A New Product For A New Industry Was
The Beginning of Sprague Electric Co.

What is it that prompts the birth of a manufacturing company? There are many answers, but basically it is a product which someone feels has wide enough interest to be purchased in the marketplace.

In 1925 radio was a relatively new medium. Families purchasing their first radio were more thrilled with the new “gadget” than today’s purchasers of large colored TV sets. Reception was poor by today’s standards, but men of vision were considering the problem a challenge.

Robert C. Sprague, then a young naval lieutenant stationed in Quincy, Massachusetts, had an idea to improve the tone of his radio set. In his home workshop he developed a tapped, fixed paper condenser, with an accompanying switch, which made seven different capacity values available to the operator. By adding the proper capacity value across the output of the radio and the input of the separate speaker then in use, a pleasant improvement in tone quality resulted.

Mr. Sprague called the device simply a “Tone Control” and applied for patents on both the condenser and the complete device. The patents were granted and on June 1, 1926 the fledgling business was incorporated.

The Tone Control did not, however, take the public by storm. Sales were modest and it soon became apparent that if the young company were to succeed, a new approach must be taken. Even at that early date the young electronics industry was highly competitive. What to do? The condenser, or heart of the Tone Control, provided the answer. Less than one-half the size and only one-eighth the weight of the standard Mica condenser then in use, it was also much cheaper to build and rigorous tests showed it had all the needed electrical and life characteristics, including an exceptionally high voltage breakdown.

The decision was made, and the new company was in the condenser, or capacitor, business as it came to be known. The Midget capacitor was a success with radio set manufacturers. Sales for 1927 were a satisfactory $54,000; for 1928 a whopping $234,000 with a net profit of $35,000. By 1929 the original two employees, Mr. & Mrs. Sprague, had increased to a peak of five hundred and fifty.

Most people find it difficult to really understand that a company is just like a family. They have heard it said often enough, but somehow they don’t really believe it. In your own family you have a certain number of dollars to spend. You must have food, clothing and housing. Other things, the extras, must be provided from your personal profit – the money you have left over. If you want to improve yourself, you think about learning a new skill or about advancing yourself in your present job by acquiring more knowledge. A company hires people to improve on its products and develop new ones. This will provide more business. As a company, Sprague Electric has been very successful in the area of new products. It has kept abreast, and in most instances ahead, of its competitors and has earned an outstanding reputation throughout the industry.

The Profitable Company
There is another correlation between the company and the individual employee which is often overlooked, and that is

Microelectronic Devices

The work of Sprague Electric in semiconductor integrated circuitry is a logical outgrowth of many years of research on semiconductor materials, of its original large scale effort in germanium and silicon transistor technology, and of its several years of basic investigations of the physical and dielectric properties of the silicon-silicon dioxide system.
QUALITY
Sprague Precision Condensers are the Standard of Condenser Quality

When critical engineers get together, they all agree that Sprague Condensers are superior... They know that Sprague Condensers have stood the severest tests of service—that they can be depended upon to perform their duties with unfailing faithfulness. Sprague Condensers are designed by the nation's foremost condenser engineers and assembled by skilled craftsmen... And here are a few reasons why Sprague Condensers are better:

The Sprague Electrolytic Condenser
A single unit allowing maximum flexibility for mounting in circuits. No solder or spliced joints in its one-piece metal case of pure aluminum. A lower leakage and better power factor than any other electrolytic unit, wet or dry. Rigid construction prevents possibility of internal shorts or minute cracks which make for ease in mounting. Edge effect not over 10% of sheet type.

The Sprague Block Condenser
Dielectrically superior due to patented parallel layer process. Rigidity protected by extra heavy sheet metal case. Insulated to reduce loss due to dripping of individual condensers, wrapping of assembled block in moisture-proof material, and triple sealing. Higher leakage resistance guaranteed above 5000 megohms per microfarad.

The Sprague One Microfarad Unit
Flexible mounting—either unique or fixed to Flange. Connectors protected against moisture by double seal and are only one small open end. Also furnished inidget assemblies up to five sections of low capacity.

The Sprague Midget
A company and individually strong unit. Tested to high voltage breakdowns—waterproofed with sulphur-curing and special process of triple impregnation. Easily and quickly mounted—Dual type of winding if desired.

SPRAGUE SPECIALTIES COMPANY
Quincy, Massachusetts
Sprague Electrolytic and Paper Condensers
Will Solve Your Condenser Problems

NATIONAL ADVERTISING - 1930

Even before the move to North Adams a modest nationwide advertising campaign was initiated. From the beginning “quality” was the key word as illustrated in the above ad - the first to appear in this national magazine. At that time business was often sporadic and dependent on the highs and lows of radio manufacturers. As we review the growth of Sprague Electric we cannot help but notice the steady growth and the forward looking decisions on which early activities were conducted. Product development was important, and it was equally important to bring the new products to the attention of buyers.

During the following years the advertising expenditures were increased and by the 1940's a four-way program reached around the globe.

First were the advertisements directed to manufacturers who bought capacitors for use in original equipment such as radios and electronic and electrical equipment. These were usually full-page ads in all the important technical magazines.

The second group of ads were for KOLOOHM resistors - a very important product. Originally manufactured in North Adams, the line was moved to Kingston, New York and later to Nashua, New Hampshire where the units are still produced in large quantities today.

The third advertising area was for the Sprague Products Company. These ads were designed to reach servicemen, dealers and distributors.

The fourth area was a modest amount spent for the export area.

This was also to expand greatly following the War.

THE BIG JOB

During World War II thousands of engineers were in service. At War's end they would scatter to private firms all over the country. It was Advertising's business to make Sprague capacitors and resistors well known so that when our salesman called on a private company after the War, he would be a welcome representative.

Advertising was also the best way to inform buyers of the many new Sprague developments. The Harry P. Bridge Company, Advertising Counselors of Philadelphia, handled accounts in the early campaigns and are still doing it today.

