of American aircraft.

The National Advisory Committee for Aeronautics was established by the Congress 30 years ago "to supervise and direct the scientific study of the problems of flight with a view to their practical solution." It is a committee of 15 appointed by the President and serving as such without compensation. The membership includes General Arnold and General Echols of the Army Air Forces; Vice Admiral Fitch and Rear Admiral Richardson; the heads of the Civil Aeronautics Administration; the Bureau of Standards, the Weather Bureau, and the Smithsonian, and 6 technically qualified experts from private life.

Out of N. A. C. A. research has developed the engineering basis for a rapidly advancing technology. Consequently, America had, when the war started, a healthy nucleus of a strong, competitive aircraft industry. Had it not been so, we might now be studying German and learning how to do business with Hitler.

The country can be grateful to the Congress that had the vision 30 years ago to establish the N. A. C. A. as a separate agency to advance aeronautical science, although that Congress was quite cautious about how it appropriated the taxpayers' money. It started the N. A. C. A. with an appropriation of "\$5,000 a year for 5 years, or so much

thereof as may be necessary." It was not clear whether the phrase "so much thereof as may be necessary" related to the \$5,000 or to the 5 years.

However, from that modest start the N. A. C. A. has, with continued far-sighted support of the Congress, grown to an organization of 6,500 employees, with an annual operating budget of \$26,000,000, and with three major research stations at the Army's Langley Field, Va.; at the Navy's Moffet Field, Calif.; and at the Cleveland Municipal Airport, Cleveland, Ohio.

Experience through two great wars has enabled the N. A. C. A. to blaze new trails in aeronautical research, and to lay the foundation in America for the new science of aeronautics. Under the leadership of able chairmen from Dr. Durand in World War No. 1 to Dr. Hunsaker, present Chairman, and including the illustrious names of Charles D. Walcott, Joseph S. Ames, and Vannevar Bush, the N. A. C. A., with the invaluable assistance of Dr. George W. Lewis as Director of Aeronautical Research, has worked as one with the Army, the Navy, and the industry to gain for America definite leadership in aircraft development.

This first became generally recognized in the late twenties. I recall that in the early thirties there was a meeting in the United States of the Federation Aeronautique Internationale. Discussions by European leaders after visiting the N. A. C. A. laboratories at Langley Field were to the effect that America was at that time 10 years ahead of any other nation in the development of aeronautics. I asked how they measured time. They replied that, if progress were to cease in the United States, and Europe were to continue at its own pace, it would take any European nation 10 years to catch up.

Then came Hitler and the resurgence of German militarism. Setting about quietly at first to build a superior air force, Hitler authorized Goering and Udet to do all things necessary to build for Germany the strongest air force in the world. Did they rush into mass production of airplanes based on 1933 designs? They did not. Realizing that the struggle for supremacy in the air must start in the research laboratory, Germany expanded and multiplied its research facilities until at the time of the pact of Munich in 1938, the German aeronautical research establishment had grown to five times the size of that of the United States. By that time Germany had also built its great air force and was then the strongest power in the air.

The N. A. C. A. had started in 1937 to anticipate the oncoming emergency, and to expand its research facilities. It is most fortunate that these additional facilities were constructed in time to increase the effectiveness of the whole aircraft program in this war. Let us see how that has been done. The problems are too numerous to recount in detail, but I would like to give you a few examples.

The aircraft program required enormous quantities of aviation gasoline and lubricating oil, involving first of all a determination as to the kind of petroleum stocks that could be used to produce high octane gasoline in the quantities needed.

In cooperation with the oil industry's laboratories and with the Army and Navy, the N. A. C. A. was able to bring forth research data upon which decisions were based for the early expansion of the aircraft petroleum industry. The shortage of natural rubber made it necessary quickly to reach decisions as to the petroleum stocks to be used and N. A. C. A. research served as a guide by indicating how different products would perform in an aircraft engine.

The chief tool for aerodynamic research is the wind tunnel, which is, generally speaking, an apparatus or structure for measuring the various characteristics of airplanes under simulated flight conditions.

Tests are made at the throat, or smallest section, of the tunnel where the air velocity is greatest. Throat sizes vary from 4- by 18-inches to 40- by 80-feet, the latter being the largest in the world, and large enough to test a full size airplane. The N. A. C. A. has in operation about 30 wind tunnels used for different purposes; such as, to investigate stability and control; to increase lift and reduce drag of wings; to improve streamlining in general; to develop engine installations; to study propeller efficiencies; to make airplanes controllable when spinning; to prevent ice formation in flight; to improve operating characteristics at high altitudes; and to explore the possibilities and obtain fundamental data in the entirely new field of flight at speeds above the velocity of sound, roughly 750 miles per hour at sea level.

Speed is still the most important single characteristic of an airplane. Through the ages the speed of man's travel has increased slowly up to the time of the conquering of the air. Since then improvement has been rapid. One of the greatest developments in the evolution of the aerodynamic or streamline form has been the N. A. C. A. high-speed wing. This wing makes possible under flight conditions as much reduction in wing drag, or resistance to forward motion, as all previous research had accomplished in this respect since the original Wright airplane first flew in 1903.

