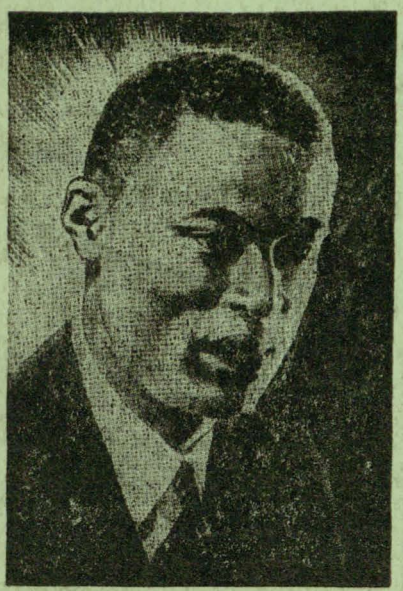
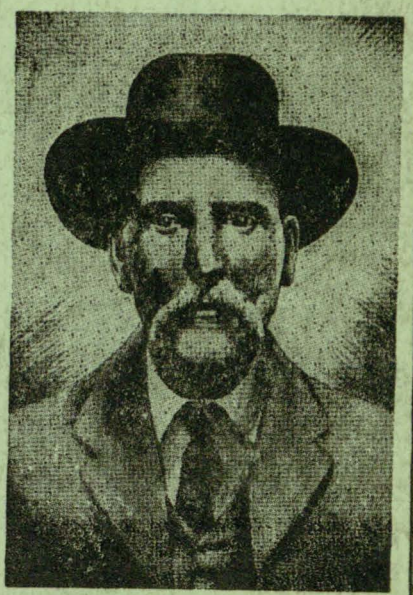
THE MOREHOUSE

JOURNAL OF SCIENCE

Published jointly by The Alabama State Teachers College, Morris Brown College and Morehouse College



CLAUDE HOWARD
Georgia
Inventor of Gauging and Sorting Machine for Ford V-8 Piston Pins



ANDREW J. BEARD
Alabama
Inventor of Automatic Car-Coupling Device, Known as The "Jennie Coupler"

Vol. 7, No. I

February, 1945

THE MOREHOUSE
JOURNAL OF SCIENCE

Vol. VII. February, 1945 No. 1

I. To bring to the teachers of Science in Negro Schools articles on methods of instruction, objectives, and curriculum organizations in both secondary schools and colleges.

II. To publish articles by the profession, giving publicity to individual ideas, methods, et cetera, of interest and mutual helpfulness.

III. To act as a clearing house in an attempt to standardize courses in science in the different denominational and public secondary schools, as to aims, content and evaluation, in order to facilitate transfers, and entrance upon the standard college courses.

IV. To point out and emphasize the practical application of the theories of science.

V. To record the achievements of Negroes in the field of science as historical data for the purpose of inspiration.

VI. To publish unbiased and critical book reviews.

VII. To abstract articles of interest appearing in the periodicals for the benefits of our readers.

VIII. To adhere more or less closely to this general outline but gradually making such improvements and additions as may recommend themselves from time to time.

CONTENTS

OUR VIEWPOINT

Again we are happy to send to you another issue of the Morehouse Journal of Science. We feel that this issue comes to you with more assurance of being a forum of continuous issue. The following Colleges have definitely assumed sponsorship of this organ as the official expression of their departments of the Natural Sciences, namely: Alabama State Teachers College, Morris Brown College, Morehouse College.

With the support and backing of these Institutions, it is felt that we can keep this purely scientific periodical coming to you regularly. Never have we needed such a periodical more than at the present time.

Much is being said and written concerning the Negro's opportunity for employment and participation in the various War industries and service in the highly technical units of the Army and Navy. We may be mistaken, but we feel that some of the philosophy of the thinking of Employers and Officials in control is due to our own neglect to advertise, emphasize and establish the adaptability and efficiency of the Negro boy and girl in the use and appreciation of modern scientific machinery and methods, which are so essential in the present war.

Our schools and Colleges have gone overboard in training in the social sciences and humanities.

We have magnified our Poets, Singers, Musicians of various types, Orators and neglected the professional, technically trained, business and productive individuals. In fact, we have lived like the troubadours of the middle age, on the Bounties of our Benefactors.

Natural Science departments in our Colleges have been considered burdensome and necessary evils, for the benefit of the few individuals who were trained for the profession of Medicine, Pharmacy, Nursing, Home Economics and that much publicized and talked about, but little practiced and elaborated field, namely: Agriculture.

In the present emergency one of our oldest and best known so called institution for training in Mechanical Trades and Agriculture was designated by one of the Government specialist as not being up to a good Vocational Industrial High School, in scope and quality of work. Although we realize most of our administrators come from the ranks of the cloth, the social sciences or

humanities, we are hoping that this present crisis will help them to interpret the handwriting on the wall. That these Schools will re-examine their objectives and curricula in line of the needs of our group for the possibility of fusion and becoming an integral part of the present Scientific Civilization of America. Survey courses in the Natural Sciences have sapped the vitality of many strong departments. Colleges flourish where degrees can be obtained without a single course in Mathematics.

Another evidence of this lack of interest in the fundamental scientific development in which we live is shown, in fact, that outside of the National Technical Association with Chapters in Chicago, Dayton, Los Angeles, Nashville, Detroit, New York, Pittsburgh, Perdue, St. Louis, Tuskegee, Greensboro, and Washington, we have no attempt at natural science organizations or cooperation between the learned members of our group in the pure or applied sciences.

There has been some attempt in the South lately by various individuals to form some sort of organization of Negroes who are members of the Sigma Xi Honorary Scientific Society. A few Negroes hold membership in the various learned societies of this Country. However, we are of the opinion that we must develop a general belief in, and appreciation of the scientific capabilities of the Negro boy and girl. This must be an all-out project of every Negro in the pure and applied sciences from the highest to the lowest. Every individual of superior achievement and opportunity must think of himself only as an instrument for extending to others the same opportunity.

We hope the columns of the Journal will offer such opportunity for the development of such recognition, which we have pointed out as essential to the integration of the Negro as a Component part of the contemporary civilization in which he lives. Here shall be the possibility of expression of ideas, the recordings of experiences and achievements of our group.

We are justly proud of the few individuals who have achieved in the various fields of Science, but we regret the fact that they are accepted as exceptions and almost as museum curiosities. We want to bring to the attention of our fellow citizens the ability of so many of our group that when Employers or Officials face a Negro youth with certain educational qualifications, he will think of him as capable as any individual of like qualities for any position which is being considered.

To these aims we hope you will subscribe and will lend your assistance. We welcome Scientific, Historical and Educational articles, with reference to the objectives as stated for this Journal.

OUR MAILING LIST

It may happen that our mailing list is inaccurate. If this issue has to be forwarded to you, write us your correct address so that you can receive the April issue promptly. Or, if this copy belongs to someone else, send your name and address for a copy of the April Issue. If you have a friend you desire to know about the Journal, also send his name and address. We want this Journal to reach the Library of every Negro Institution of Learning and every teacher of Science.