What is a Condenser?

(from the September, 1938 LOG)

A condenser is a device that stores or concentrates electricity. When it is storing electricity it is charged. The simplest form consists of two conducting plates such as copper, aluminum or tinfoil, separated by an insulating material such as air, oil, paper or mica. Such a condenser may be charged by connecting a battery to the two plates for a period of time and then disconnecting the battery. If a wire is connected to one plate and the other end brought near the other a spark will jump. In some cases this may be repeated several times before it becomes necessary to charge the condenser again.

A perfect condenser would hold its charge forever unless discharged by some means. Since the best insulators will conduct electricity to some extent, the charge will leak off and the condenser will become discharged. A good condenser will hold electricity longer than a poor one. Such a condenser has low leakage current and high leakage resistance.

A condenser may be compared to two tanks connected by a pipe with a valve in it. When the valve is closed and one tank is filled with water to a higher level than the other, we have a charged condenser. If the valve is opened the water will flow until the level in the two tanks is the same and the condenser is discharged. If the valve does not leak when closed we have a perfect condenser. If the valve leaks the condenser has leakage.

In 1746 Benjamin Franklin used the condenser formed between the clouds and the earth. This kite formed the wire used to connect the two. He discharged his condenser by drawing a spark between the key and his knuckles.

A filter condenser may be used for storing electricity for a short time and then delivering it to some other device. This corresponds to a reservoir. When there is plenty of rain the reservoir stores up water. During the dry period this water continues to flow into the water mains of the city so that water is available at all times.

A bypass condenser may be used to separate one electric current from another. This would correspond roughly to the use of sieves or screens to separate sand from gravel or for grading coal.

A tuning condenser is used to determine or change the frequency characteristic of an electric circuit as for example the tuning of your radio from one station to another. In watches and many clocks a small spiral spring is attached to the balance wheel. By regulating this spring we can speed up or slow down the speed of the clock. In the radio the condenser is varied to increase or decrease the wave length or frequency of the electric currents. The radio in your home has a condenser in it that performs the above functions.

Early Sprague Developments

During the 1930's electronic equipment began to play an increasingly important role in the American way of life. Television was a new word, but it would soon be a household standby. During this time, Sprague engineers and scientists were hard at work on the new products which were born with the advent of World War II, but even in the 30's the product line was growing rapidly.

Shown in the photograph: Back row, left to right - (units used in a) television set; telephone; electric refrigerator. Second row from back: Radio condensers - dry electrolytic, radio push button assembly, and wet electrolytic. Third row from back: the new coaxial condenser, dry electrolytic, paper condenser (in front of dry electrolytic), liquid compensator condenser. Front row: condensers used in electric razor, automobile generator, automobile radio.

The Beaver Street Plant in North Adams was the only manufacturing operation during the 1930's, but the Company was growing and it was apparent that additional areas would soon be necessary.
Robert C. Sprague Expressed His Thoughts About 'Industry Under War Conditions'

Prior to this country's entrance in World War II its effect was apparent as we provided assistance to various European countries. In the July 1940 LOG, Mr. Sprague expressed his thoughts.

"As this issue of the LOG goes to press, our country is beginning to feel the effects of the war in Western Europe and of the determination of this country not to be caught unprepared in this time of emergency. In our resolution to build a strong defense, it must not be overlooked that a critical factor in our preparedness program are already being felt. The most important of these is the shift of many workers and industries to war production.

"Inevitable results of the war and the country's preparedness program are already being felt. The most important of these are the shifts taking place in demand. The coming months may see less automobiles produced in favor of more airplane motors, etc., but production will go on. Disruptions in the supply of raw materials have become evident in certain lines and there is no doubt that we shall have to face the possibility of more fluctuations in prices.

"I recently noticed a picture in Life magazine showing a German tank with a "fish pole" aerial at one side. This gives a hint, I think, of the important role which the radio will play in building an up-to-date defense for the country.

"Through all this, the quality of adaptability and willingness to give our full efforts to new tasks and new ways of doing them will be extremely important. The young and flexible company whose management and employees have open minds will inevitably forge ahead.

"Sprague Specialties is a young company and I am proud of the vigor and enthusiasm of its employees and management. These qualities and the ability to adapt ourselves to sudden changes will contribute much to our progress in the coming months."

LONG SERVICE NORTH ADAMS EMPLOYEES REMEMBER

Longtime employees in North Adams like to reminisce about "the old days". There was a friendly feeling of comradeship throughout the group. With a one-plant operation, everyone was on a first-name basis. The group above were in Paper Rolling.

The Brown Street Plant, purchased in 1937, was a typical New England textile mill. Today the exterior looks much as it did thirty years ago, but the grass has given way to asphalt for parking and there is a sidewalk, instead of a dirt path, in front of the fence.

The second North Adams plant, Brown Street, was purchased in 1937. It was an important step for the company as it signified anticipated growth. The substantial debt incurred from the severe financial reverses of the early 1930's was finally liquidated, and a firm base had been established on which to expand operations. Research and Engineering personnel were hard at work on products which were to prove most beneficial.

"Sprague Specialties is a young company and I am proud of the vigor and enthusiasm of its employees and management. These qualities and the ability to adapt ourselves to sudden changes will contribute much to our progress in the coming months."
As part of the Army-Navy "E" Award ceremonies visiting military personnel were taken on tour of the Company's manufacturing facilities. Many components were built for top secret weapons, and the employees knew only that their work was extremely important to the War effort.

Army-Navy "E" Award Flags Give Proof of Production Efforts

Five Army-Navy "E" Awards and the Navy Bureau of Ordnance "E" Award were made to the employes of Sprague Electric Company, Beaver and Brown Street Plants, during the course of World War II in recognition of their exceptional production record in the War effort. The Army-Navy "E" pennant was awarded to the Company for high achievement in war production and for uniting efforts on the home front.

