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AMACHE SECONDARY SCHOOLS
ADVANCED SCIENCE
FINAL REPORT

AIMS

- A. The making of wise choices based on a general knowledge of cause and effect relationships, and on many specific understandings of such relationships.
- B. The skillful use and proper care of equipment.
- C. The ability to work cooperatively with a group, respecting the rights of others, and accepting responsibility for making contributions to group activities.
- D. The development of a functional scientific vocabulary.
- E. The desire and ability to read scientific materials.
- F. An understanding and appreciation of man and his relationship to his environment such as will assist him to live an intergrated, purposeful life.
- G. The ability to think scientifically.
- H. The ability to apply appropriate mathematical techniques to the solution of scientific problems.
- I. An understanding of, and an interest in, the instruments and processes developed by science.

OFFERING

Advanced Science offered one full credit for the course. Classes met five fifty-five-minute periods per week. The following units from the text, SENIOR SCIENCE, Busch-Patcek--Kovats, were covered; Water; Fire; Fuels; Weather and Air; Foods and Medicine; Textiles; Building Materials; Home Equipment; Transportation; Safety. These units from BASIC ELECTRICITY, Beauchamp--Mayfield were covered; The Electric Circuit; The Electric Current; Resistance to Electric Current; E. M. F. by Chemical Action; Magnetims; Electromagnetism; E. M. F. by Induction; Energy, Work, and Power; E. M. F. by Mechanical Action; Mechanical Energy from Electrical Energy. In addition to these texts a wide variety of leaflet and pamphlet material related to the above units was used.

PLAN OF WORK

Each student was required to make one oral report upon a subject related with each unit from SENIOR SCIENCE. Much of the pamphlet material was used for this purpose. On most of these units, notebooks were also required that were handed in and graded at the completion of the unit. Work from BASIC ELECTRICITY was not begun either term until the second semester. Time between the two texts was divided

approximately evenly. Because of the limited time and because of the nature of these classes the study of each unit from BASIC ELECTRICITY was confined to the basic principle involved. A certain amount of the detail necessarily had to be omitted. Some of the experiments at the end of the units in both SENIOR SCIENCE and BASIC ELECTRICITY were prepared and presented either by a student or a group of students.

EVALUATION

The course in Advanced Science was first offered during the school year 1943-1944. The class was taught the first year by L. M. Jackson and was taught the second year by Mr. H. W. Williams. Mr. Jackson taught the last quarter of this term after Mr. Williams left the faculty.

Students in Advanced Science obtained a general knowledge of a wide variety of scientific topics and of their social implications from the SENIOR SCIENCE text. Students were also able to give emphasis to particular phases of science in which they were especially interested. This was made possible by the use of oral reports and the wide use of reference material. The course in BASIC ELECTRICITY provided as good coverage of the elementary principles of electricity. The course also provided the opportunity for those who were more intensely interested to obtain a comprehensive understanding of the fundamental laws of electricity.

Jackson

Physics.

The course aimed to:

1. Develop a basic understanding of physical laws and principles.
2. Enable the student to apply basic laws and principles in the solution of problems and the understanding of phenomenae.
3. Develop scientific attitudes and habits of thought.
4. Give the student an appreciation of physical science as it is related to the vocations and to economic and social well-being.
5. To teach basic skills required in the manipulation of materials and equipment.

Course Offering.

The course covered the usual pattern of content with first semester emphasis given to matter, energy, sound, and light. The second semester covered color, magnetism, electricity, electronics and some applied aeronautics and navigation. One unit of credit for two semesters.

Plan of Work.

Work in the text, Modern Physics by Dull, was supplemented with special assignments and readings from other sources and work in the laboratory. Meeting each day for 56 minutes no special laboratory periods were assigned though approximately one-half the time was spent in laboratory work and frequent demonstrations.

Both slide films and motion pictures were used to supplement laboratory and classwork.

Evaluation.

As an elective subject physics attracted ^{those} who were, in general, quite proficient in both science and mathematics. The general level of achievement was quite high with pupils exhibiting special ability in the solution of mathematical problems related to class work. Though equipment for individual laboratory work was not available the equipment for teacher demonstrations was very good and a special effort was made for pupil committees to plan and execute most experiments.

AMACHE SECONDARY SCHOOLS
Final Report
Biology

Aims:

The objectives of the biology course were:

1. To develop an understanding of the laws and principles which control life processes.
2. To develop an understanding and appreciation of man and his relationship to his environment.
3. To develop the ability to think scientifically.
4. To develop the specialized vocabulary used in the biological sciences.
5. To develop an interest in biology which will lead to further reading in the field.