A REQUEST

In order to record the achievement of Negroes in the Field of Science as historical data for the purpose of Inspiration, we are asking our readers to send to this office the following information:

1. Names and addresses of any Negro business concerns manufacturing raw or finished commercial products.

2. Names and addresses of Negroes employed in business concerns manufacturing finished or raw products in positions calling for technical skill or knowledge.

3. Names and addresses of other Negroes such as Inventors, eminent surgeons, physicians, etc.

OUR POLICY

Let us reiterate our hopes of living up to the eight aims of this Journal as stated with your cooperation. Will you not give us the benefit of your experience, ideas, and experimentations? Send us your papers, for this, your paper. Let us together make this Journal of assistance to us in accomplishing that which we most desire: To make our schools the most efficient, our graduates the better prepared and ourselves the best equipped teachers professionally.

WANTED

The following copies are missing from our files of the Journal, Volume 1, No. 2, July, 1926, and Volume 1, No. 4, January, 1927. They are urgently needed. If you are willing to sell either of these numbers please write to the Editor.

SCIENCE TEACHING IN HIGH SCHOOLS OF GEORGIA AND ALABAMA

With the closing of practically all the private high schools and academies in the states of Georgia and Alabama, the responsibility of Secondary school education has become a recognized responsibility of the State Boards of Education. Further, there has also been a movement to free the high schools of the pressure of preparing for college, and to allow them to organize their curricula and teach to the end that the schools may be functional in meeting the community needs. The state of Georgia has crystallized the sentiment in a philosophy of stating the goals of the secondary school, in terms of seven life adjustments. The state of Alabama has also expressed the desire and begun curricula studies for reorganization of the High Schools on a community functional basis.

THE MEETING OF THE ALABAMA ASSOCIATION OF SCIENCE TEACHERS OF ALABAMA

H. L. VAN DYKE

The State Teachers College, Montgomery, Ala.

The Alabama Association of Science Teachers was called to order by the President, Dr. C. T .Simpson, in Opelika, Alabama, at 11:00 A. M. on January 20, 1945. This was the first meeting of the Association during the 1944-45 school year. The East Street High School of Opelika was the host institution for the meeting. Some ninety-five persons, including members of the Junior Chapters, were present at this one-day session.

The special feature of this meeting was the planned program for the benefit of the members of the Junior Chapters. The president of the association had circulated a questionnaire and a suggested list of activities some weeks before the meeting. The answers to this questionnaire provided the nucleus for all of the work and discussions on projects during most of the meeting.

Several members of the association took an active part in guiding the work projects and the discussions. Dr. B. F. Smith of the State Teachers College prepared a rabbit for mounting for those interested in taxidermy. Dr. Eagleson of Atlanta University held discussions concerning electric motors and demonstrated magnetic field conductors, short circuits, armature winding, and computator arrangements. The president, Dr. Simpson, was aided by Mr. Brown of the Secondary School Study and Mr. Coston of the host institution in the taking of pictures ,developing of films, and the preparation of solutions. Dr. H. L. Van Dyke of the State Teachers College led discussions concerning the field of cosmetics. Professor B. T. Harvey of Morehouse College, Dr. Simpson, and Mr. Bryant of Lanett, Alabama, worked with the groups on electroplating. In addition, Mr. Harvey discussed the extraction of dyes from bark.

Another important feature of the meeting was the faculty-student planning seminar led by Mr. Brown of Atlanta, aided by Dr. Eagleson, who served also as a consultant with Mr. Brown.

The president had gathered a large collection of free materials which were exhibited in display rooms. Mr. Coston of the East Street High School was responsible for the very good arrangement and interest given to this display. Many of the Junior Chapters arranged exhibits and prizes were given on the basis of subject matter in the fields of Physics, Biology and Chemistry. A committee awarded prizes in the form of books to the following schools: Loveless High School of Montgomery won the prize for Physics, East High School of Opelika won the prize for Biology, while Lee County Training School of Auburn won the Chemistry prize. The committee suggested that a number of ribbons be given rather than three prizes in order that more recognition could be given to worth-while efforts of many schools.

The Junior Chapters elected the following State Officers for the year:

President—James Mundy, Tuskegee High School, Tuskegee.

Vice-President—Otis Carter, Loveless High School, Montgomery.

Secretary—Abraham Bibb, Loveless High School, Montgomery.

Assistant Secretary—Norma Thomas, Trenholm High School, Tuscumbia.

Treasurer—Moses Wilson, East Street High School, Opelika.

Dr. E. G. Trigg, Mr. E. K. Weaver, Mrs. Lee and Mr. J. M Reynolds of the State Teachers College and Mr. R. C. Hatch, State Jeans Supervisor, gave valuable assistance to the success of the meeting.

ALABAMA ASSOCIATION OF SCIENCE TEACHERS SUGGESTIVE WORK ACTIVITIES

I. COLLECTING AND PRESERVING SPECIMENS

1. Classifying for exhibition rocks and minerals brought from my community.
2. Classifying for exhibition insects brought from my school or community.
3. Preserving, stuffing, or mounting animals brought from my community.
4. Indentifying and preserving leaves, flowers, from my community.
5. Others: .....

.....

II. ELECTRICITY

6. Repairing electrical appliances brought from my community.
7. Constructing some electrical gadget, to be used in my school or home, from materials which I shall bring. (Please describe in some detail).
8. Electroplating some small clean object. (Please describe the object).
9. Working out some wiring or other electrical problem which is important in my work.
10. Solving a problem in electricity of a mathematical nature which is important in my work.
11. Operating an electrical gadget founded in my school or community.
12. Constructing a simple radio set for sending or receiving.
13. Others: .....

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III. AQUARIA AND TERRARIA

14. Building a 5-10 gallon aquarium from wood, glass, slate, metal, concrete, or other materials which I can bring.

15. Establishing an aquarium, using submerged plants, in a container which I shall bring.
16. Establishing a terrarium in a glass container which I shall bring.
17. Building a submerged aquarium heater using Nichrome Wire or other 10-100 watt heating element.
18. Others: .....

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IV. COSMETIC AND OTHER CONSUMER PRODUCTS

19. Making soap from old grease, peanut oil, soy beans or other vegetable oil which I will bring.
20. Constructing a motor stirrer from a small electric fan motor which I can bring.
21. Making creams, lotions, fingernail polish, etc. (Please indicate choice).
23. Others: .....

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V. PHOTOGRAPHY

24. Developing plans for darkroom.
25. Developing and printing pictures.
26. Taking various kinds of pictures and identifying the science principles involved.
27. Toning and Tinting pictures and identifying the science involved.
28. Others: .....

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VI. INDUSTRIAL PROCESSES

29. Silvering small mirrors.
30. Making plastics.
31. Distilling pine sap to obtain turpentine.
32. Distilling crude oil.
33. Purifying or refining some industrial product. (Name

product).

34. Others: .....

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VII. MODELS, CHARTS, ETC. FOR TEACHING ABSTRACT IDEAS IN SCIENCE

35. Making atomic models from cardboard, sticks, wire or other materials.
36. Making a fireless cooker from wood and insulating board.
37. Building a chicken incubator from wood and insulating board.
38. Calculating the efficiency of a thermos bottle.
39. Making a simple musical instrument from wire, windshield glass, wood or other materials.
40. Apparatus or charts to illustrate some science principle.
41. Others: .....