The North Adams' operations were a veritable beehive of activity with high school students and housewives employed on a part time basis. Large red, white and blue signs reminded the employees of the vital work being performed. Families at home were anxious to do everything in their power for the men at the Front.

None knew the destiny of our nation when Poland was invaded in September 1939. Nor knew the destiny of Sprague. With courage and foresight the Company concerned itself with the needs of a great nation which might soon be drawn into war.

In June 1940 a contract with the Chemical Warfare Service warned our people of what was ahead - Sprague was to make gas masks. Laboratories were rushed to completion; manufacturing and warehouse space reserved for emergencies; new machinery and new stock were ordered and built. In six months to a day the first gas mask rolled off the assembly line. This was our first war production.

W AR IS DECLARED

When Pearl Harbor came Sprague was ready. Everything gave way to the grim necessities of war. Within a few weeks, the manufacture of peace-time products stopped. Sprague began the greatest conversion of manufacturing design in its history. Training classes were formed as employment figures went up and up. Existing space was soon crowded to the limit; further expansion was made at the large Brown Street plant, and later at leased properties on Marshall Street.

THE NEW FILTER DEPARTMENT

The Army Signal Corps and the Air Corps came to us for new filter designs. Constant radio communication between planes, tanks and other mobile units must be maintained in a modern army, but the complex ignition and control systems of planes and vehicles hindered the use of the delicate radio apparatus required. Fortunately, we had accumulated much valuable experience in this field. We built a shielded laboratory large enough to garage military vehicles. We tackled and solved tough new problems involving the extremely technical requirements of aircraft design. The Filter Department was born.

PRECISION RESISTOR

A new precision resistor needed by the Armed Forces was built to specifications which the industry had hitherto never been able to meet. It had to stand immersion in boiling water or freezing sea water, and be built to such accuracy in resistance value that even the most severe test would not cause a variance of over 1/2 of one percent. Sprague knew the answer because of seven years of basic research applicable to this problem. Engineers rushed final designs. The life test men ate and slept on their job for a week in order to make the continuous 150 hour test required. Within three weeks after action was requested, we gave our answer: "No one has ever been able to do it before, but we have done it, and here it is!"

That was our answer to dozens of problems - an answer that showed what peaceful men and women can do when they get fighting mad.

V-T FUZE EFFORTS

A MAJOR CONTRIBUTION

In the V-T fuze effort a "miracle of production skill" the Sprague Electric Company played an important role in the success of the Navy's number one secret weapon, the V-T or proximity fuze. Regarded as second only to the atomic bomb, the V-T fuze was used to successfully combat the German buzz bomb menace in England and the Japanese suicide planes.

At the height of production, 2600 employees were involved in manufacturing components for the highly secret weapon. They had no idea of the exact use of the units - they only knew that it was highly important to the War effort. In October 1945, the Company received their fifth "E" Award; this one from the Navy Ordnance Department for Sprague's contribution to the heretofore highly secret device.

In North Adams The Women Went To Work

You can't make up that bridge table if you go far behind today's teenagers. Sprague is making old age pensions unnecessary. Ten percent of the employees are more than 60 years old. Two women, aged 67 and 63, drive every day from the town of Savoy, 14 miles away. Before she leaves her farm, the older one milks nine cows. The younger one milks four. There are 73 three-generation families employed there.

You can't find your fourth even if you go among the physically handicapped. There are 556 such persons on the Sprague assembly line. One of them is a dwarf who has a made-to-order sized table and chair.

Most of the women working there have children and family problems. All the town's domestics have gone to work in this or other North Adams factories. You can't find sitters to look after young children... Even with their family problems, these housewives keep absenteeism down to 2 per cent, and that is well under the average.

"These are just people who want to be doing something toward the War," said John D. Washburn, Personnel Executive of the Company. "Almost everybody who can see lightning, hear thunder or walk is taking his turn here."
Dr. John L. Sprague Addresses N. H. Tech Graduates

Dr. John L. Sprague, Senior Vice President of Research and Development, delivered the commencement address to the first graduating class of the New Hampshire Technical Institute in Concord, New Hampshire. A class of 29 students received Associate Degrees in Electronic Engineering Technology or Mechanical Engineering Technology.

Dr. Sprague, who was introduced by Robert L. Parrish, Sprague Electric General Manager of Tantalum Operations, urged the graduates to continue their education, if possible. He noted that the world’s knowledge is doubling approximately every eight years, and that as we learn more and more we come to the realization of how little we really know.

In reference to Sprague Electric Company, Dr. Sprague pointed out that the new field of microelectronics is probably the most exciting and stimulating in the entire electronics field today. Work in this field, however, requires extensive education and key technical people are generally familiar with most, if not all, of the complicated disciplines.

The Associate Degree in Applied Science which the Technical School graduates received qualifies them for placement at a semi-professional level and allows them to prepare for promotion as experience is gained. It provides a broad background for continuing education, both formal and informal.

Dr. Sprague emphasized that he did not wish to sound discouraging and he noted that today’s scientific technology requires nearly as much art as science. “People with this special skill,” he added, “like the very skilled mechanic or experienced production supervisor, are invaluable.”

In closing, Dr. Sprague said, "Graduation today is not an end but a beginning. The challenge and the opportunities are there. The rest is up to you.”

Scholarships Awarded To 10 High School Seniors For College Studies Applicable To Employment At S. E.

Ten Sprague Electric scholarships were awarded to high school seniors at graduation ceremonies in their respective schools. Seven of the 10 scholarships were awarded to children of Sprague employees. At the Aube County, New Hampshire Plant Kenneth Ray Caraway, son of Joseph Caraway, received the award; at Concord, New Hampshire, Rene A. Milo, son of Jean Milo, was the recipient; and at Nashua, New Hampshire, Gerald R. Joyce, son of Mary Joyce, received the award. The Sprague Electric General scholarship, awarded at a location which does not have a scholarship of its own, was presented to Thomas W. Daigvault, son of Martin J. Daigvault of the Plymouth New Hampshire Plant.