Offering:

Biology was offered as an elective on the senior high school level. The class met for five fifty-five minute periods per week and one full credit was given for two semesters work.

Material Covered:

The text used was Everyday Biology, by Curtis, Caldwell, Sherman. The course included the traditional topics such as how living things obtain food, grow, reproduce, and adjust to environment; how living things are classified; how man cares for and improves living things; how human life is conserved.

Procedure:

The textbook material was studied and considerable use was made of self-checking exercises included in each unit. Some use was made of workbooks. Equipment did not permit individual laboratory work, but considerable use was made of demonstration techniques and of visual aids. Several field trips were taken.

CHEMISTRY

There are no reports for the 1942-43 and the 1943-44 chemistry classes.

1944-1945

General aim and objectives: (taken from the Science Department's plan of work)

Chemistry has a general relationship to life and should meet the academic and vocational needs of the pupils.

1. He understands the chemical nature of substances and the importance of chemical changes.
2. He appreciates the services of Chemistry to society through its contributions to health, agriculture, industry, etc.
3. He learns facts, principles, technical language, formulas, and laboratory techniques of Chemistry.
4. He thinks creatively.
5. He develops scientific attitudes toward problems in school and everyday life.
6. He uses the scientific method of solving problems in school and everyday life.
7. He reads and expresses himself well.
8. He uses leisure time and recreational time to further his needs and future vocation.

Offering: Class periods of 55 minutes, five periods a week.
Two semesters of work offered.

Plan of work:

A. Fundamental Principles

1. Matter
 - a. structure
 - b. energy
2. Chemical formulas
3. Oxygen
4. Hydrogen
5. Solutions and ionization
6. Chemical equations
7. Acids, bases, salts, and oxides.

B. How Chemistry is Related to the Individual

1. Foods and Nutrition
 - a. Water in the body
 - b. Glands of internal secretion
 - c. Diseases
2. Drugs and medicines
3. Cosmetics
4. Hobbies
5. Vocations

C. Chemistry Related to the Home

1. Cooking
 - a. Utensils
 - b. Cooking and preservation of foods
 - c. Tableware
2. Heating
 - a. Fuels
 - b. Air-conditioning and refrigeration
- 3.

- 3. Sanitation
- 4. Gardening
- D. Chemistry Related to the Community
 - 1. Water purification
 - 2. Sanitation
 - a. Disposal of sewage and other wastes
 - b. Disease
 - c. Health centers and medical care
 - 3. Food production and distribution
 - a. Food inspection
 - b. Laws
- E. Chemistry Related to Industry
 - 1. Improvements in Industry
 - a. Sanitation
 - b. Working conditions
 - c. New Products
 - 2. Vocations
- F. Chemistry Related to Warfare

Accomplishments:

The basic text used for this class was Living Chemistry, by Ahrens, Bush and Easley. Laboratory work was limited because there was no class laboratory. However, experiments were either formulated by the pupils or selected from the variety of workbooks available and performed as demonstrations before the class by small groups of the students.

From September to March the class-work was based upon the textbook. Then the work plan was altered and the textbook material was used as a background for more experimental work in class. Since every student in the class planned to attend college, some of the fundamental concepts needed for college chemistry work were stressed. The metric system, structure of matter, valence, laws of chemical combination, ionization, chemistry problem-work, and experimental techniques and write-up were particularly emphasized. In addition, material was gathered to keep the class informed as to some of the contemporary developments in chemistry.

Lowell M. Jackson
Instructor of Science
Work Report: May 1-May 19

Advanced General Science

In this final period, the Advanced Science classes completed two units in Busch, Textiles, and Safety.

The unit on textiles proved interesting to the girls of the class, especially. It contained many useful suggestions in caring for various kinds of materials, and in purchasing cloth goods. Contained in the unit, were discussions concerning the production of cotton, silk, wool, linen and rayon cloth. We also had reports on celanese and nylon, and discussed the economic angle of the production of artificial cloths. Also several interesting reports were brought in on the subject synthetic rubber.

In these classes, since Christmas, I have been requiring a great deal of oral reports. This practice proved to be beneficial in two ways: the reports bring in outside information and add interest to the class, and the students obtained considerable practice in speaking before a group. I noted a great deal of improvement in the quality of oral recitation among most of the students.

During the last three weeks of school, these classes completed the unit from Basic Electricity on Induction and covered the important points of three other units.

The unit of Induction had been partly covered in the previous period. In this unit we studied the principal of transformers and induction coils, as well as the underlying principal of generators.