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SUGGESTED TITLES IN SCIENCE FOR SMALL HIGH SCHOOL

Hallie B. Brooks, Atlanta University Library, Atlanta, Ga.

GENERAL SCIENCE

Caldwell, O. W. and Curtis, F. D.—*Science for today* Ginn, 1939 ..... $1.92
Colling, A. F.—*Science on parade* ..... Appleton-Century, 1940 ..... 3.00
Davis, Watson—*Science picture parade* ..... Duell, 1940 ..... 3.00
Van Buskirk, E. F., Smith, E. L. and Nourse, W. S.—*Science of everyday life* ..... Houghton, 1938 ..... 1.62
Webb, Hanor and Beauchamp, R. W.—*Science by observation and experiment* ..... Appleton-Century, 1935 ..... 3.75

SCIENCE — HISTORY

Jaffe, Bernard—*Outposts of science* ..... Simon & Schuster, 1935 ..... 3.75

ASTRONOMY

Baker, R. H.—*Introducing the constellations* ..... Viking, 1937 ..... 2.50
Reed, W. M.—*Stars for Sam* ..... Harcourt, 1931 ..... 2.75

PHYSICS

Black, N. H. and Davis, H. N.—*Elementary practical physics* ..... Macmillan, 1938 ..... 2.00
Harrison, G. R.—*Atoms in action* ..... Morrow, 1941 ..... 3.50
Langdon-Davies, John—*Inside the atom* ..... Harper, 1933 ..... 2.00
Whitman, W. G.—*Household physics* ..... Wiley, 1939 ..... 3.00
Hough, Walter—*Story of fire* ..... Doubleday, 1928 ..... 2.00
Morgan, A. P.—*First electrical book for boys* ..... Scribner, 1935 ..... 2.50

CHEMISTRY

Black, N. H. and Conant, J. B.—*New practical chemistory* Macmillan, 1936 ..... 1.88
Foster, William—*Romance of chemistory* Appleton-Century, 1936 ..... 3.00
Holmes, H. N.—*Out of the test tube* ..... Emerson, 1941 ..... 3.00
Jaffe, Bernard—*New world of chemistry* ..... Silver, 1940 ..... 1.84
Morgan, A. P.—*Simple chemical experiments* Appleton-Century, 1941 ..... 2.00
Morgan, A. P.—*Things a boy can do with Chemistory* Appleton-Century, 1940 ..... 2.50

MINERALOGY

Loomis, F. B.—*Field book of common rocks and minerals* Putnam, 1923 ..... 3.50
Shitlock, H. P.—*Story of minerals* American Museum of Natural History, 1925 ..... .80

GEOLOGY

Croneis, C. G. and Krumbein, W. C.—*Down to earth* University of Chicago press, 1936 ..... 3.75
Reed, W. M.—*Earth for Sam* ..... Harcourt, 1930 ..... 2.75
Fenton, C. L.—*Our Amazing earth* ..... Doubleday, 1938 ..... 4.50
Reed, W. M.—*Sea for Sam* ..... Harcourt, 1935 ..... 2.75

PALEONTOLOGY

Dimtars, R. L.—*Book of prehistoric animals* Lippincott, 1935 ..... 2.00
Fenton, C. L.—*Life long ago* ..... Day, 1937 ..... 3.50

Lucas, F. A.—*Animals of the past*.....American Museum of Natural History, 1929..... .80

BIOLOGY

Moon, T. J. and Mann, P. B.—*Biology*.....Holt, 1941..... 2.00
Locy, W. A.—*Biology and its makers*.....Holt, 1915..... 3.25
Lucas, J. M.—*Man's first million years*.....Harcourt, 1941..... 2.00
Marshak and Seagal—*How man became a giant* Lippincott, 1942..... 2.00

MICROSCOPY

Disraeli, Robert—*Seeing the unseen*.....Day, 1939..... 2.50 (1.88)
Yates, R. F.—*Exploring with the microscope* Appleton-Century, 1934..... 2.00

BOTANY

Coulter, M. C.—*Story of the plant kingdom* University of Chicago press, 1935..... 2.50
DuPuy, W. A.—*Our plant friends and foes*.....Winston, 1941..... 1.00
Clute, W. N.—*Common names of plants*.....Author, 1942..... 3.00
Mathews, F. S.—*Field book of American trees and shrubs* Putnam, 1915..... 3.50
Rogers, J. E.—*Tree book*.....Doubleday, 1905..... 3.50
Mathews, F. S.—*Field book of American wild flowers* Putnam, 1929..... 3.50
Mathews, F. S.—*Familiar flowers of field and garden* Appleton-Century, 1937..... 2.50

BACTERIA

Conn, H. W.—*Bacteria, yeasts, and molds*.....Ginn, 1932..... 2.00
Park, W. H. and Williams, A. W.—*Who's who among the microbes*.....Appleton-Century, 1929..... 3.00

ZOOLOGY

Beebe, William—*Exploring with Beebe*.....Putnam, 1932..... 2.50
Hegner, R. W.—*Parade of the animal kingdom* Macmillan, 1935..... 5.00
Hornaday, W. T.—*American natural history*...Scribner, 1935..... 5.00
Innes, W. T.—*Complete aquarium book*.....Halcyon house, 1936 (now out of print. Try second hand)
Morgan, A. P.—*Aquarium book for boys and girls* Scribner, 1936..... 2.00
DuPuy, W. A.—*Our animal friends and foes*...Winston, 1940..... .80

Snedigar, Robert—*Our small native animals* Random House, 1939..... 2.50

INSECTS

Comstock, J. H.—*Manuel for the study of insects* Comstock Pub. Co., 1938..... 4.00
DuPuy, W. A.—*Our insect friends and foes*.....Winston, 1940..... .80
Lutz, F. E.—*Field book of insects*.....Putnam, 1935..... 3.50
Weed, C. M.—*Insect ways*.....Appleton-Century, 1930..... 1.36

FISHES

National Geographic Society—*Books of fishes* The Society, 1939..... 3.50

REPTILES

Pope, C. H.—*Snakes alive and how they live*.....Viking, 1937..... 2.50
Ditmars, R. L.—*Book of living reptiles*.....Lippincott, 1936..... 2.00

BIRDS

Chapman, F. M.—*Bird-life; a guide to the study of our common birds*.....Appleton-Century,..... 5.00

TEACHER-STUDENT HEALTH IN OUR POST WAR PLANNING

W. A. Mason, M.D.

Consultant, Health Education, Ga. Dept. of Public Health

Much discussion has arisen as to trends in the protection of health in the post war period. The large number of rejections of individuals drafted for military service has again emphasized the need of planned health services for the greatest number of American people. Whether these services be administered through group insurance or some other more dramatic change toward the socialization of medicine, there are many who believe that education of the public in health is essential to the success of any program. This is of course a long range program. It is necessary, nevertheless, that however these services are administered, that the public be trained to use wisely the armamentarium of public health services thus provided. Adult education becomes a necessity because of our

failure in the past to properly give to our children in our schools the facts and experiences necessary for wholesome living. I say facts and experience because too often we have taught facts and so-called rules of health rather than using the school and community as a laboratory where students might experience wholesome living.