The first significant application of the N. A. C. A. high-speed wing was in the P-51 Mustang. That airplane was voted by Europe's outstanding aeronautical experts as the best fighter airplane on either side in the European war. Since Pearl Harbor the N. A. C. A. has investigated, on request of the Army alone, 42 types of bombers, 50 pursuit types, and about 40 miscellaneous types, and a comparable number for the Navy. As an example of what the N. A. C. A. does on a new type of airplane, let me tell you of some other aerodynamic characteristics of the P-51 which are also the product of N. A. C. A. research: Air scoops to provide combustion and cooling air, which greatly reduce the drag of air intake openings as formerly used on airplanes; filleting, that is, the fairing at the junction of the wing and the fuselage; the windshield and canopy shape; N. A. C. A. flush-type rivets; and improved controllability in dives. The N. A. C. A. also provided the basic data for the design of exhaust stacks on the P-51 in order to get additional speed by the use of the exhaust as a form of jet propulsion.

The early versions of the Mustang had a 1,000-horsepower engine. The design of the airplane was such that no fundamental bar to speed increase existed, so that when engines approximately twice the power became available, they were used. The resulting large increase in speed caused serious rumbling and strong vibrations around the radiator scoop. The causes were investigated by the N. A. C. A. in a wind tunnel at 600 miles per hour. By application to the air scoop of the same principles as used in the high-speed wing design, the rumbling and vibration were cured. This simple improvement permitted a full realization of the speed possibilities of the Mustang design.

The basic principles of the N. A. C. A. high-speed wing are gradually coming into general use on American airplanes where high speed is desired. The Bell P-59 Aircomet, the Bell P-63 Kingcobra, the Douglas A-26 Invader, and the Lockheed P-80 Shooting Star are mentioned as a few examples. In the present state of knowledge, it is now regarded as practically a physical requirement that all new high-speed airplanes apply the principle of the N. A. C. A. high-speed wing.

The new Lockheed P-80 Shooting Star jet-propelled airplane recently announced by the Army, the Lockheed Co., and the General Electric Co. was investigated in model form in a wind tunnel at over 500 miles per hour to

determine its high-speed control characteristics and to obtain an estimate of its performance. It was confirmed by those tests that the N. A. C. A. high-speed wing which the Lockheed Co. had chosen would permit the P-80, with its new jet power plant, to fly at a higher speed than any previous airplane. Extensive flight tests were made by the N. A. C. A. flight research staff to correlate the performance data obtained in the wind tunnel and in flight, and to make full-scale load measurements by recording the air pressure on the wings and tail surfaces during various high-speed maneuvers. This information is of exceptional value to designers because it is the first ever obtained at such high flight speeds. The N. A. C. A. test pilot who conducted the flight tests on the P-80 flew, in those tests, faster than any other human being, without, however, bothering to establish an accredited world speed record.

As airplane speeds approach the velocity of sound new problems are encountered because the character of the air flow over the wing, in obedience to natural law, changes abruptly at that speed and causes an important loss of lift and serious increase in drag.

Although the speed of any airplane can be increased through the simple use of more power, this method has serious limitations because constantly enlarging the power plant would increase weight and fuel consumption, and reduce useful load. The major objective of aerodynamic research, therefore, is to increase speed by reducing the drag of the whole structure. The ability steadily to achieve progress in the direction has distinguished aviation from other forms of transportation. For example, to increase the speed of an ocean liner 5 knots would require twice the horsepower. To increase materially the speed of railroad trains would require not only more power, but greatly improved roadbeds and rolling stock. Likewise, to increase materially the speed of automobiles would not only consume more gasoline and tires, and cause more rapid depreciation and more accidents, but would also require improved superhighways.

On the other hand, the onward march of aeronautical science shows increases in speed being attained with increased efficiency. For commercial aircraft this will mean increased speed at less cost per passenger-mile. And the more we learn how to improve the performance of the airplane, the greater and more practicable of accomplishment seems to become the need for further improvement. Of course somewhere in the course of airplane development there will come into the equation some limiting factor of diminishing returns, which will impose a practical limit on speed and size. But, if we judge the future from the past we will, as limits are approached, merely raise our sights a little higher and press for some further scientific development that will permit us to carry on.

As an example, the N. A. C. A. has demonstrated by recent research that flight at supersonic speeds, that is, above the velocity of sound, is possible with new types of power plants, and is conducting further research to make it an actuality.

Despite such development, large increases in drag will still occur at speeds between present flight speeds and supersonic speeds and represent one factor in hindering the immediate development of higher speed airplanes. It is essential that the drag of high-speed airplanes be made as small as possible. This problem is being intensively studied in high-speed wind tunnels and in flight, and considerable progress has already been made in the development of improved configurations not only for wings but also for fuselages, tail surfaces, cowlings, air intakes, windshields, and canopies.

The huge passenger airliners of the future may be powered by gas turbines of 5,000 to 10,000 horsepower per engine, using low-grade

nonvolatile fuel. The gas turbine has many fundamental advantages over the reciprocating engine. It has, for example, fewer moving parts, is considerably lighter in weight and smoother in operation, and its relative efficiency is superior at high altitudes and at high speeds.