We then studied the high lights of two units, one of Motors and the other dealing with Generators. We discussed the general principals of each without going into an intensive study of the various kinds. I felt it to be unnecessary in this type of class, and that the time could be used elsewhere to a better advantage.

The last few days were given over to what was probably the most practical part of the text for the majority of the students, viz. how to read a watt meter, and how to determine the wattage of electrical devices in order to estimate their operating cost in the home. Many were surprised to discover how much current they were consuming in their own barracks.

Whether the time was well spent that we took for the study of Electricity is difficult to say. Certainly many of the students will never use the information in a practical sense, but that can be argued about many of the subjects taught in General Science. I do know that some of the students gleaned a great deal from the course that will be useful to them. I am sure that some will continue their study further in this field.

Lowell M. Jackson
Instructor of Science
Work Report: April 15-May 1, 1944

Advanced General Science

During the last half of April the Advanced General Science classes completed the unit of Home equipment. The unit covered a wide variety of subjects, including suggestions by which one can judge refrigerators, washing machines, electric irons and other household appliances. A portion of the unit was devoted to the study of home lighting problems, the importance of proper lighting, and how to secure correct lighting. Other topics treated included, care of musical equipment, photography as a hobby, and the home work shop.

In addition to the text material, a good deal of information upon related subjects was given in oral reports. Topics included home air conditioning, and various new labor saving household gadgets.

In Basic Electricity we completed a unit on electromagnetism. This proved to be an interesting unit to the class. We did a number of experiments demonstrating uses of electromagnets, eg. in door chimes, buzzers, telegraphs and the like. We also demonstrated how permanent magnets can be remagnetized.

We commenced the study of a unit dealing with induction of currents during this period and did experiments demonstrating how a current can be induced into a conductor by disturbing the lines of force of a magnetic field. Further study of this principal will be made during the next few days.

SEMESTER REPORT

General Science, 9th Grade

In these classes we covered four general problems: How do living things behave? How do scientists classify living things? How are plants and animals fitted to the conditions around them? How do simple machines help us do work?

The first unit combined biology and psychology in the study of behavior in human beings and in animals. The last part of the unit was given over to responses in plants.

Unit two was a study in classification of living things. And served as a good introduction to Biology. During the study of this unit we did some field work to classify some of the plant life of this locality.

The third unit dealt with adaptation of plant and animal life to its environment--both in water and on land. The latter part of the unit was given to the study of man and the way he has adapted himself to his environment. In this part I endeavored to correlate this study with the problems of the students in their present environment.

The fourth unit serves as an introduction to the next five units, all of which deal with physical science.

Although we have only covered about one-third of the text, I have no doubt that we can complete it this semester. The forth-coming units are more tangible to the students than the previous ones; hence they are going at a much more rapid rate.

Lowell M. Jackson
Instructor of Science
Work Report: Mar. 15-April 1, 1944

NINTH GRADE GENERAL SCIENCE

During the last two weeks of March the ninth grades finished the unit on "Electricity and its Uses" and commented the unit on "Harnessing Energy"

In the unit on electricity we studied many practical things such as how to estimate the operating cost of electrical equipment, and how to determine whether an electrical device is practical.

In the unit on Harnessing Energy we are studying the various sources of energy such as the wind, water wheels, turbines, pelton wheels, steam reciprocating engines, and steam turbines, internal combustion engines (gasoline and diesel) and compressed air.

So far we have learned the relationship of work (foot pounds) to horsepower and the relationship of horsepower and wattage.

ADVANCED GENERAL SCIENCE

During the last part of this month these classes finished the unit in Beauchamp on "Cells and Batteries". This unit included the theory of the production of electrons by chemical action, the difference between dry and wet (storage) cells, how to connect cells to multiply voltage, amperage or both. In addition there were many practical suggestions as to the care and upkeep of cells, which was especially valuable in its information concerning the proper care of storage batteries.

In our Senior Science text we completed the unit dealing with "Foods and Medicines". This unit proved interesting especially in its treatments of Vitamins and also for its debunking of "quack" cures and patent medicines.

Lowell M. Jackson
Instructor of Science
Work report: April 15-May 19

General Science

The Ninth grade General Science classes spent the last five weeks of school completing three final units of the text, Heridity, History of Living Things, Conservation.

The unit on Heridity included a short discussion of Mendel's law, and a study of such subjects as variations, blends, mutations. However, the greater part of the unit discussed how plants and animals can be improved by selection, grading, developing useful mutations, grafting etc.