I once visited a school in the southern part of our state. The teacher of agriculture was interested in the environmental situation of the school — a worthy objective. He explained in glowing terms his plans for building sanitary toilets, some of which were in the process of construction. He then took me on a tour of the project. I spent a day at the school and noted that no one was using the old privies, nor could they use the incompleted ones. On asking him where the children were going, he proudly pointed to a nearby grove, stating that he did not want the children to use the old privies any more, and that they were using the grove until the new toilets were completed. It did not once occur evidently to his fertile brain that first he was jeopardizing the health of the entire community, and more important still that he was completely ignoring a fundamental fact in the learning process. When our schools do well their job in health education; when they make it functional rather than purely didactic, then this process will become increasingly less important for adult groups.

In any post war plans for health then the teacher is a most important factor, and there must be definite planning now particularly in our teacher-training institutions in this area. There must be a basis for this training of course in our elementary and secondary schools. Training in safety, in hygiene, personal and mental, in human relations, in the known facts about communicable diseases and protective measures against them, is as much a part of the curriculum as the tool subjects and may often be integrated with them by the skillful teacher. The teacher training college builds on this foundation, or where lacking, as it usually is in our present educational systems, seeks to instill a desirable philosophy as regards health through establishment of a functional student health service. A teacher so trained subconsciously radiates health, and leads her students into a fuller appreciation, both by teaching and practice, of the healthy life.

It is our object merely to point out a minimal program that will insure a greater degree of health among teachers, and a will to transmit through teaching and practice a workable philosophy as regards health to their students.

Much of this as I indicated earlier is a long range program, but it is nevertheless the sine qua non to the success of any measure directed toward protecting or preserving the health of our citizens. There is no "Magic Carpet" approach. New patterns must be established. Boards of education will many times need a renaissance in their thinking and practices. Teachers, too, must often be prodded from a lethargy sometimes approaching fatalism. This same lethargy has been noted too often in their fight for a living wage.

1. HEALTH EVALUATION

Teaching is mentally and physically taxing. Every teacher therefore should have a thorough physical examination. This should come preferably upon entrance in the teacher training college, should be repeated at least once a year during college, and thereafter. The objectives of such examination should be threefold:

1. To detect communicable diseases, especially typhoid, infectious syphilis, tuberculosis.
2. To protect by immunization against those diseases for which we have accepted techniques (typhoid—small pox).
3. Finally, to evaluate the individual as to his ability mentally and physically to withstand the strain incident to teaching. In the female, a sympathetic understanding of all problems related to personal hygiene should be urged.

This examination should preferably be made by a selected physician rather than by the individual's personal physician, and should include recommendations as to the person's physical and mental fitness for the teaching profession, and suggestions to the applicant for protecting her own health on the basis of physical findings.

2. ADEQUATE BUILDINGS

Buildings should be properly equipped, with proper environmental sanitation, and should include proper rest rooms or a lounge where teachers may relax, if only for a short time.

3. REGULATION OF PUPIL LOAD

Regulation of pupil load is essential to the physical and mental well being of teacher and student alike.

4. ADEQUATE LUNCH ROOM FACILITIES

The body must be properly fed if one is to function optionally.

5. ADEQUATE COMMUNITY RECREATION

Free of mental hazard often experienced especially in small communities.

6. SECURITY

This may come in the form of tenure retirement insurance, group insurance, etc. Security of employment is necesary to proper mental hygiene.

7. A LIVING WAGE

Sub-standard wages just as sub-standard housing and recreation, is the greatest ally of disease. Wage differentials following the pattern in the South not only create frustrations, but leave psychic scars and cut down the ability of the teacher.

SUMMARY

1. The present war has again emphasized the need for improving the health of our citizens.

2. Post war planning for health promises health services to the greatest number of people. It is likely that we shall have some form of socialized medicine.

3. Education of the public in the wise use of health services is essential. This is a long range program, and the teacher must play an important part through practice and teaching, in developing a philosophy on wholesome living in her students.

4. Teacher training institutions must make health education as challenging to the pre-service teacher as the tool subjects. This necessitates a well organized and functional student health service.

5. A program of minimal requirements that will insure a greater degree of health among teachers, and a will to do a good job of the teaching of health is presented.

CONCLUSION

"It is my philosophy that the purpose of life, health, and education are one — that the end and aim of all are growth and enrichment of human experience."—Bonser.

THE PERISCOPE

JOSEPH TURNER, INVENTOR OF MECHANICAL DEVICE

Mr. Turner is a "scaler" at the branch plant of the Carnegie Illinois Steel Corporation at Charleston, S. C., a $100,000,000 concern engaged in war production work. He is in charge of a mechanical chisel that removes scale from steel plates. The machine is operated by compressed air. Mr. Turner invented and perfected an attachment that cools the point of the chisel, hence preserving its temper and greatly lengthening its life. It reduces labor by half and doubles production. Mr. Turner was issued a certificate of merit in "recognition of initiative and patriotism for a meritorious contribution to the war production drive," by the Carnegie Illinois Steel Corporation. It was the first award of the kind presented at the plant.

JAMES H. BIRNIE, THE MOSQUITOES OF SOUTH CAROLINA

A review of the mosquitoes found in South Carolina with special reference to the genera and species that act as disease vectors.

Twenty-nine species distributed among ten genera are reported. Of these seven are known to be disease vectors under natural conditions, two are suspected disease vectors, and twenty have been shown not to transmit disease producing organisms under natural conditions. Attention is called to the fact that several members of the so-called "non-transmitting" group have been shown to act as disease vectors under experimental conditions, but, as yet, no information regarding their role in nature has been obtained, therefore, they cannot be classified as vectors.

The species transmitting malaria, blackwater fever, yellow fever, dengue fever, filariasis, tularaemia, and equine encephalomyelitis are listed together with notes on their biology and relative importance as vectors.

Data regarding the biting habits, larval habit as wintering

state and economic importance of all twenty-nine species found in South Carolina is presented.

Included in the forms discussed is *Anopheles Walkeri* a new species for South Carolina discovered in the summer of 1940 by author.

South Carolina State A. and M. College Bulletin.

Vol. 29, No. 4, pp. 7-13.

DR. DANIEL HALE WILLIAMS LIVES ON AT PROVIDENT

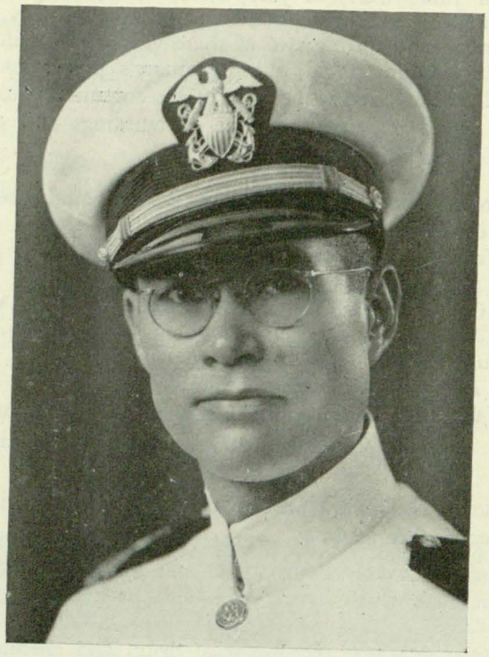
After church one Sunday, recently, a prominent doctor of Georgia took his pastor to task for having told the congregation that the late Dr. Daniel Hale Williams, famed Negro heart specialist of Chicago, had been a member of the select American College of Surgeons. The doctor insisted that a Negro had never been a member. Now there is another Negro member, Surgeon Louis Tompkins Wright, of Harlem, who operates on heads.