The N. A. C. A. is pushing research on the metallurgical and aerodynamic problems involved in the development of light, powerful compressors. Aircraft turbines will also require research to develop materials that will keep their strength at high operating temperatures.

The idea of a gas turbine has been known for 2,000 years and has been used for at least a score of years in other forms of transportation and in stationary power plants. Why has it only recently attracted such attention that it is hailed as the engine of the immediate future for aircraft? One reason is because since 1939 the N. A. C. A. has initiated and sponsored research by others in the development of new alloys having high strength at high temperatures.

German turbine development so far has been accomplished without using such high-temperature alloys, but this has required a complicated system of cooling which would not have been necessary had they the high-temperature alloys that have been developed in America. Another N. A. C. A. contribution was the improvement through research of the efficiency of supercharger compressors from below 70 percent to 85 percent and higher. These improvements enabled us, after a slow start, to gain the lead in this most important field.

The N. A. C. A. initiated steps for the development of jet propulsion in this country. Several years ago the N. A. C. A. formed a special committee on jet propulsion and got three large firms interested in accepting membership; namely, General Electric, Westinghouse, and Allis-Chalmers. As a result, each of these firms developed designs of jet propulsion units, two of which are now in production. The third was more expensive and seemed better adapted for post-war development and, therefore, has not been pushed.

Parallel with that activity, General Arnold saw what the British were doing with the Whittle engine and in conferences with our committee, it was agreed to get an American firm to manufacture the Whittle engine. The General Electric Co. was indicated as the most hopeful organization for that purpose and the Army made a contract with General Electric resulting in the production of the Whittle jet propulsion engine, first used in the Bell P-59 airplane.

Flowing directly from their original interest in the subject, the General Electric Co. went on further and developed the jet propulsion unit, now used in the Lockheed P-80 Shooting Star. In the P-80 we have something fully as good and perhaps superior to either the German or the British.

The P-80 has been studied by the N. A. C. A. to show where modifications could be made or must be made to obtain satisfactory performance at altitudes for both winter conditions and summer conditions.

There is no way to measure the value in war of superior performance of aircraft. It may mean the difference between winning and losing a war. The Battle of Britain in 1940 is a case in point. But the scientific research of the N. A. C. A. has also a tremendous economic value which can be measured in

part in dollars and cents. Take for example the B-29 which has so rudely awakened the Jap leaders from their comfortable dream of world conquest by putting so many of their industries to sleep. That airplane is at present the great white hope of the Army Air Forces in the long-range bombing of Japan, although the Army has three new bombers coming along which are expected to be more powerful and capable than the B-29. They are the Consolidated B-32, virtually a parallel project to the B-29; the Northrop B-35, and the Consolidated B-36, which is larger than the B-29. The American people are putting into the B-29 program alone several billion dollars. Now what is the end product of that great expenditure? Transportation of bombs for long distances. Recent N. A. C. A. research indicates a possible fuel saving which could very materially increase the return upon that investment either in terms of dollars and cents, conservation of material resources, or by making more bombings sooner, to shorten the war. And that research cost only a few thousand dollars.

I could give you another interesting example of research as applied to the B-29. That airplane was designed for a certain gross load. Military necessity required that it carry a greater load. As a result, the engines had to produce more power, which resulted in their overheating. This in turn shortened their service life and sometimes caused failure in flight, and endangered the airplane and crew. N. A. C. A. research showed where the overheating was critical and pointed to a partial remedy which is being applied and is resulting in greater safety in operation and considerable lengthening of the service life of B-29's.

One of the most serious hazards to flying is ice formation. The N. A. C. A. exhaust heat deicing system for the prevention of ice formation on aircraft is being applied on several types of military aircraft now in production and has permitted safe flight in weather conditions which otherwise would have grounded airplanes. It is one of the greatest contributions to the safety of flying ever made.

In time of war the N. A. C. A. operates as a research and engineering facility of the Army and Navy. Its work is the most fundamental activity of the Government in connection with the development of aircraft and its relations with the military services and with the aircraft manufacturing industry are constant and intimate. It is this teamwork that has made possible the great development of America's air power in this war. The results of N. A. C. A. research will continue to be reflected in the steady improvement in the speed, range, carrying capacity, stability, controllability, maneuverability, ceiling, and rate of climb, and, in short, in the general military effectiveness of America's aircraft.

One of the outstanding lessons the present war teaches is that the problem of insuring America's future security is inseparable from the problem of keeping America first in the air.

N. A. C. A. research on military problems will be largely applicable to commercial and private aircraft after the war, with this significant distinction: In military aircraft superior performance must be achieved, if at all possible, even at the expense of lowered safety and economy. In the development of civil and commercial aircraft the research