The unit on History of Living things proved to be quite interesting. It gave a clear, yet simple, idea of how geologists read the "record of the rocks." In this unit we used Well's "Outline of History" to study natural selection--a topic that fitted quite logically into the subject.

The last unit of Conservation, dealt with the conservation of natural resources, such as coal, petroleum, wild life, forest, and soil, with a good deal of emphasis upon the latter. Considerable interesting material on the conservation of soil and the conservation of wild life was brought in from outside sources.

During the last semester of this year, these classes did a great deal of oral reading. I found that the students as a whole seemed to show greater comprehension of subject matter by this method, that they were stimulated to discuss the material as we were reading it, and that they developed a great deal in their speaking habits and in their ability to recite before a group.

Lowell M. Jackson
Instructor of Science
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Nov. 18, 1944

To: Mr. H. K. Walther
From: H. W. Williams
Subject: Monthly Report for Advanced Science.
Text Book: Senior Science
by Bush-Stack-Hovats.

Subject Matter Covered.

I. Fire pp. 108-146

A. Fire Under Control.

1. Stoves.

2. Hot Air Systems.

3. Steam Systems.

B. Improvements in Home Heating.

1. Automatic Fuel Feeds.

2. Thermostats.

C. Transference of Heat.

1. Conductions.

2. Convection.

3. Radiation.

II. Fuels. pp. 149-189.

A. Coal and Coals.

B. Wood and Charcoal.

C. Petroleum.

Each student keeps a note book. These were handed in and graded.

Each student gave an oral report on a scientific subject of his own choice.

Questions in the text were used for several short tests.

A few experiments were performed but not as many as I should have liked.

Proposed Work.

I. Petroleum. pp. 181-214

A. Drilling for Oil.

B. Refining Petroleum.

II. Weather and Air. pp. 217-274.

A. Importance of Weather.

B. Weather Forecasting.

C. Air Pressure in Use.

D. Composition of Air.

Each student will continue to give one oral report each month.
Note books will be kept for the experiments performed.

Test in Adv. Science 11-3-44

- I. Describe and explain the principle of a thermostat.
- II. Name and explain the three methods of heat transference.
- III. State the law of conservation of energy, and trace the energy from the water at the top of Niagara Falls to the iron, toaster, light etc. in the home.
- IV. Define temperature. Change 62°F to centigrade. Tell what you can about the range in temperature.

Dec. 26, 1944

To: Mr. H. K. Matthes
From: H. H. Williams
Subject: Monthly Report for Advanced Science.
Text: Senior Science by
Bush - Otacek - Kovats.

Subject Matter Covered

I. Fuels pp. 189-214

A. Petroleum

1. Refining

2. Future Supply

B. Gases

C. Side lights

II. Weather and Air pp. 217-245

A. Importance of Weather

B. Weather Forecasting

Visual Aid.

I. Chemistry in Electricity

II. A New World

III. Molecular Theory of Matter

Experiments were performed.
Also each student gave one
oral report on outside reading.

Proposed Work
Subject Matter

- I. Weather and Air pp. 245-274
A. Air Pressure in Use.
B. Composition of Air.
- II. Foods and Medicines pp. 275-350
A. General Classes of Substances
in Foods.
B. Food Preservation
C. Diets for Special Purposes.
D. Medicines
E. Advertised Cures

Several films are scheduled.
Each student will give an oral
report. Note books will be kept.

Test in Adv. Science

12-8-44

- I. Explain fully why coal is the most valuable one we have.
- II. Explain how coke is made and why it would be advisable to burn coke instead of coal.
- III. Explain the two important methods of drilling oil wells.
- IV. Tell how petroleum is refined.
- V. Explain the statement "There are but three fundamental units of measurement."

Lowell Jackson
Instructor of Science
Report: October 4-15, 1943

SUMMARY ON WORK

The work of grades 9-1, 9-3, and 9-4 for the past two weeks has been grouped around the unit of "Classification of Living Things". In this unit, we have endeavored to show the method used by scientists in the grouping of various forms of living things into their proper places. The first part of the unit was spent in discussing the general systems of classification, that is, by taking one particular kind of animal and tracing its classification from being a living thing down to the particular animal itself.

Since then, we have been taking different forms of animal life in more detail to get a more definite idea of the method of classification. In conjunction with this work, these classes have been making charts showing various groups of animals and their distinguished characteristics. Also, the members of these classes are preparing individual reports on strange living things to be given orally.

To date, we have covered about two thirds of the unit work.