In North Adams, six awards were made. Three went to children of employees and in addition, area students were granted an engineering scholarship, a cooperative engineering scholarship and a nursing scholarship. Children of employees were Kent Francis Moore, son of Gloria Moore; Ronald Walter Gamache, son of Aline Gamache; and Robert Allan Scrivens, son of Doris Scrivens. The Sprague Electric Engineering Scholarship was awarded to E. Richard Scholz, of Adams, Massachusetts; Louis Russell Yarter, of North Adams, received the Cooperative Engineering Scholarship; and Donna Marie Scholz, of Adams, was awarded the Nursing Scholarship.

Children of employees and the winner of the Engineering Scholarship are awarded $500 a year for four years, a total of $2000 each. The Cooperative Engineering Scholarship is a $500 grant for one year, and the Nursing Scholarship is $400. In addition to the student's award, Sprague Electric provides a grant to the school or university equal to one half the scholarship. This may be used in any constructive manner the school deems appropriate.

Kenneth Caraway is a graduate of Aube Central High School (North Carolina) where he ranked 11th in a class of 97. He plans to attend the University of North Carolina where he will major in electrical engineering. During high school he was on the Annual Staff, Student Council, a member of the Beta Club, FFA, French Club, Science Club and was active in football. In 1966 he served as President of the Student Council and was also voted “Mr. Ashe Central.”

Rene Milo is a graduate of Concord High School and has been accepted at Rensselaer Polytechnic Institute, Troy, New York where he plans to major in electrical engineering. While a student, Rene was a member of the National Honor Society and a member of the Concord High School Cross Country and Spring Track teams. He has also been active in church activities as a member of the Youth Fellowship and the choir.

Ranking fourth in his class, Gerald Joyce has been especially outstanding in subjects of a scientific and mathematical nature. He was also active in the extra curricular life of the school as well as many out-of-school activities.

Young Joyce will enter the University of New Hampshire in the Fall and will major in physics with further plans of obtaining a masters degree.

Thomas Daigvault plans to enter the University of Vermont where he will major in science. He ranked in the top 10% of his class and was active in extra curricular activities in addition to being a good student. He was a member of the Student Council and the National Honor Society and was a letter man in baseball, basketball, football and track.

Kent Moors was an honor student at St. Joseph’s High School in North Adams and a member of their St. Thomas Aquinas Honor Society. He served as president of the Forensic League and was a member of the St. Joseph’s debating team for two years during which time they won two state championships and two diocesan championships.

Mr. Moors plans to attend Boston College where he will major in political science and pre-law. He hopes to enter the field of corporate law.

A graduate of Adams Memorial High School, Ronald Gamache will attend Rensselaer Polytechnic Institute where he will major in nuclear or solid state physics. A Pro Merito student, young Gamache served on the Yearbook staff, was a member of the Chem Club and the Fencing team. During summers he has done radio and TV repair work.

Robert Scrivens, a graduate of St. Joseph’s High School, will enter the University of Notre Dame where he will pursue a five year course of study including liberal arts and majoring in electrical engineering.

In high school he was co-editor and art director of the school paper, served on the Yearbook staff, participated in the senior play and was president and treasurer of the Key Club. He also played basketball and baseball and served as journalism class instructor.

Richard Scholz, winner of the Engi

Continued on page 4, col. 3
Sanford Family Day Scenes

Some of the nearly 700 visitors who toured the Sanford Plant during the first Family Day are shown registering prior to the guided tours of the manufacturing facility and displays.

Ernest L. Ward, President, (2nd right) and Martin J. Daigneault, Plant Manager, (left) are shown with two visitors in front of a map on which the location of all Sprague Electric plants is depicted. The display is part of a large exhibit showing Sprague products and the widespread utilization.

Refreshments of punch, cookies and ice cream were served in the Plant Cafeteria to all Family Day visitors at the conclusion of guided tours throughout the building.

Anthony N. Sacco, Corporate Safety Supervisor, (left) is shown explaining a wide variety of safety equipment used by Sprague Electric throughout its many operations.

Community Leaders And Employees Enjoy Sanford Family Day

Nearly 700 persons, including Sanford business and civic leaders and Sprague employees and their families, were on hand for the first Family Day held at the new Sprague Electric Plant in Sanford, Maine.

The event, which marked the official opening of the new Plant, included small group guided tours of the Tantalum and Ceramic capacitor manufacturing facility, several interesting displays and refreshments.

The morning tour for local community leaders, industrialists and businessmen was followed by a luncheon at which Ernest L. Ward, President, was the principal speaker. In his remarks, Mr. Ward expressed faith in more growth for the Sanford operation and praised the cooperation given by the community and local contractors for the rapid start the Company has made in Sanford.

During the afternoon, employees and their families were greeted by Martin J. Daigneault, Plant Manager, and Wendyl A. Reis, Manager of the Nashua, New Hampshire Plant and the Ceramic Monolithic Operation in Sanford. They were then guided through the entire manufacturing line. At the conclusion of the tour, refreshments were served in the Cafeteria.

Among the interesting displays was an exhibit of safety equipment which was explained by Corporate Safety Supervisor Anthony N. Sacco. Another exhibit which generated much interest was a display of the complete line of products manufactured by Sprague Electric as well as several pieces of commercial equipment indicating the wide utilization of the units.

14 Employees Share Awards of $1,955

Two large suggestion awards were made recently to North Adams employes, Frederick George, of the Metallizing Department, received $720 for an improved method of sharpening the blades on the paper slitter of the metallizing machine; and Frederick Baker, of the Machine Shop, was awarded $370 for his idea to improve the aluminum caps used on the grinding machine in the Ceramic Department.