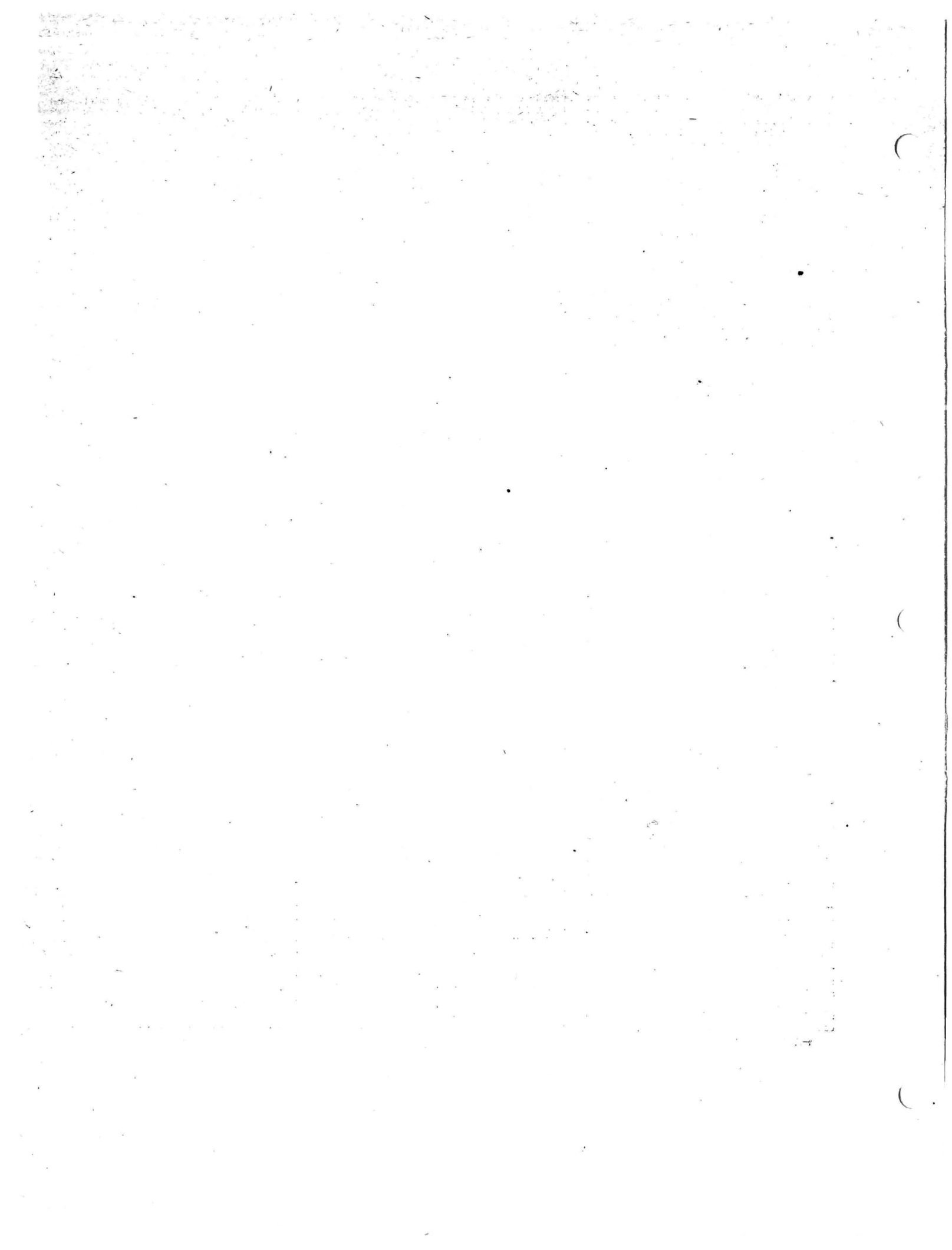
emphasis must be primarily on safety and economy of operation.

Following the war the world will enter the aerial age about which men have dreamed. Air transportation to all parts of the world will shrink time and distance and bring the peoples of the earth closer together in forceful emphasis on the fact that we all live in one world. Underwriting America's future in the aerial age, and underwriting America's investment in such future preparedness in the air as will effectively preclude attack, is its liberal support of research in aeronautics. America's aeronautical research policy is thus, in the military sense, an insurance policy on the very life of the Nation, and in the commercial sense it is a sound investment assuring America a position in the forefront of progressive nations when the progress of civilization is resumed after the war.

There is one unique wind tunnel I would like to speak about. The N. A. C. A. altitude wind tunnel has just recently been placed in operation at the Cleveland laboratory. That extremely important equipment has been the most difficult project ever attempted in the realm of aeronautical research anywhere in the world. In an air stream 20 feet in diameter, flowing 500 miles per hour, there are maintained altitude conditions of temperature and density existing at elevations up to 50,000 feet, i. e., about 67° below zero (Fahrenheit) and a pressure about one-ninth of that at sea level. And this despite the fact that the power output of the engine under test and the energy of an 18,000-horsepower motor to create the wind must be absorbed as heat by the rarefied air stream while the temperature is kept to 67 below. The N. A. C. A. altitude wind tunnel is the only place on the surface of the earth where the performance of jet-propulsion engines can be investigated under altitude conditions. Without it many months and the running of dangerous trials would be needed to obtain flight data that can be obtained with ease and safety in the altitude wind tunnel in a very short time. It should give America a definite advantage in the development of jet-propulsion airplanes.

Whereas a year ago only a few types of airplanes in all the warring nations could attain a speed in level flight of 400 miles per hour, the United States, England, and Germany now have airplanes in the 500 mile-an-hour range. Now N. A. C. A. scientists, and no doubt those of other nations as well, are preparing to enter the entirely new field of aerodynamic problems involving flight of aircraft and of guided missiles at speeds above the velocity of sound. In order to explore these possibilities the National Advisory Committee for Aeronautics is actually constructing new supersonic wind tunnels having airspeeds much faster than the speed of sound, ranging up to the neighborhood of 2,000 miles per hour.