9-2 Group

This group has been progressing at a slower pace than the other three ninth grade groups. Last week (Oct. 4-8), this group completed the work in Unit I as described in the previous report. In the week of October 11-15, they have taken up the second unit called "Classification of Living Things".

ADVANCED GENERAL SCIENCE

Both groups of "Advanced General Science" are studying the unit built around the subject of water. This topic is subdivided into the following: "Water as the Life Blood of the World"; "Water as a Cleaning Agent"; "Operating Water for Use"; "Water as a Gas"; and "The Chemical Composition of Water". One group has completed the unit this week (Oct. 11-15) and will take an examination the earlier part of the week of Oct. 18-22. The other group will finish this unit on the same week as the first group take their examination.

Lowell M. Jackson
Science Instructor
November 5, 1943

GENERAL SCIENCE

The Freshman General Science groups, 9-1 and 9-4, have completed the unit in our text on Classification of Living Things. They have prepared and are now in the process of presenting in class, oral reports upon various strange and interesting living things from all over the world, giving physical characteristics, conditions under which they live, habits and the like. I am having them to classify the forms of life as the Kingdom, Phylum, Class, and order.

Classes 9-3 and 9-2 are in the process of preparing their reports, having just completed the formal work in the chapter.

In their reports I have endeavored to obtain as much information as possible for the students and from as wide variety of sources as possible. With the aid of four students, I compiled a bibliography from all the available magazines in the library; this has been of considerable value.

During the past week I have been grading notebooks from the four 9th grade classes covering the work done in our first unit on Behavior. (It became necessary to delay calling for these because of the nature of an experiment in which we were making observations of a growing plant.) Many of these notebooks showed unusual talent and comprehension.

I have been especially well pleased with the progress of the 9-2 group, both as to attitude and quality of work.

ADVANCED GENERAL SCIENCE

The Advanced Science groups have completed the unit on the subject, "Water" and are preparing reports to be given orally in class. A good many of the students are reporting upon such topics as A.H.S. Heating Plant; Amache Water System; Amache Fire Department; Amache Sewage Disposal Plant; Caddoa Dam, etc.

It will be interesting to observe how much initiative the students present in these reports.

Lowell M. Jackson
Instructor of Science
Work Report: November 13, 1943

GENERAL SCIENCE

The freshman groups, 9-1 and 9-4, began this week on the third unit called "How Plants and Animals are Fitted to the Conditions Around them". This unit follows logically the previous unit on "Classification of Living Things". To date, we have made a brief survey of the unit by considering the necessity of living things adapting themselves to their environment. We will, in the future, take various forms of animal life and study them in more detail. In this unit, I shall endeavor to put forth the idea of man's adapting himself to changing conditions; and from this point, I shall endeavor to direct each class in thinking of ways to adapt themselves to the changed condition in which they are living.

The 9-3 group finished giving their reports referred to in the last written report, and will take their examination on the second unit on November 17.

The 9-2 group will finish giving their reports by November 17, and will take their examination on November 19.

I have also been going over the notebooks of all the classes for Unit II and have been highly pleased with the quality of workmanship and with the amount of originality that is demonstrated by the students.

ADVANCED GENERAL SCIENCE

Both classes of Advanced General Science have commenced a unit on "Fire, Its Wonders and Its Dangers". The unit is subdivided in the following manner: the importance of fire; the nature of burning; the destructive fire; methods of extinguishing fire; and fire as it is used in the home and in industry. This promises to be an interesting and highly beneficial unit. I have planned a number of experiments; I also have made arrangements with Mr. Campbell, the fire chief, to give demonstrations of various kinds of fire extinguishes and how and when to use them. I have also been grading the notebooks of these classes on Unit II and have found a great deal of excellent workmanship.

Lowell M. Jackson
Instructor of Science
Work Report: November 30, 1943

GENERAL SCIENCE

The Freshmen groups, 9-1 and 9-4, are completing the unit, "How Plants and Animals are Fitted to the Conditions Around them", and will take their examination the latter part of this week. It was intended that these two groups would take a field trip during the Thanksgiving holidays at which time we would study the various plants of this locality and how they are adapted to their habitat. Because of the bad weather, only fourteen students made the trip; however, we succeeded in getting a great variety of specimens which we brought in and studied in all the classes.

The 9-2 and 9-3 groups are, as usual, trailing along in the wake of the other two. They will probably finish this unit by the middle of next week.