Dr. Williams scored another record during his lifetime. In 1891 he opened Provident Hospital of Chicago in a frame building with a bed capacity of thirteen. It was here in almost pioneer surroundings, medically speaking, that Dr. Williams performed the first successful operation on the human heart which earned him his place in the College of Surgeons.

It was not until 1929 that Dr. Williams saw Provident Hospital take its place as the biggest and best Negro hopsital in the country. That year Julius Rosenwald raised $3,000,000 to build and equip a new plant. Connected with the University of Chicago, Provident counts among its staff several white consultants, among them, Gynecologist Joseph Bolivar DeLee who himself has revolutionized the practice of obstetrics in this country. Of all Negro doctors who have turned specialists in the past ten years, seventy-five percent have been trained at Provident Hospital.

Negroes are justly and understandably proud of Provident Hospital. Negro doctors in the South, cut off from hospital facilities, available to white doctors, point to Provident as evidence of the Negro doctor's ability when they are given a chance. It is good argument except for the fact that the history of the development of Provident on the fiftieth anniversary of its founding disclose that Dr. Williams was not giving a chance, he took it.

FIRST NEGRO NAVY ENGINEER OFFICER



Edward Swain Hope, was recently commissioned full lieutenant in the U. S. Naval Reserve, Civil Engineer Corps, and he reported for duty at Davisville, R. I., on May 20, 1944. While approximately a dozen Negro men were commissioned as ensigns several months before, with the rank of second lieutenant Hope is the first Negro to be given the rank of full lieutenant in the U. S. Navy. This rank carries with it, of course, considerably more responsibility than the corresponding rank in the Army.

Lieutenant Hope was born in Atlanta in 1901, where he received his undergraduate training at Horehouse College. He was awarded the B. S. and M. S. degrees in civil engineering by the Massachusetts Institutte of Technology, where his post-graduate work was done, in 1926 and 1927 respectively. A student at Teachers College, Columbia University, during 1939-1942, he was awarded the Ed. D. in personnel administration by that institution in 1942.

In the summer of 1926 Lieutenant Hope conducted the water power survey for the Grenfell Mission at St. Anthony, Newfoundland. From June, 1927, to July, 1931, he was engineer for the Brazil branch of the Electric Bond and Share Company, in Rio de Janeiro, Brazil, and during two of these years he was in charge of hydrographic studies on all that company's properties in Brazil. From 1932 to May, 1944, the date of his commission in the U. S. Navy, he served as superintendent of buildings and grounds at Howard University.

Lieutenant Hope is a member of the National Technical Association, the American Association of Engineers, and the Kappa Delta Pi fraternity of Columbia University.

OUR CONTRIBUTION TO NEGRO HISTORY WEEK

Do you know the following Negroes:

James Parsons, Jr., Durion Company, Chemist.

E. J. McMillan, Cleveland Hardware Co., Metallurgist.

Dr. T. K. Lawless, Northwestern University Medical School, Professor.

Lt. Edward S. Hope, U. S. Naval Reserve, Civil Engineer Corps, Hydro-Electric Engineer.

Benjamin Banneker, Astronomer and Almanac Maker. In 1770 he made a clock which struck the hours, the first clock constructed in America.

A. Maurice Moore, Jr. Buyer of drugs and chemicals for the city of New York, founder and former President Harlem Laboratories, Inc., W. 125th Street, First Negro business located on this street.

Lewis Howard Latimer, Edison pioneer. Successfully produced a method of making carbon filaments for the Maxim electric incandescent lamp, which he patented. In the autumn of 1881 Mr. Latimer was sent to London, England, to establish an incandescent lamp department for the Maxim-Weston Electric Light Company.

Jan Matzeliger patented the first complete machine ever invented for performing automatically all the operations involved in attaching soles to shoes.

Wendell King, Radio Station WEDH. Radio Engineer.

Lloyd A. Hall, Research and Consulting chemist, Chicago, Ill.

Dr. James Derham, first regularly recognized Negro Physician of whom there is a complete record, New Orleans, Louisiana.

Dr. William Augustaus Hinton, Harvard Medical School, Boston, developed the Hinton Test for Syphilis, admittedly a more sensitive test than either the Kahn or Wasserman.

Dr. Raymon S. Mubay, Cape Town, South Africa, a staff member of Professor Paul Ehrlicks' Clinics in Germany and the first to enter the vein through the skin. Previous to that time they were incising the skin to pick up the vein to introduce the needle for the medicine.

Norbert Rillieux, New Orleans, La., Inventor of Evaporating pan for refining sugar.

Andrew J. Beard, Birmingham, Ala., Inventor of Automatic Car-Coupling Device, known as the "Jennie-Coupler."

Claude Harvard, Atlanta, Ga., Inventor of automatic guaging and sorting machine for Ford V-8 piston rings.

For further information write the Editor or consult the following files:

Vol. 1-6, The Morehouse Journal of Science.

The Colored Inventor, Henry E. Baker.

Technigrams of the National Technical Association.

Meeting of the Alabama Association of Science Teachers and Junior Chapters at Opelika, Ala.

DID YOU KNOW

By Harold E. Finley,

Morehouse College, Atlanta, Ga.

FOREWORD, At this moment many educators are intensely interested in the improvement of science programs in American schools. Because a considerable amount of attention is being devoted to ways of making the science programs of educational institutions deal directly with problems of contemporary living, teachers of science are being encouraged to make use of resources and materials available in their communities. They are being taught, or being told, that science programs should be made "meaningful," or that science should be put to work in everyday life of each person exposed to its discipline. With these facts in mind it occurred to the author that some good may come of a series of article written with a view towards suggesting topics and problems which may be considered in the planning of a functional program in science. Such a series of articles might come from persons who have had professional training in the various fields of science or from persons interested in science but not having professional training in that area. The writers of these articles would not attempt to supply all the details of how an analysis of a topic or solution of a problem should be approached, indeed special efforts might be taken to avoid stating or implying that "this or that is the best way —."

The author would like to think of this article, and those which may follow, as a deliberate expression of effort intended to provide starting points or initial steps *leading towards* either the stimulation of thought or the preplanning aspect of teaching; not as comprehensive surveys, nor as statements of plans for the organization and analysis of problems, issues, activities, bibliographies, and the like. Instead, each article, especially this one, might be a series of statements which could serve to stimulate persons (be they teachers or students or others) to ask "Why? How?" In other words each article in the series would state the who, when, where and what of certain scientific phenomena or scientific events. It seems desirable to state the whos and whats in such a way as to arouse the curiosity of the reader. If sufficiently stimulated the reader or a group of readers may be inclined to formulate explanations, or better, to test explanations which some other person formulated.