At the past two Suggestion Committee meetings a total of $1,955 was paid to 14 suggesters for their accepted ideas. Rudolph Drobnik, of the Machine Shop, and Robert Rivers, of High Reliability Foil, were each $125 richer for an improvement in their respective areas, while Judith Pedercini, of Plant Engineering, received $120 for a cost saving procedure.

Co-suggesters Helen Harrington and Walter Tatro, Jr., of Miscellaneous Papers, each received $110 and Irene Rowley, of High Quality, submitted an idea worth $90. A Film Products employe, William Lauth, received $50 and Norma Sartori, of Ceracircuit Production, was awarded $45. Twenty-five dollar checks went to Arlene Bedard, of

J. L. Hennessey New St. Louis Dist. Mgr.

James L. Hennessey has been named St. Louis District Manager, it was announced by Carroll G. Killen, Vice President, Industrial and Military Sales.

Mr. Hennessey comes to Sprague Electric from Vickers, Inc., in St. Louis, where he has been in charge of district sales for the Electric Products Division for the past six years. A graduate of St. Louis University with a degree of bachelor of science in electrical engineering, Mr. Hennessey also holds a master's degree in business administration from that institution.

A native of St. Louis, Mr. Hennessey and his wife, the former Judith Jacobsmeier, make their home in Florissant, Missouri.

Dearborn Employe's Daughter Achieves Scholastic Record

Beryl Davis, daughter of James Davis, Customer Service Manager at Dearborn Electronics, graduated with a perfect 4.0 scholastic average over a four-year period from Oak Ridge High School, Orlando, Florida. This was the first time in the school's history that a student had achieved this highest of possible grades.

Miss Davis has received awards for her outstanding scholastic performance from the U.S. Jaycees, Kiwanis, American Legion, Reader's Digest and the State of Florida. She is a member of the National Honor Society, Editor of the school magazine, The Intelligensia, Treasurer of Tri-Hi-Y, member of the Chemistry Club, Inter Club Council, Math Club, FHA, Latin Club and a varsity cheerleader.

Miss Davis was awarded a scholarship to Emory University, Atlanta, Georgia where she will major in psychology.

General Accounting; Frederick Curtis, of Formation Control; and Edward Mulvaney, of Mica. George Shaker, of Networks, received $15.
Superintendents Announced For Two Areas of Special Components Division

Two new appointments for the Special Components Division were recently announced by Harold F. White, Plant Manager. Peter J. Wol, Jr. has been named Superintendent of Ceracircuit Manufacturing and Kenneth C. Casperson has joined the Division as Superintendent of the BRMJ Department. Mr. Casperson will be responsible for all DMAY Line manufacturing in addition to the Pulse Transformer Line.

Mr. Wol joined Sprague Electric in 1955 as a Technician in Research and Engineering. With the establishment of the Special Components Division in 1958 he transferred to Union Street where he held positions as Foreman, General Foreman and Coordinator prior to his present promotion.

Mr. Wol's wife is the former Ilene Kellar of Adams.

Mr. Casperson is a native of North Adams and a graduate of Adams Memorial High School. Mr. Wol attended the Radio & TV Institute in New York City and has taken University of Massachusetts extension courses in Pittsfield. Following graduation from the Institute he was employed by General Electric Company in Pittsfield, Massachusetts for a short time and also served in the U. S. Signal Corps for two years.

Mr. Wol joined Sprague Electric in 1955 as a Technician in Research and Engineering. With the establishment of the Special Components Division in 1958 he transferred to Union Street where he held positions as Foreman, General Foreman and Coordinator prior to his present promotion.

Mr. Wol's wife is the former Ilene Kellar of Adams.

Mr. Casperson is a native of North Adams and a graduate of St. Michael's College, Winookski Park, Vermont. Following graduation he joined the Cornell Wire Company, Williams-town, Massachusetts as a Supervisor and later was promoted to Foreman, Superintendent and Plant Manager.

Mr. Casperson assumed his duties at Sprague Electric on June 7. His wife is the former Arlene Joseph of North Adams and they are the parents of a daughter.

Ceramic Package

Masters Degrees For Two Sprague Men

W. Clement W. Wesolowski

Two Sprague Electric employees, Warren J. Clement and William E. Wesolowski, both of Engineering, were awarded masters degrees for study completed under the Company educational sponsorship program. Mr. Clement received a master of science degree in science and mechanical engineering from Rensselaer Polytechnic Institute and Mr. Wesolowski was awarded a master of science degree in chemistry from Williams College.

A native of Dallas, Texas, Mr. Clement joined Sprague Electric in the Engineering Laboratories in 1961 following graduation from Texas A & M. College Station, Texas with a bachelor of science degree. Prior to that time he had served in the U. S. Air Force for three years and had also received a bachelor of arts degree from North Texas State College, Denton, Texas.

Mr. Wesolowski is a native of Windsdor, Massachusetts and received his secondary education in Greenfield, Massachusetts. In 1958 he graduated from Worcester Polytechnic Institute with a bachelor of science degree in chemistry. Following graduation he joined Sprague Electric in solid tantalum engineering and in 1960 transferred to Sprague's Concord plant. In 1961 he returned to North Adams and enrolled in the master's program at Williams.

A second lieutenant in the U. S. Army Reserve, Mr. Wesolowski spent six months on active duty in 1959. He has served as a town meeting member in Adams and is a member of Lambda Chi Alpha fraternity.
Picture Highlights

The North Adams' Management Club recently presented a rowboat to the Herbert W. Clark Day Camp for use in their summer program. John Marciano, Camp Director, (in boat) accepted the gift which was presented by Zygamond Nash and Gerald Dubois on behalf of the Management Club. Conducted under YMCA sponsorship, the Camp is open for six weeks each summer.