ADVANCED GENERAL SCIENCE

Both classes are continuing their study on the unit "Fire, Its Wonders and Dangers". At present we are studying various types of heating systems. In keeping with this part of the unit, I have taken the classes to observe our own heating plant. Last week the two classes were given demonstrations by Mr. Campbell on various types of fire extinguishers. This proved to be interesting and educational. Mr. Campbell lectured on each type of fire extinguisher, then started several fires using gasoline and oil. He then demonstrated the various types of fire extinguishers showing the good and bad qualities of each. I feel that this type of education will be of benefit to each member of the class.

Lowell M. Jackson
Instructor of Science
Work Report: January 1, 1944

(This is a report for the past three weeks; I chose to submit it in this manner rather than to have a separate report for one week.)

ADVANCED GENERAL SCIENCE

These classes have finished the unit on Fuels, which proved to be an interesting study of wood, coal, petroleum, and gas as they are produced and used as fuels. Conservation of natural resources was also discussed.

We distilled coal to produce coke, coal tar and combustible gases; and we distilled wood to produce charcoal and combustible gases.

For our next unit I plan to go to Unit 9 in the-text, "Transportation", which seems to follow logically the work we have been covering. In connection with this, I plan to interject a study of simple machines and the principal upon which they work. This material is not found in the text.

GENERAL SCIENCE (9th Grade)

The four Freshman classes are studying a unit upon the subject of "Work". It includes a study of what work is, how machines help us to do work, how to determine the mechanical advantage, and the efficiency of machines, and how the most complicated machines are made up of a combination of all or some of the six fundamental machines.

It is interesting to note that heretofore slow students are showing remarkable interest and improvement in their work since our work has shifted from biology to mechanical science.

The classes are studying fairly close together, and I hope to complete this unit the first week of the New Year, then to the study of electricity.

SEMESTER REPORT

Advanced General Science

The four problems we covered in the Advanced General Science groups were, "Behavior", "Water", "Fire", "Fuels".

The first unit on Behavior was based on a unit from the Beauchamp-Mayfield-West text. I covered this unit only with the fifth hour class--Mr. Griffith having been teaching the other class at that time.

The unit on Water was divided into three main heads--water as a liquid, as a solid, and as a gas, plus some interesting sidelights dealing with specific gravity of liquids, Archimedes principle, and the composition of water. In this unit students obtained a great deal of outside material upon the subject of water by writing to various agencies.

In the unit on Fire, we studied it both as a constructive and as a destructive force. The approach, as is generally the case with the text we are using, was more sociological than scientific. Both classes had the opportunity to see various types of fire extinguishers demonstrated by Mr. Campbell when we made a field trip to the Fire Department.

The topic of Fuels was approached from three main angles--coal, wood, and petroleum. In each case the fuel was discussed as a source of heat, of power and of important by-products.

A number of interesting reports upon modern fuel developments, such as high octane gas, were made. Also some reports upon potential fuel supplies, such as oil shale, further use of coal products, the sun as a source of energy, etc., were given in class.

Lowell M. Jackson
Instructor of Science
Work Report: February 1-15, 1944

NINTH GRADE GENERAL SCIENCE

The Ninth Grade classes completed a unit on "Sound and its Uses" during these two weeks. The unit was divided into the following sub-topics: "How Sound is Produced", "How Sound travels", "How Sounds Differ from one Another", "Pitch", "Intensity", "Over tones", "How do we Hear", and "Sound Recording".

This proved to be a profitable and interesting unit; we performed a number of experiments to determine pitch of vibrating bodies, sympathetic vibration, how sound can be reinforced, etc. The opportunity was also afforded, while studying how we speak, to give a good deal of emphasis to certain sounds which are difficult for these children. By choral recitation, we practiced "l's", "r's", "th's", etc. In addition we also studied the construction of the ear, and learned a number of things concerning the care of the ear.

ADVANCED GENERAL SCIENCE

During this period we finished a unit on Transportation--a study of all the various forms of mechanical transportation and the problems connected. This unit contained much useful information concerning care of an automobile, and what to look for in buying new and used cars. In addition to the text work, each student gave an oral report upon some recent development in transportation.

After completing this unit we took the study of Electricity, using the Beauchamp-Mayfield text "Basic Electricity." In this period we studied the "Electrical Circuit" in which we learned the difference between open and closed circuits, conductors and non-conductors, etc. Practically all the members of the class are enthusiastic about this unit.

Lowell M. Jackson
Instructor of Science
Work Report: February 15-29, 1944

NINTH GRADE GENERAL SCIENCE

During the past two weeks these classes have been studying "Light, How this Energy is Used". To date we have studied how light travels--how it is like and unlike sound, the meaning of transparent, translucent, opaque, radiation, reflection, diffusion. Using these terms, we are studying various lighting systems, what is meant by "foot candle", and how to determine foot candles. In general, we are studying how to care for the eyes. Other divisions of the unit include a study of the camera, the eyes--how they function, microscope, movie projector, the spectrum, and colors.