N. A. C. A.'s John Stack, chief of the Langley laboratory's compressibility research division, and recognized authority on high-speed problems, indicated in the last annual Wright brothers lecture the possibility within a few years of aircraft traveling westward at clock-stopping speeds. This would mean a speed at our latitude equaling the earth's speed of rotation on its axis and giving the effect of keeping the sun in a fixed position, or, in other words, regular air transportation leaving Washington, say, at 12 noon and arriving at San Francisco at 12 noon the same day!



Temporarily Out of Service

by Mike Favia

Robert (Bob) Mathes enlisted in the Signal Corps in May 1942 and one month later he was shipped to India as a radio repairman with a Signal Company attached to the 10th Air Force. At the time of his transfer to the NACA, Mathes held a Technical Sergeant's rating. At present he works in the East Area Telephone Exchange.

Bob Mathes' recital of his stay in India was so interesting that I'm sure the readers will enjoy his version of it more than a secondhand write-up.

I spent thirty months overseas out of my first thirty-one months in the Army at various stations in India. A G. I. in India has many gripes but probably the one I'd stress would be the climate. The weather is usually hot or hotter. There are three main seasons in place of our four. The winter is pleasant and dry. This is followed by very hot dry weather. Following this is the hot damp period of the monsoon.

Once back in "Shangri La" where Indian weather is only a memory instead of a plague, many interesting things are recalled.

The bearer system is quite common in India among the American soldiers. For about thirty rupees (\$10.00) a month the full-time services of a native bearer can be secured. In our company one bearer usually cared for six or eight men and the men paid him themselves. It is well worth \$1.50 per month to sleep a little later each morning and still avoid the Top Kick's wrath over disorderly barracks or tents.

The bearer airs the bedding, polishes shoes, sweeps the floor, has the bed well made according to individual taste or the C. O.'s orders, as the situation may require. In addition, he runs errands, sews on buttons and is a general "handy man." If he doesn't speak English, he usually understands enough so that a few Hindustani words with much gesticulating and pantomime will make him understand the wishes of his "Sahibs."

The G. I. in India doesn't mind KP at all. In most cases this work is done by natives. American soldiers don't have much time for sightseeing but can make good use of that time in India for it is the circus on a grand scale.

I was fortunate enough to be in a tiger hunting party. For this purpose a Maharaja loaned us four large ele-



phants. I enjoyed riding them and marveled at their agility in fording streams and climbing banks almost as the actual shooting at game.

Within a couple miles of our camp at the side of a stream we sighted tigers, wild boars and many deer. In grass higher than an elephant's back most of the game is gone before a good shot can be made. The elephants move along with a sort of shuffling and cracking sound as they plow through grass and brush.

All information is conveyed by signs and the air is quite tense. When a tiger is sighted, most anything can happen. The elephants mill around and a wounded tiger is a pretty tough and dangerous cat. A few tigers were killed at this camp but trophies are hard to bring back. The heat will cause hides to spoil rapidly and tanning facilities are pretty hard for a G. I. to secure.

India has many natural and man-made wonders. The wealth of its 380,000,000 inhabitants is held by a very few. These few have built some things well worth seeing. The most widely known is the Taj Mahal. I visited this and marveled at its marble screens and the intricate designs upon its marble walls made of inlaid semiprecious stones. The Taj in the moonlight is a picture not easily forgotten. To visit the Taj in shoes is forbidden. This is true of all Mosques. We didn't go barefooted, however, as the enterprising Indian has turned this into a profitable situation. For four annas a pair of cloth slippers can be rented and worn over the shoes.

A visit to Darjeeling was among my privileges. This is the resort from which tourists look at the everlasting snow of Kinchinjunga, the second highest peak in the world. From Tiger Hill a short distance away, Mt. Everest can be seen in clear weather. The climate here is very fine during the hot season.

The snow-covered Himalayas on one side and the profusion of sub-tropical vegetation on their slopes as they drop from Darjeeling to the hot dusty plains is a picture that must be seen to be fully appreciated. The population in



by Mart Norman

Attention women drivers - our cause is not lost. According to squadron leader A. M. Ruston of the British Air Commission who visited the Lab last week, the women of the States stand very little teasing from men drivers as compared to the women who drive in England. Wonder if the English law of driving on the left side of the road could have been passed just for the women. Squadron Leader M. Lawson-Smith and E. J. Gregson, both of the British Air Commission, were here at the same time and heartily agreed with Squadron Leader Ruston's comment.

Edward R. Sharp, Manager of AERL, and Abe Silverstein visited the Lab for several days this week. Those of you who have been around for a period of time will remember Abe as the former Section Head at Full-Scale. E. H. Chamberlin of the Washington Office was also here with Sharp and Silverstein. The three men stayed together at the Oak Point Camp near Yorktown. Quote, "Better than any hotel accommodations and more fun, too." End quote.

It was good to see Private Coleman Donaldson, formerly of LMAL, now of the USAAF, around the Lab this week. Also welcome was his almost new wife, Barbara.