Company sponsorship of educational courses was a family affair in the case of Bernard and Aime Thibert as the two brothers received certificates for completion of courses in their particular area of interest. John B. Ortman, Manager of Engineering Services, (left) presented Bernie his diploma for a course in Professional Locksmithing from the Locksmithing Institute. He completed the three year course with a straight "A" average. Aime's certificate, presented by Dr. James J. Casey, was for a course in Elements of Metallurgy prepared by the Metals Engineering Institute.

Grafton Employe's Daughter Chosen Miss Hobby Ceramics

Pat Carter, daughter of Elva Carter of Sprague of Wisconsin, Inc., was selected to be Queen of the 10th Annual Hobby Ceramics Show sponsored by the Badger Ceramics Association of Milwaukee, Wisconsin.

In the preliminary competition based on the judging of essays written by the contestants on the value of ceramics in education, Pat was one of five winners. The five girls were interviewed and Pat was chosen as final winner and named Miss Hobby Ceramics of 1966. She reigned over the two-day show which was held at the Sheraton-Schroeder Hotel.

The competition for position of queen was open to girls in Milwaukee area schools who have had some experience working in ceramics. As queen, Pat received a prize of a $100.00 War Bond.

Scholarships

Continued from page 1

Scholarship, was an honor student at Adams Memorial High School. He was a Pro Merito member and a National Merit Finalist. He will attend Worcester Polytechnic Institute where he will major in electrical engineering.

Richard is an Eagle Scout and was a member of the school gymnastic exhibition group. He also served on the yearbook staff and participated in the senior class play.

Russell Yarter graduated from McCann Vocational Technical High School in North Adams and will enter Rochester Institute of Technology in the Fall in their five year cooperative program. While in high school he was class president for two years, president of the National Honor Society for two years, a member of the school gymnastic exhibition group. He also served on the yearbook staff and participated in the senior class play.

Donna Girard graduated from St. Joseph's High School and will enter Burbank Hospital School of Nursing, Fitchburg, Massachusetts in the Fall where she will be enrolled in their three year program.

While in school she held a part time job and in addition served as co-editor of the yearbook, business manager of the school paper and was a four-year member of the Glee Club.

Robert C. Simmons has joined the marketing staff of the Special Components Division as a West Coast Regional Product Specialist, it was announced by William L. Moorhead who is in charge of the Division's Marketing.

Mr. Simmons will make his headquarters at the Los Angeles offices and will be responsible for technical assistance to Sprague's sales engineers and representatives in the Pacific Coast and Rocky Mountain areas.

Mr. Simmons is an engineering graduate of the University of Iowa and a member of the American Society of Mechanical Engineers. He was previously associated with Westinghouse Electric Corporation in various sales and engineering capacities for the past 11 years.

Equipment Donated

Richard C. Peterson, Manager of Instrument Operations, checks the instruction manual for a Tektronix oscilloscope with Mrs. Ann Olson, a science teacher at St. Joseph's High School in North Adams. Sprague Electric donated the equipment to the school for their science department.

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Reputation Earned During War Years Proves Beneficial

During the War many millions of electronic components made by Sprague Electric found their way to all parts of the world. Technicians in every country learned to know and respect Sprague equipment. Shipping containers and labels bearing the name of the company were familiar sight all across this country and abroad. Many hundreds of executives, engineers, scientists, government officials and military men of importance made frequent trips to North Adams to visit the Sprague plants on business.

As the Company marked its 20th anniversary in 1946 it had weathered the worst depression the country had ever known and had set distinguished records for research, engineering and production during World War II. During the reconversion period following the War its employee enrollment was almost 100 times what it had been the first few weeks of operation in North Adams in 1930, and it occupied three large plants - Beaver Street, Marshall Street and Brown Street.

RECONVERSION - A CHALLENGE

Immediately following VJ Day wholesale cancellation of war orders flooded the Sales Office. During the last year of the War Sprague Electric designed, engineered and manufactured nearly 10,000 different electrical components. This accomplishment and the experience gained from it placed the Company in an excellent position to go forward and to overcome the many difficulties of reconversion to successful peacetime operation.

On the 20th anniversary of the Company Robert C. Sprague said, “I am proud of our accomplishments, both in peace and in war, during the past twenty years. With the continued cooperation of our employees we will go forward together to even greater things in the twenty years ahead.”

Ceramic Capacitors - - Important New Line

Ceramic capacitors, now a very familiar product, first appeared in volume following the War. They were manufactured by depositing conducting surfaces on a ceramic plate. Multiple capacitors could also be produced in a single unit and techniques were developed for the manufacture of printed circuits (capacitors and resistors deposited or “printed” on flat ceramic plates). To further assist in Sprague Electric’s development of ceramic capacitors the Company purchased the Herlec Corporation of Milwaukee, Wisconsin, a manufacturer of ceramic components. At about the same time a branch plant operation was started in Nashua, New Hampshire. The product here was also ceramic capacitors.

DU PONT MACHINE ACQUIRED

Sprague Electric, through Herlec Corporation, acquired possession of an automatic machine for the production of vitreous enamel capacitors. Developed by Du Pont Company and the Signal Corps during the War, the machine produced the ceramic capacitors for replacement for mica units. Mica was in extremely short supply at that time. The product here was also ceramic capacitors.

GROWTH CONTINUES

The production of ceramic capacitors proved to be a wise decision. Operations at Nashua showed a steady growth and that plant is still the largest of the branch operations. Herlec facilities were subsequently moved to Grafton, Wisconsin and a few years later the name was changed to Sprague of Wisconsin, Inc. Harry W. Rubinstein, one of the original owners of Herlec, continues today as the President of Sprague of Wisconsin.

Prior to the introduction of the molded capacitor it was the custom in the industry to manufacture paper tubulars to the specifications of large customers. As a result, there was always a considerable variation in physical dimensions and marking and most orders had to be handled separately. Plastic molded tubulars were manufactured and sold as standardized units. This standardization, together with the improved characteristics of the plastic molded capacitors, made it possible to manufacture paper tubulars for use in radios and other electrical and electronic devices had been inserted in cardboard tubes, the ends of which were sealed by wax. The performance characteristics of the new molded and printed capacitor it was the custom for use in television sets, automobile radios and in electronic equipment used in humid areas.