I plan to finish this unit this week and to take up a unit on "Electricity as it is Used" next week.

ADVANCED GENERAL SCIENCE

These past two weeks we have continued the study of Electricity, using the Beauchamp-Mayfield "Basic Electricity" as a text. To date we have studied how electrons behave in a circuit; this naturally involved the study of the theory of electrons and protons and their relationship to atoms. We are now studying resistance, potential and amperage--in other words the principle of Ohm's law. This unit contains much practical material concerning safeguarding the circuit and other precautions. We will finish this part of the text this week and take up the study of cells next week.

In our "Senior Science" text we are studying a unit on "Weather". In this unit I have divided the classes into five groups and assigned a problem to each group. Each problem is covered in the unit; however, I have suggested to each group, additional material about which they are to get information.

The classes are showing a great deal of interest in the study of Electricity.

Lowell M. Jackson
Instructor of Science
Work Report: March 1-15, 1944

NINTH GRADE GENERAL SCIENCE

During the first week of March the ninth grade General Science classes finished the unit on "Light". The classes then reviewed all the work they had covered since the beginning of the second semester, and took their examinations for the quarter.

The classes then took up the study of "Electricity and its Uses". This unit deals with the manner in which electrons can be made to produce light, heat, do work--such as operate buzzers, motors, etc., to do electroplating, and to send messages as by telegraphs, telephones and radio. In addition to this material this unit also teaches how to read an electro light meter; how to determine the wattage of electrical appliances in order to estimate their operating cost; and how to determine the amperage in a circuit so as to safeguard the circuit and the fuse. I have given a good deal of emphasis to this part of the unit and have had good response from the students. They have examined the appliances in their barracks to estimate the amount of current each uses and its operating cost.

To date we are about half finished with this unit; I plan to finish it by the end of the third week of this month.

ADVANCED GENERAL SCIENCE

During the past two weeks the Advanced Science Classes finished the unit in Bush on "Weather", and the unit in Beauchamp on Ohms Law. They then took their quarter exams on all the work covered since the new semester.

The classes then took up the study of production of current by chemical action, ie, dry cells and storage cells. In Bush, they are studying a unit on Foods and Medicines. This is an interesting unit, especially in its treatment of Vitamins.

We will finish both these units by the end of the third week of this month. The classes are continuing to show a great deal of interest in the study of electricity.

Lowell M. Jackson
Instructor of Science
Work Report: April 1-15, 1944

NINTH GRADE GENERAL SCIENCE

The ninth grades finished their study of "Harnessing Energy" during the first half of April. This unit brought together what the class has learned in a previous unit on "Simple Machines" and showed how forces of energy can be applied to them to do work.

This unit included the study of wind, compressed air, water, steam, and petroleum (as used in internal combustion engines) as sources of power. Also included in the unit was the relationship between work, horsepower, and wattage.

The classes visited the machine shop where we observed the various types of engines and saw how they operate. We also observed other parts of an automobile such as transmission, differential, steering arrangement, universal joints, and etc.

The classes will finish their test on this unit April 19th.

ADVANCED GENERAL SCIENCE

The first half of this month the Advanced Science classes completed a unit in Busch on Building Materials. This covered a wide variety of topics including the various building materials such as wood, brick, tile, and also the various roofing materials such as slate, tile, cedar shingles, and metal shingles. A portion of the unit was given over to the manufacturing of glass, and another portion to the manufacturing of paints, also a number of useful hints about painting.

Building strain or "load" was also discussed as well as building codes and laws governing the construction of houses.

We also discussed subjects not found in the text including adobe houses, skyscrapers, construction and prefabricated houses.

In Beauchamp the class completed a comparatively short unit on Magnetism. This unit necessary before the class goes into the study of many of the uses of Electricity. The classes are continuing to show a good deal of interest in this course.

Lowell M Jackson
Instructor of Science
Work Report: April 15-May 1, 1944

Advanced General Science

During the last half of April the Advanced General Science classes completed the unit of Home equipment. The unit covered a wide variety of subjects, including suggestions by which one can judge refrigerators, washing machines, electric irons and other household appliances. A portion of the unit was devoted to the study of home lighting problems, the importance of proper lighting, and how to secure correct lighting. Other topics treated included, care of musical equipment, photography as a hobby, and the home work shop.