The author sincerely hopes that he may not be expected to write all the articles for the series. Accordingly an invitation is

hereby extended to teachers of science and to others with interests in science to submit an article for the series. Contributions from non-teachers will be accorded the same welcome extended to teachers in elementary schools, high schools and colleges. Typewritten manuscripts should be sent to the Editor-in-chief of this JOURNAL OF SCIENCE who will submit them to qualified referees for comment and editing. Each accepted article will be published under the title "DID YOU KNOW?"

INTRODUCTION. Genetics is the study of inherent similarities and differences. It is the science of heredity and related phenomena. This subdivision of the biological sciences has grown out of the facts, assumptions, theories, and hypotheses which men acquired through experiences in plant breeding, animal breeding, mathematics and cytology.

GOAL. This article is written with the hope that it may appeal to readers who want to enlarge their understanding of a relatively young science; a science with its greatest potentialities yet to be realized; a subject for thought and discussion capable of arousing keen interest because it concerns cotton, corn, beans, peanuts, watermelons, strawberries, tomatoes, potatoes, Jimson weeds, morning-glories, roses, Amoeba, Parmaecium, mice, rats, hogs, dogs, cows, mules, horses, races of mankind, and myriads of other living things.

CHRONOLOGY OF GENETICS. Neolithic people recognized varieties of cattle and dogs, possibly as much as 10,000 to 25,000 years ago. Mules are mentioned in the writings of Homer (B. C. 800). Genesis 30:35 has often been cited as evidence that in biblical times men believed in "birthmarks." Ancient Hebrew herdsmen were successful cattle breeders and Jacob was one among the best of them. One of the most important tools of modern genetics was used in Babylon, Egypt, and Greece. Spanish sheepbreeders gave Spain a monopoly of the wool weaving industry as early as the 15th century. Primitive Americans were persistent and unusually successful plant hybridizers. Camerarius' *De Sexu Plantarum Epistola,* published in 1694, paved the way for modern experiments in plant hybridization. The sugar beet is a hybrid which dates back to the Napoleonic era. Many of the modern breeds of livestock owe their origin to the manager of the famous Dishley Estate which flourished in England about a century after Camerarius. The Royal Society of London knew something about the inheritance of color-blindness as far back as 1779. Charles Darwin successfully hybridized morning-glories and produced very attractive varieties. Thirty-four years

after Gregor Mendel laid the foundation of modern genetics the Englishman Bateson and the American Spillman were hot on the trail of the gene and barely missed being given credit for the discovery which made Mendel the father of genetics. Between the years 1902 and 1908 Bateson coined at least six terms which are almost invariably used in genetics. From about 1904 until recent years the science of genetics has been greatly advanced by contributions of American scientists and there are some who state that American scientists dominated the field during that period. A new branch is developing on the "genetic trees," namely, the biochemical branch.

COTTON. The cultivated cottons of today seem to trace back to cottons grown in one or the other of four world centers, namely, Indo-China, tropical Africa, Mexico or Central America, and the lower regions of the Andes Mountains of South America. The large-boll foundation stock for the cottons known as Columbia, Jones Improved, Keenan, and Russell was introduced into Georgia by a German immigrant who obtained the seed from North Africa. In recent years American breeders of cotton increased the average staple length about one-thirty-second of an inch with the result that the value of the entire cotton crop was increased a total of nearly eight million dollars.

CORN. In a certain way corn shares with garden peas the honor of being the plant that lead to the establishment of Mendel's laws of inheritance. It is very likely that the only genetic difference between a kernel of sweet corn and a kernel of field corn is due to a single gene which prevents the conversion of some of the sugar (in sweet corn) into starch. Through a knowledge of plant genetics it is possible to convert some of the leading types of southern field corn into sweet corns. Manufacturers of puffed grained breakfast cereals probably got their idea of "puffing" grains from popcorn. There are different flavors of popcorn, flavors as characteristic as the distinctive flavors in apples; these flavors undoubtedly have a genetic basis.

WATERMELONS. Watermelons, cucumbers, muskmelons, pumpkins, and squash belong to the same family of plants. It is possible to control the pollination of watermelons and thereby produce different varieties. Our knowledge of the genetics of watermelons is very meager in comparison with what is known about corn. The Georgia Rattlesnake variety of watermelon was produced about 1870 in Atlanta, Georgia, by W. D. Johnson. The Monte Cristo melon (formerly called Kleckley Sweet) was developed by

W. A. Kleckley in Alabama and introduced by W. Atlee Burlee & Co., in 1897. The Stone Mountain variety was introduced by the H. G. Hastings Co., of Atlanta, Georgia, in 1924.

STRAWBERRIES. The strawberry is now distributed and growing in nearly every country in the world, yet, the cultivated variety was derived from two American species. The cultivation of strawberries in such different climates as in the interior of Alaska and in the southern part of Florida is definitely the result of plant breeding. Many of the cultivated varieties of our time are descendants of the wild meadow strawberry of eastern North America and the beech strawberry from the cost of Chile in South America. Some of the wild Chilean strawberries bore fruit as large as a walnut and sometimes the size of a hen's egg. The wild meadow strawberry is smaller than the cultivated varieties. It is said that the cultivated varieties got their flavor and color from the North American berry and their size from the South American berry. Breeding experiments with strawberries may be conducted in almost any class room or laboratory where the plants can be grown in flower pots. Because color, size and shape of the berry is determined by several genes the interpretation of inheritance in strawberries needs further study.

FLOWERS. There are 15,000 varieties of roses known by man. Roses and many other flowers have been improved by breeding and new varieties have been created by amateur flower breeders. The following kinds of flowers are suitable for experiments by amateur flower breeders: Morning-glory, nasturtium, gladiolus, verbena, petunia, carnations (pinks), roses, snapdragon. Flower breeders have usually taken chances and "waited for breaks" in order to create new varieties in spite of the fact that an almost elementary knowledge of genetics would enable a breeder to "make the breaks."

GOATS. The goat is the second most widely distributed of all domesticated animals, being found throughout the world outside the Arctic regions. Captain John Smith (of Pocahontas fame) brought milk goats to Virginia. Goat milk is palatable and nutritious; a good milk goat will supply sufficient milk for the average family for nealy 10 months of the year and can be kept where a cow could not be accommodated. This domesticated animal can become increasingly important as a dairy animal in the United States. There is great need for more complete data on its milk and butterfat production; these characteristics may be affected by heredity. Future progress in improvement of milk goats demands

the cooperation of small scale owners of goats, scientists, and breeders.

DOGS. It seems that dogs were the first wild animals to be domesticated by man. Prehistoric men probably owned dogs. Dogs serve man as companions or pets, guards, guides, draft animals, hunters, herders of live stock, subjects of scientific investigations, and in case of necessity as food. These numerous uses are partly the result of their original inheritance and partly due to centuries of selection. Only in recent years has beeding of dogs been placed on a scientific basis. In spite of centuries of domestication much is yet to be learned about the genetics of dogs.