New Plastic Molded Tubular Capacitor Sets Sales Records For The Industry

In July 1947 a new product, the plastic molded capacitor later trademarked BLACK BEAUTY, was introduced to the trade. It was to prove one of the most outstanding developments in the industry and a real moneymaker for Sprague Electric.

For a number of years the Research Department had been developing a new paper dielectric capacitor with improved performance characteristics and appearance. Up until this time small paper dielectric capacitors for use in radios and other electrical and electronic devices had been inserted in cardboard tubes, the ends of which were sealed by wax. The performance characteristics of the new molded far exceeded the standard paper tubular type and met with enthusiastic response from manufacturers.

The improved characteristics made the units ideal for use in all places where paper tubular capacitors were required, and they were particularly valuable in cases where resistance to heat and to humidity were important. Original demand was strongest for use in television sets, automobile radios and in electronic equipment used in humid areas.

Plastic molded tubular capacitors, later trademarked BLACK BEAUTY, were instrumental in standardizing capacitor manufacturing. They also proved to be much more resistant to heat and humidity than paper capacitors.

MANUFACTURE STANDARDIZED

Prior to the introduction of the molded capacitor it was the custom in the industry to manufacture paper tubulars to the specifications of large customers. As a result, there was always a considerable variation in physical dimensions and marking and most orders had to be handled separately. Plastic molded tubulars were manufactured and sold as standardized units. This standardization, together with the improved characteristics of the plastic molded capacitors, made it possible to manufacture paper tubulars for use in radios and other electrical and electronic devices had been inserted in cardboard tubes, the ends of which were sealed by wax. The performance characteristics of the new molded and printed capacitor it was the custom for use in television sets, automobile radios and in electronic equipment used in humid areas.

Grafton, Wisconsin

Nashua, New Hampshire
Sprague Products, First Wholly-Owned Subsidiary, Acquired in June 1946

In 1946 Sprague Electric Company acquired its first wholly-owned subsidiary, the Sprague Products Company. Organized by Harry Kalker in 1933, Sprague Products handled the sale of Sprague Electric components to distributors for replacement purposes.

As one of the original Sprague Electric salesmen, Mr. Kalker was well versed in the complete product line. Under his able supervision the needs of the radio, and later television, repair shops were well supplied with attractively packaged and proper capacity units.

A COMPLETE SERVICE

Mr. Kalker traveled extensively, visiting “jobbers,” familiarizing himself with their needs and meeting as many of the men as possible. He also distributed attractive bulletins describing new applications for Sprague units.

In addition to the components themselves, Sprague Products supplied attractive display cases which further aided in making the Sprague name a familiar one. As with the radio manufacturers, themselves, quality of product was stressed to the replacement trade. Our competition would often supply a cheaper unit, but its quality would be of questionable value. With Sprague, quality was of utmost importance.

The Sprague Products Company has continued to grow and expand over the past thirty-some years. Three Sprague Product sales offices are now located strategically across the country and about thirty sales representatives handle the extensive accounts. Mr. Kalker dates his association with Sprague Electric to the early days of 1926 and is still very much on the job as President of Sprague Products.

A strong support organization, Sprague Products has contributed to the demand for Sprague Electric units and Sprague Electric’s consistent growth and development has further enhanced the increased sales of Sprague Products. It has proven to be a mutually advantageous combination.

Sprague Employees Assist Children In War Ravaged Holland

Following the War, children in many European countries were in dire need. It seemed fitting that Sprague employees should do whatever they could to assist at least some of them, and arrangements were made to sponsor a group of children in Holland. These unfortunate tykes had very little food or clothing and their school had been destroyed.

An appeal to Sprague employees for donations brought over two hundred dollars in two weeks. In addition to money, usable clothing was also collected and sent on its way. Soon letters began to pour in from the grateful children. Their English was limited but their thanks was not.

The donations continued for a long time, and the Marshall Street yard was later brightened with beautiful tulips, sent to North Adams by the children of Holland. During those years the LOG often carried pictures and stories about the children and their progress. It had been a heartwarming experience for all concerned.

Rapid Growth of Television Following War Brings Increased Business In Components

In 1947, 250,000 television sets were manufactured and sold. It was an advanced new medium and there was much speculation in the industry as to the ultimate demand for the new product – and also its impact on the radio business. Many felt it might greatly reduce the demand for radios while others thought it unlikely that people would spend long hours in front of “the box”.

The history of the 20-odd years to the present may well hold a lesson for us all. The new product, television, did not diminish the demand for radio, but it did provide an important means for the electronics industry to grow beyond any previous expectations. As the television industry was beginning to develop, radio was being improved and expanded. The first cumbersome sets gave way to smaller, more compact, and even portable models. This advancement was due primarily to the improved components provided by the electronics industry.

HIGH QUALITY NEEDED

A television set requires five to six times as many capacitors as a household radio. Shown above are simplified drawings of sets produced in the 1940’s. In both the top and bottom views Sprague units are clearly visible. They include can-type and tubular electrolytics, molded tubulars and KOOLOHM resistors. Ceramic capacitors were not manufactured by Sprague Electric at this time.

The Sprague policy of large expenditures for research and development put the Company in the lead following the War. Many products developed for the military found ready peacetime application. The Electronic Age was to bring the most rapid product advancement ever witnessed in the history of mankind.
Introduction of Transistor Opens Vast New Opportunities To Component Producer

Sprague Granted Basic Patents For Solid Tantalum Units

In addition to the intensive work being done in transistors, Sprague Electric was awarded basic patents for new solid tantalum units which were to prove to be an exceptionally popular product.