In addition to the text material, a good deal of information upon related subjects was given in oral reports. Topics included home air conditioning, and various new labor saving household gadgets.

In Basic Electricity we completed a unit on electromagnetism. This proved to be an interesting unit to the class. We did a number of experiments demonstrating uses of electromagnets, eg in door chimes, buzzers, telegraphs and the like. We also demonstrated how permanent magnets can be remagnetized.

We commenced the study of a unit dealing with induction of currents during this period and did experiments demonstrating how a current can be induced into a conductor by disturbing the lines of force of a magnetic field. Further study of this principal will be made during the next few days.

Lowell M Jackson
Instructor of Science
Work Report: May 1-May 19

Advanced General Science

In this final period, the Advanced Science classes completed two units in Busch, Textiles, and Safety. The uni

The unit on textiles proved interesting to the girls of the class, especially. It contained many useful suggestions in caring for various kinds of materials, and in purchasing cloth goods. Contained in the unit, were discussions concerning the production of cotton silk, wool, linen and rayon cloth. We also had reports on celanese and nylon, and discussed the economic angle of the production of artificial cloths. Also several interesting reports were brought in on the subject of synthetic rubber.

In these classes, since Christmas, I have been requiring a great deal of oral reports. This practice has proved to be beneficial in two ways: the reports bring in outside information and add interest to the class, and the students obtained considerable practice in speaking before a group. I noted a great deal of improvement in the quality of oral recitation among most of the students.

During the last three weeks of school, these classes completed the unit from Basic Electricity on Induction and covered the important points of three other units.

The unit of Induction had been partly covered in the previous period. In this unit we studied the principal of transformers and induction coils, as well as the underlying principal of generators.

We then studied the high lights of two units, one of Motors and the other dealing with Generators. We discuss the general principals of each without going into an intensive study of the various kinds. I felt it to be unnecessary in this type of class, and that the time could be used elsewhere to a better advantage.

The last few days were given over to what was probably the most practical part of the text for the majority of the students, viz. how to read a watt meter, and how to determine the wattage of electrical devices in order to estimate their operating cost in the home. Many were surprised to discover how much current they were consuming in their own barracks.

Whether the time was well spent that we took for the study of Electricity is difficult to say. Certainly many of the students will never use the information in a practical sense, but that can be argued about many of the subjects taught in General Science. I do know that some of the students gleaned a great deal from the course that will be

useful to them. I am sure that some will continue their study further
in this field.

A. St. Williams
Oct. 14, 1944

Advanced Science.

Text: - Senior Science by Bush-Stack-Kovats.

Work done Sept. 16 - Oct. 14.

I. Water pp. 51 - 74.

- A. Water as a gas.
- B. Chemical Composition of water.
- C. Water purification.
- D. Specific Gravity.
- E. Buoyant Force.

II. Fire pp. 75 - 120.

- A. Nature of burning.
- B. Destructive Fire.
- C. Fire Extinguishing.
- D. Heating.

III. Experiments.

- A. Buoyant Force of water.
- B. Water seeks own level.
- C. Air pressure.
- D. Effect of oxygen on burning.

IV. Each student gave an oral report of outside scientific reading.

Proposed work: - I plan to cover material in text from page 120 - page 214 which will complete Fire and Fuels. Also we shall do all possible experiments, and each student will give at least one oral report on individual work.

Test in Adv. Science

9-29-44

- I. Discuss why water is called the life blood of the world.
- II. Draw a diagram and explain a suction pump.
- III. Explain why we need force pumps.
- IV. What is the law which governs the loss of weight of a solid submerged in a liquid?
- V. Draw a diagram and explain how a simple steam engine works.

Test in Adv. Science

10-13-44

- I. Write a paragraph about the early day beliefs and mysteries of fire.
- II. Explain what takes place when a piece of paper burns.
- III. Describe one type of fire extinguisher, and tell what is necessary ~~to~~ to extinguish a fire.
- IV. Draw a diagram and explain fully a vacuum steam heating system.
- V. What type of heating system would you choose? Give reasons.

Test in Gen. Science. 9-(28-29)/44
10-1

- I. Define:
- (A) Behavior
 - (B) Reflex Act.
 - (C) Conditioned Reflex.
 - (D) Instinct.
- II. A. Name the five senses.
B. Name and locate the sense organs.
- III. You see an object. Explain fully.
- IV. Why are we able to tell difference in color?

The tests in other classes were comparable to this. III. was hearing the gong.
IV. was explain how to teach an animal a trick.