FINIS. All facts stated in this article were selected from two publications of the UNITED STATES DEPARTMENT OF AGRICULTURE, namely, YEARBOOK OF AGRICULTURE for the years 1936 and 1937. These books may be obtained free by sending a request to your Congressman or they may be purchased from the Superintendent of Documents, Washington, D. C. Most of the topics and problems mentioned here can be adapted to the purpose of utilizing the natural resources of a community in order to acquire an understanding of some of the whys and hows of genetics.

ARITHMETICAL DIFFICULTIES OF WEST VIRGINIA STATE COLLEGE STUDENTS TAKING ELEMENTARY CHEMISTRY

By William J. L. Wallance and Paul J. Moore,

West Virginia State College,Institute, W. Va.

For a number of years, the Department of Chemistry at West Virginia State College has observed that one of the glaring weaknesses and inadequacies of students taking the Introductory Course in Chemistry involved a lack of knowledge of some of the fundimental arithmetical and algebraic operations. For the past four years the Department has been using the Iowa Placement Examinations, series C-A, Revised A and the Revised B Examinations for the purpose of sectioning students. Part I of these examinations consist of twenty problems. The correct solutions of these problems involve a knowledge of arithmetical and algebraic operations essential

for success in mastering Inorganic Chemistry. Furthermore, maiy of these operations are of considerable practical importance in every day life. Since arithmetic in an elementary and Junior High School subject, it is logical that the college should expect students to be able to find the solutions to simple arithmetical problems, and to expect those students having had elementary algebra in the high school or college to be able to solve simple algebraic operations.

It is the purpose of this investigation to ascertain whether or not those students entering the Introductory Chemistry Course at West Virginia State College have an arithmetical and algebraic background so important to success in this field and so important in understanding many problems which arise in every day life.

The following is a list of problems which are representative and similar to the problems found in the Placement Examinations mentioned above. The exact problems can not be given for several reasons.

LIST OF PROBLEMS

1. What is 31% of .06?
2. If a truck load of coal weighs 3,000 lbs. and the coal is 70% carbon, how many pounds of carbon are in the coal?
3. A sample of coal weighing 2 grams lost .25 prams of water when dried. What percentage of water was in the original sample?
4. Coal is 80% carbon. How much coal will be needed to get 1,000 lbs. of carbon?
5. Solve to one decimal place: [210x372x740] divided by [291x 840].
6. A plot of 8 acres is divided among 11 people. What common fraction of an acre does each person receive?
7. What is the square root of 961?
8. If two pounds of fifteen cent coffee is mixed with six pounds of twenty cent coffee, what is the value per pound of the mixture?
9. If Charleston is ten miles from Institute and one kilometer equals two thirds of a mile, what is the distance in kilometers between these two towns?
10. If six gallons of punch are needed for sixty-five persons, how many gallons will be needed for one hundred and forty per-

sons?

11. Solve for Q: $a/6 = 3b^2$.
12. Solve for P: $P_1 V_1/P_2 V_2 = T_1/T_2$.
13. If $a = 12$, $b = 4$, $y = 2$, $[a-b]y = ?$
14. If $x = yz$, what does x/y equal?
15. $A^2 = b^2 +$ what does $b = ?$

Table I gives the performance of 267 students on these types of problems.

The number of the problems in the table is the same as that in the above list.

TABLE I

PEFORMANCE OF 267 STUDENTS

No. of Problem	No. Answered Right	No. Answered Wrong	No. Not Answered	Total No.
1.	63	129	75	267
2.	84	90	93	267
3.	42	69	156	267
4.	29	87	418	534
5.	1	31	235	267
6.	22	126	119	267
7.	45	46	176	267
8.	42	69	156	267
9.	11	87	169	267
10.	23	117	127	267
11.	47	72	148	267
12.	12	46	209	267
13	168	45	54	267
14.	106	54	107	267
15.	8	122	137	267

Examination

This problem represents two of the problems found in the Placement.

It is to be noted that a student is not expected to work all of the problems in the time limit of fifteen minutes. The interesting point is that for only two problems did the number of correct responses exceed the number of wrong responses.

Analysis of the wrong answers given by the students show that the incorrect attempts are due to:

1. Faulty multiplication,
2. Decimal point trouble,
3. Lack of knowledge of certain fundamental concepts such as "percentage"
4. To a lack of understanding of numbers and their relation to one another, and
5. Attempts to memorize mathematical operations without a real knowledge of the principles underlying the operations.

Further examination of the performances of 267 students on Part I of the Iowa Placement Examinations reveals that 136 or 50.9% of the students solved two problems or less during the fifteen minutes. Thirty six of these persons failed to solve a single problem. The above results seem to indicate some fundamental arithmetical weakness. Since a knowledge of arithmetic is so very important in modern life, it appears that the elementary schools, high schools, and colleges should address themselves wholeheartedly and cooperatively toward strengthening the preparation of young people in arithmetic.

STATEMENT MADE BEFORE ANNUAL GEORGIA PRINCIPALS CONFERENCE

R. L. Cousin, Division of Negro Education
Atlanta, Georgia

Mr. Chairman,

Members of the Conference:

The State Department of Education initiated and has used this conference as an instrument to reach all the principals in the state to the end that the work of the schools may be made more functional. Each year numerous individuals have assisted in both planning and carrying out the work of the conference. It is highly desirable that some official and representative group of principals be designated to serve in an advisory capacity with reference to the planning of future conferences. Now that our principlas have

organized on a state-wide basis it is my suggestion that such an advisory committee be set up within the principals organization. It is further suggested that the constituency of such an advisory committee be determined before the close of this conference.

This is the seventh annual conference of principals. Each year the program has centered around some timely topic in order that our principals might be kept up to date on the best practices and procedures in teaching, supervision, andadministration. Starting in 1939 as a conference for high school principals the program has been expanded to include the principals of elementary schools also. The six previous conferences have dealt with broad and general topics in education. This year we are dealing more with one specific topic; namely, How Science Programs in the School May Be Improved.

During the 1944 summer session at Atlanta University there was conducted a Science Workshop. We were fortunate to have a majority of enrollees from Georgia. The participants and the members of the Principals Workshop group expressed the hope that there could be a follow-up of this special program, and our discussions today will do just that.

This week I have examined the applications for accrediting from our Negro high schools with particular reference to science offerings. Practically every high school filing an application offers courses in both general science and biology. It is interesting to note that some of the largest high schools restrict science offerings to those two courses. Some of the schools with adequate staff are offering courses in chemistry. Courses in physics are almost non-existent in small high schools.

It is quite evident that many teachers of science are not prepared for their work. This fact makes this conference all the more significant. The supply of prospective teachers of science is also far from adequate. Last spring 225 seniors asked that their names be listed in our annual bulletin of prospective teachers. Of that number only 8 had majored in science. To be added in this number were 103* who had majored in other fields but who had taken at least twelve semester hours in college science courses and could be considered as being eligible for science instruction. The Georgia Committee on Cooperation in Teacher Education will do well to study the matter of supply and demand for this and other fields as one basis for the guidance of students.