Private C. W. Weger, who worked with ALD, stopped at the Lab on his way to spend a 15 day furlough up north. He joined the Air Corps after resigning here in March 1944, and is now working in the base weather station at Spence Field, Georgia.

WANTED: Licensed A & E mechanic to do part time work on J-2 cub. S. R. Alexander, 19-Foot Tunnel or call Hampton 6651.

that vicinity is quite interesting also. A few Tibetans and Chinese mixed with the Nepalese and other Indians made a picturesque scene, especially in places where white people shop in very nice stores.

Souvenirs of carved ivory, sandal wood, ebony, brass and cloth account for a lot of G. I. dollars. Star sapphires and other jewelry are very popular items.

The native costumes and customs and the sights in Delhi, Calcutta and Bombay as well as other towns give the G. I. stationed 'somewhere in India' plenty of material for writing interesting letters home.

ALL-STARS TACKLE 19-FOOT APRIL 29

The new softball season will have its official opening Sunday, April 29, at the Darling Stadium, when the Air Scoop All Stars meet the 19-Foot Tunnel, Champions of last years league.

The champs will field practically the same team that won the playoff last year, according to Pat Cancro, captain and shortstop. The All-Stars will be minus the services of Paul Marchal, captain and shortfielder, Johnny Gradle, first baseman, and Claude Hart, third baseman, who have left the Laboratory.

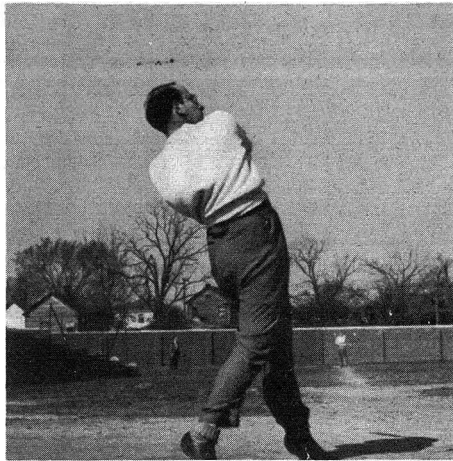
Complete plans have not been made as yet, but it is expected to have a large crowd on hand for the game and to have several Laboratory officials participate in the time honored spectacle of throwing out the first ball.

HOLD CLASS FOR SCOREKEEPERS

An instruction class for scorekeepers in the Men's Softball League will be held at 7:45 p.m., April 26, at the Symes-Eaton Community Center. George Zender, Structures, will be the instructor.

The purpose of the class is to familiarize scorers with the method of scoring and to teach them how to score correctly for the league games.

Zender requested that all team captains who have not furnished him with the names of two scorekeepers do so as soon as possible, as it is advisable to have them all on hand for the class.



No, kids, it's not the male version of Joan McCracken; it's just Marvin Pitkin displaying mid-season pop-up form at the Stability softball practice session last Sunday. Pitkin, who piloted last year's Batbusters to undisputed possession of last place said, "So what; suppose I can't bat so good? You ought to see me in the field, there I'm really lousy."

(Photo by Everett)

LAB PHOTOGS MAY EXHIBIT LOCALLY

A photographic exhibit will be held at the Newport News Public Library beginning April 23. It is open to all except professional photographers. Prints should be mounted on 16 x 20-inch white cardboard and must be submitted to the library by Friday, April 20. Fifty of the best will be selected for display but no more than four prints from any individual will be shown.

LOCAL NINE SEEKS LABORATORY TALENT

A semi-pro baseball team is being organized in Hampton to play Sunday ball on the diamond at the Veterans' Facility at Kecoughtan. Games will be played with service teams and other semi-pro and amateur teams in the area for the entertainment of veterans stationed at the hospital.