Originally produced in 1956, solid tantalums were manufactured at Concord, New Hampshire and later expanded to Plymouth, New Hampshire and Sanford, Maine. They were particularly in demand for computers and also airborne electronics. Their extremely small size and stable electrical characteristics were outstanding advantages when used in conjunction with transistors for military electronic equipment.

During the same period, resistor production was being increased with the addition of several new lines including improved KOOLOHM resistors and the new BLUE JACKET vitreous enamelled models and FILMISTOR carbon film units. Resistor production was housed at Nashua, New Hampshire.

produced further strengthening of the product line and an increased demand.

CONCORD PLANT

With the growth of the transistor business new space for a large manufacturing plant was needed. Concord, New Hampshire was chosen and in the sight and the new plant was started in 1956. It was opened early in 1957 and fully equipped and in operation by midyear. Additions to the original structure have quadrupled the manufacturing space.

Because of the growing importance of the transistor business and the specialized nature of its engineering, production and marketing problems, all areas were combined under unified management and control in 1960 as the Transistor Division with headquarters in Concord. In 1964, the Transistor Division became the Semiconductors Division to better delineate the Company's increased activities.

The girls in the foreground attach tiny germanium blanks to transistor stems mounted in precision-machined jigs. The dies then pass through the various steps in the "precision-etch" process of manufacturing transistors on the machine and emerge at the far end as completed transistor elements ready for attachment of whiskers, capping, and final test.
Growing After 40 Years—Continued from page 1

this—as the individual prospers so does the company! Or we might phrase it in the reverse—as the company prospers so does the individual.

A profitable company provides employment with good wages. It encourages its people to learn more, to upgrade themselves to higher paying positions, and it provides opportunity for those who are anxious to better themselves.

Conversely, an employee anxious to learn new skills finds that many opportunities are open to him. His superiors are anxious to provide for education which will make him more valuable on the job. The employee is thus in a position to earn more for himself and the company.

In a business which is not successful there is no money for improvement, either individual or corporate. Lending institutions will not finance borrowing because the company is a poor risk. There is no assurance the money will be returned.

The Profit Motive

This brings us to another most important point. The direction of any enterprise, corporate or individual, requires decision-making. Speaking at the Worcester Junior College Commencement exercises in June 1965, Robert C. Sprague, Chairman of the Board and Chief Executive Officer, said, "The profit motive is actually a short way of describing a system which permits, encourages and requires individual decision making in the conduct of business and personal affairs."

Since Sprague Electric was founded in 1926, many thousands of individual decisions have been made by all members of the Sprague team.

The profit which a company earns is a reliable barometer of how successful the decisions have been. It can be traced back to the work performed by each and every employee. Any decision to not do the best job possible jeopardizes the product being manufactured and the company as a whole. Customers will make a decision not to buy a product which is of poor quality.

Sprague Electric is a successful company and it is successful because many hundreds of people have each done their job to the best of their ability. The Company has grown and its employees have grown with it. It has been a profitable venture for both.

Three Important Groups Coordinate Plans For Growth And Expansion

In 1959 Sprague Electric's sales surpassed $50,000,000 for the first time. It was at this point that the Fourth Decade Committee was formed. The Committee's initial goals included the establishment of reasonable targets for the Company through 1967, the end of the fourth decade.

For its first three decades Sprague Electric's sales and profits had increased at a compound rate of 16% annually. In these first thirty years such growth rates were achieved comfortably and without undue strain, even though they far surpassed the industry generally. But it was clear that to maintain such growth rates through the fourth decade would overtax the Company's financial and manpower resources. Consequently, one of the Fourth Decade Committee's original decisions represented a sort of compromise; for the period from 1958 through 1967, it projected a corporate growth rate of 12% annually. In the first half of the decade this target was substantially exceeded; in 1963 and 1964 we did not do as well, but present indications are that the target will be more than reached.

PRODUCT COMMITTEES

Since its formation the Fourth Decade Committee has worked closely with Product Committees. These Committees represent virtually all product categories and are composed of three members each. Each chairman is responsible for all operating and planning functions as they relate to his product area. He determines the inputs to meet immediate sales needs; he guides engineering and manufacturing activities to meet future needs. His tools range from detailed, constantly revised sales-and-production estimates to a heavy reliance on Value Engineering groups. Since the Product Committees cover the entire Sprague product line, they serve as a clearing house and a filter for much valuable information.

VALUE ENGINEERING

One of the most vital factors to be taken into account in long-range planning is manufacturing cost reduction. Value Engineering was organized as a systematic approach to reducing the cost of a manufacturing function without impairing the quality of the product.

The Value Engineering groups are made up of representatives of manufacturing, engineering, purchasing and methods, and they meet regularly to study each step in the manufacture of the product for which they are responsible. Following each study, two plans are presented—one for immediate action and one for long-range changes.

Although the Value Engineering groups are a more recent formal technique than the Product Committee or the Fourth Decade Committee, they are destined to contribute substantially to the strong competitive posture of the Company.

The three-prong approach of Value Engineering, Product Committee and Fourth Decade Committee provides a firm footing on which to gauge further activities.

New Technology Predicted For Industry In 1970's

In the 1870's a leading inventor made the statement that the age of inventions was practically over since "everything worth inventing had already been produced". Today the statement seems ridiculous when we think of the tremendous advancements made since that time—and there will be more!

Robert C. Sprague, speaking to an American Management Association group in New York City in 1964, mentioned that by 1973 an entirely new electronics technology will have evolved. He called it "Technology X" and noted that it was not just a "blue sky" statement as there was already in process "a sophisticated means of reducing the size of electronic units which will revolutionize the design of military equipment."

The new, smaller units produced by these new processes, Mr. Sprague said, will at first be limited to defense use, but later will find their way into industrial and home products. This will be some time in coming due to the original heavy cost.

The electronics industry is interesting and challenging—both now and in the future!