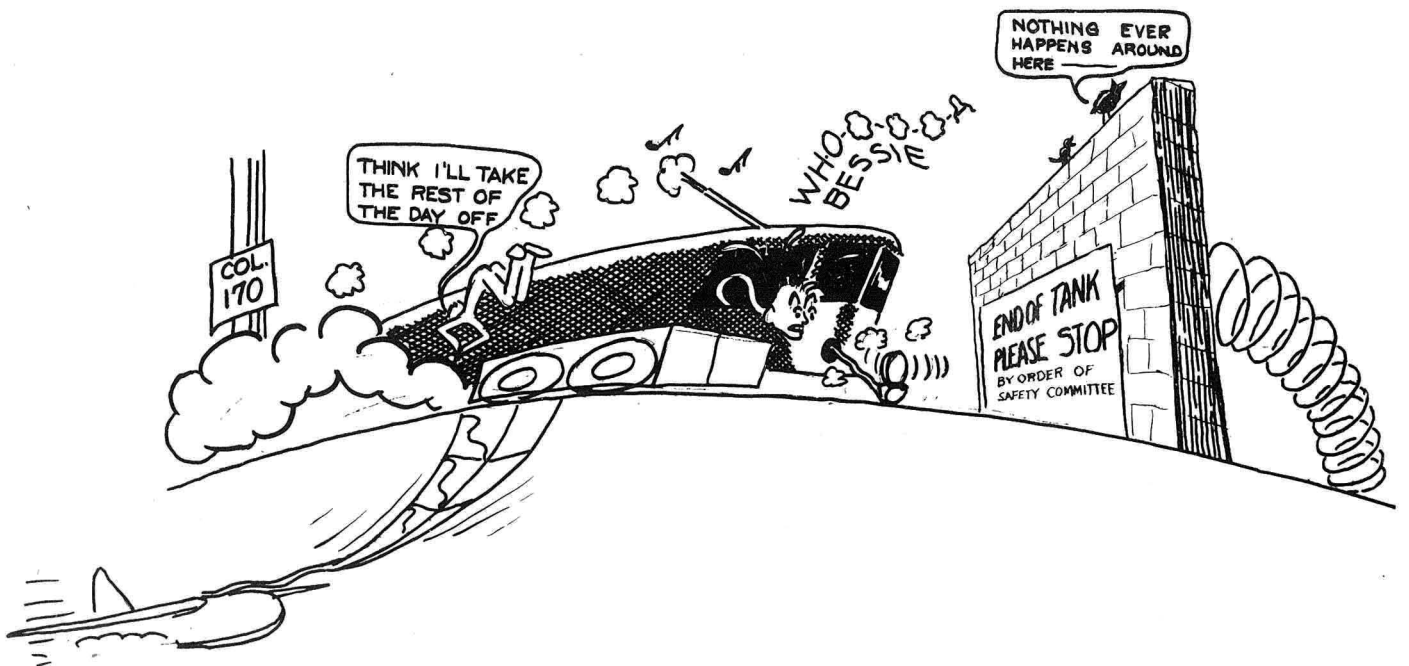
A number of Laboratory employees have already turned out for the opening practice sessions of the team which will play under the name "Hampton Merchants." Abie Bloxom, manager of the nine, has extended an invitation to any other Lab workers who are interested to report for the next practice at the diamond on Sunday at 2 p.m. He said that he is particularly anxious to acquire additions to his pitching and outfield staff. Interested persons are asked to call the Air Scoop Office, telephone 2376.

Among the Nacas who have already turned out are Lennie Bartone, Billy Bates, Pat Cancro, Ray Comenzo, Owen Deters, John Knemeyer, Pete Korycinski, Luke Liccini, Eddie Polhamus, and Irwin Schumacher.

STAMP CLUB TO MEET ON NEXT TUESDAY

The Symes-Eaton Stamp Club will hold its regular meeting on Tuesday, April 17, at 8 p.m., in the Community Center, W. R. Wright, president of the club, has extended a cordial invitation for any interested persons to attend.

NEW TELEPHONE NUMBER:
Spin Tunnel Section Head, 2389.



Fun At Engineering Easter Frolic



Photos by Everett

OFFICIAL BULLETINS

Personnel Services urgently requests all persons, on all shifts, to report vacancies in their cars as a great shortage of rides exists, especially rides from Stuart Gardens and other areas in and around Newport News. This area is not readily accessible by bus or trolley and there is much difficulty getting to and from work especially for those on the very early and very late shifts. This condition would be greatly alleviated if every seat in every car were occupied. If persons having a vacancy will call Personnel Services, 2377, it will be filled immediately.

As of last Saturday, the Leave Office in the Full Scale, or North area, was discontinued. The personnel of this office has been moved to the Service Building, and in the future there will only be two leave offices in operation instead of three as heretofore. One will serve the East Area employees, 2387, and one the West Area, 4495. Persons working in the Full Scale area should continue to report leave at the former telephone number, 2303, however. This telephone has been moved to the Service Building especially for the use of employees in that area in order to save confusion.

WANTED: To buy 35 mm camera medium priced. Mary Ellen Mayo, Impact Basin.

FOR SALE: Crosley floor model radio, call Robert Parks, West Engineering.

ST: 25-foot Lufkin steel tape, inventory number 18709, challenge type S-360. Starrett micrometer calipers, 0 to 1" graduated in ten thousandths, inventory number 21222, serial 2090. Finder please notify Carl Rossman, telephone 2274.



Recruiting

(Continued from page 1)

active so once again employees are being asked to refer qualified persons to the employment office or list the name and address of such persons in the space provided below. Names of persons qualified to fill a position other than clerical will also be appreciated as there are vacancies in practically all fields.

NAME _____
 STREET _____
 CITY _____
 NAME _____
 STREET _____
 CITY _____
 YOUR NAME _____

Honor Your Flag

(Continued from page 1)

the music. If the pedestrian is a woman, she stands at attention and places her hand over her heart.

All traffic should stop and the driver of all vehicles whether private, government, or public transportation, should alight and show the proper courtesy, while all passengers should remain seated.

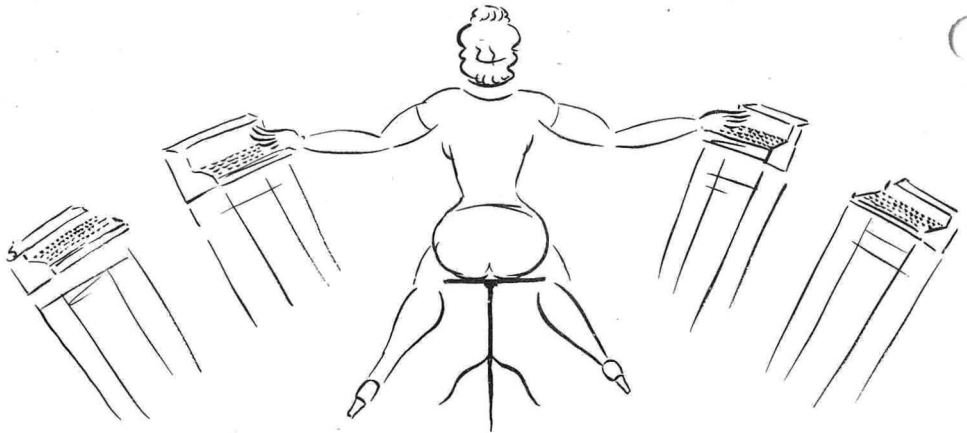


Frank Parmenter, former president of the Brainbusters, writes, "It was a regular re-union during basic training at Keesler Field. Every day some more of the gang joined our happy (?) ranks as privates. It made things a little nicer having a bunch of your pals around so you could gripe together." He said that it was really a happy day when he found that he was to be shipped to his present hangout in Amarillo, Texas. He is now going to airplane and engine mechanics school and after 13 weeks there he will receive six weeks of advanced training on a B-29 and then off to gunnery school. Frank's present address is: Pvt. Frank L. Parmenter, 33855835, Squadron I, Bks. 1034, 3701st AAF BU 'F, Amarillo, Texas.

Milton P. Sherwood recently dropped a note to the Air Scoop Office with his new address. It is: Milton P. Sherwood, S 2/c, Hydrographic Office, Room 602 West Annex, N. O. B., Norfolk 11, Va.

J. J. Zullo, formerly of Gas Dynamics sent the following bit of information from his headquarters in Washington: "I'm in the midst of the greatest pieces of electronic gear this war has produced. The Underwater sound equipment and radar gears are what I have in mind. Its very interesting work and awfully illuminating especially to a chemical engineer... By the way of advancement, I was recently promoted to the rate of Radio Technician Third class.

Pvt. Coleman Donaldson, formerly of F. G. D. A., dropped by the Lab last Saturday to pay his respects to his former co-workers.



The cartoon appearing on this page was torn down from a wall in Strasbourg by H. J. E. Reid. It was posted as an incentive to get Nazi secretaries to speed up their work and do multiple jobs. Reid hopes it might produce the same effect on Laboratory clerical workers, particularly as there is such

a shortage existing in their ranks at present.

He also mentioned that the sketch points out quite clearly that Frau and Fraulein Nazi are not as underfed as Herr Goebbels would have us think. It points out just as clearly to the Air Scoop staff that they are a bit overworked.

LIFE at the LABORATORY

The birth rate around the Laboratory

seems to be picking up. Two employees have become proud papas this past week. Jimmy Lindell, Erection Shop, is still in a stew over the arrival of his daughter, Katherine Elaine, last Sunday. Fred Berrie, East Engineering, announced the arrival of his new son, born Saturday, April 7.

Selma Diamondstein, Files, recently

surprised the whole section when she returned from a trip to her home in Kansas sporting a new rock. She is engaged to Lt. Leonard Levinson, Army Air Force.

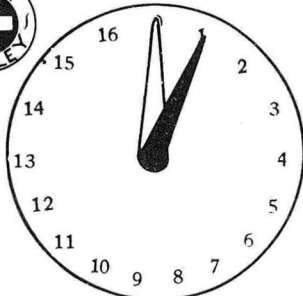
Latest reports reveal that

T. Melvin Futler, Chief of Personnel Division, is devoting his spare time to the finer things of life, namely, In the role of a G-man, he will make his debut in the Little Theater's production "You Can't Take It With You." From all his reports, Melvin should be a great success.

Frank L. M. Storm, Civil Service Representative

was entertained at a farewell party last Saturday night at the home of Norwood Evans. Mr. Storm is being transferred to Winston-Salem, N. C.

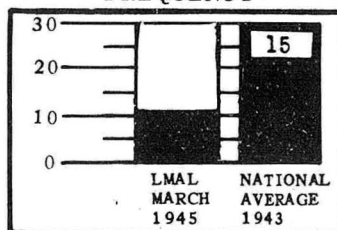
SAFETY SCORE BOARD



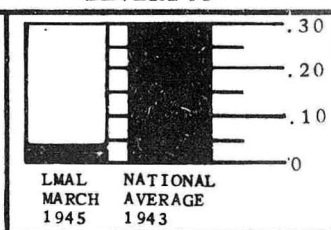
No. of Lost Time Accidents

This Week Last Week

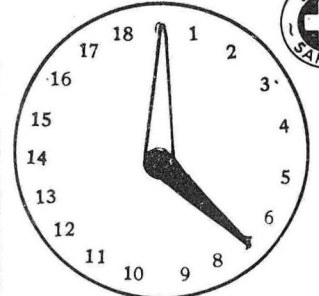
FREQUENCY*



SEVERITY**



* Number of disabling injuries per 1000000 man hours worked
 ** Number of days lost time per 1000 man hours worked



No. of Days Lost Due to Accidents

This Week Last Week