From personal observation I can say that there is great room

for improvement in the teaching of science in both elementary and secondary schools. The greatest weakness has been the failure to properly utilize available resources. This seems to reflect lack of training and imagination on the part of science teachers.

With further reference to the training of science teachers, we must agree that a sound knowledge of science is basic to successful science teaching but knowing *what* to teach is not the only characteristic of a good science teacher. Too much of our teaching has been meaningless verbalization without sufficient experiences to help children understand and interpret.

There is a necessity for knowing how to use materials and devices to make science teaching more related to the lives of the students, thereby increasing their interest. There should be a purpose on the part of the science teacher other than to make the acquisition of knowledge an end in itself. There are certain goals in science teaching which must be thoroughly understood, especially is this true of the use of the scientific method in the solving of problems. Any good teacher must know how children learn and the factors which condition learning so that proper methods may be used in reaching desired goals. In solving problems in science it is necessary for students through reading to collect evidences or material. Reading for exact meaning, for tests, exercises and directions holds one of the keys to success in science study and the science teacher must also be a teacher of reading. Not of the least importance is the necessity for the teacher of science to not only properly appraise the acquiring of facts but also the understanding of generalizations and the application of principles. To an elaboration of these points we will address ourselves today in our group meetings.

Our young people are living in a period of constant change. Science through modern inventions and discoveries has brought about a transformation in living conditions. More than ever before we need help and guidance in making satisfactory adjustments in our thinking and acting to these recent advances. This situation has been well summarized for us by Craig in the following statement:

"When the method of science is adopted by laymen in general as well as scientists, we may secure change without bloodshed, tolerance toward racial, religious, and national groups, open-mindness in the consideration of public and private problems, willingness to seek evidence and to search for all pertinent data,

and co-operation, wherever co-operation, is needed, in the solution of social problems."

*Of this number 84 were Home Ec. Majors.

THREE IMPORTANT AREAS OF CONTROVERSY AFFECTING THE SCIENCE PROGRAM IN NEGRO SCHOOLS

W. H. Brown, Associate Director Secondary School Study, Atlanta, Ga.

The seventh annual conference of Georgia principals clearly indicated that the development of science programs in Negro schools is a more complex task than it appears to be on the surface.

In the conference discussions as well as in "bull sessions" following the conference, there was complete agreement on the point that science programs in Negro schools should be and might be improved. Beyond this point, there are important areas of controversy which need to be approached with facts. These areas are suggested as bases for further discussion among those persons in the state who are interested in furthering the development of science programs in Negro schools.

The areas of controversy are presented below. In connection with these areas a number of different alternatives are presented. The alternatives represent unsupported opinions which have been expressed. Interested individuals or groups are encouraged to examine the alternatives, restate them to include additional facts, and to eliminate those which, in view of the facts, are undesirable. It is hoped that through this process, groups or individuals will come out with at least three alternatives, one from each area, which they can support with facts and which they are willing to use as a basis for action.

AREA I. Who Should Initiate the Program for the Improvement of Science Teaching in Georgia Schools in Order to Insure Some Degree of Consistency in the Direction of the Program?

Alternatives:

1. COLLEGE SCIENCE TEACHERS; since they know most about what should be taught and how best to organize science experiences for youth. After all one of their main functions is the training of science teachers. It is the duty of the Georgia colleges to arrange for their teachers to assume this responsibility.
2. THE STATE DEPARTMENT OF EDUCATION; because curriculum development is a main function of such departments and they have or should have public funds for use in providing this service.
3. THE SCIENCE TEACHERS IN THE LOWER SCHOOLS; since they know what they are trying to have their science pupils come out with. They should make their purposes known to the colleges and other agencies and request cooperation in terms of these purposes. After all, each school has full responsibility for planning and implementing its program.
4. Georgia Committee on Cooperation in Teacher Education, since the committee promotes cooperation on important problems affecting schools and colleges in Georgia.

AREA II. In Initiating The Program What Should Be Done First in Order To Put All Teachers on The "Right Track"?

Alternatives: The *surest* way to stimulate maximum development and minimum confusion is to:

1. Provide each teacher with a list of minimum facts and principles to be taught all pupils, a list of minimum apparatus to be used in teaching these facts, and a bulletin which explains how to go about teaching these things.
2. Provide capable science consultants who will visit schools and assist teachers in the discovery and implementation of appropriate steps for science programs.
3. Provide subsidized summer workshops for science teachers on several college campuses so that teachers, in cooperation with capable science consultants, can work intensively on plans and professional skills needed for their individual schools, and become a part of the follow-up program of some institution.
4. Select certain high or elementary schools as science education centers where a college, a local superintendent,

the State Department, and local teachers agree to develop a science program, collect evidences of its effectiveness, and produce instructional materials which can be shared with other schools.

5. Let the schools alone. In time they will get together and improve the situation.

AREA III. How Best Can the Essential Characteristics or Earmarks of a Good Science Program be Described?

Alternatives:

1. In terms of a standard course of study for all schools.
2. In terms of the facilities, including teacher, text and other books, and apparatus in the school.
3. In terms of the number and variety of opportunities provided for pupils to grow in the direction of clearly formulated purposes of science.
4. In terms of the school's success in meeting certain college entrance requirements.
5. In terms of the number of different text book courses available in the school.
6. In terms of significant pupil-teacher activities, written through collaboration by pupils and teachers, which reveal the important values in the program.

REPORT OF COMMITTEE ON SCIENCE EDUCATION TO THE GEORGIA COMMITTEE ON COOPERATION IN TEACHER EDUCATION

TOWARD A CONSISTENT STATE-WIDE SCIENCE PROGRAM IN NEGRO SCHOOLS

The committee of science teachers called together by the Georgia Committee on Cooperation in Teacher Education to suggest steps which might be taken to further the development of science

education in Georgia schools attempted to do two jobs:

1. To make statements concerning the direction which science programs in individual schools might take in order to insure a consistent state-wide program.
2. To make specific suggestions to the Georgia Committee on Cooperation in Teacher Education regarding steps which it might take in organizing and following through a cooperative effort to up-grade science teachers and science teaching in Georgia schools.

The Committee attempted to make its report general enough to encourage further study of content experiences by individual schools and teachers but specific enough to indicate values which can be and need to be more evident in Georgia schools as a program is projected for the improvement of science teaching. During its deliberations, the committee concerned itself with programs of science education in elementary schools, high schools, and colleges, and the relationships of these programs to each other.

GENERAL POINT OF VIEW

The committee feels that Science Education, at all levels, should be concerned with purposeful investigation and interpretation of natural phenomena. Science programs should be carried forward in ways which increase the efficiency of individuals in the intelligent control and use of environment situation which influence living.

In the elementary school the teaching of science should begin early in order to counteract the development of unscientific habits of thinking, prejudices, half truths, false assumptions, and misconceptions which are likely to develop, if science instruction is postponed too long. At first, science programs in the elementary school should be concerned with continued broadening of the pupil's sensitivity to the value of science inquiry through direct observation and study of science situations found in their homes, in the fields and streams, and in the things which pupils do or try to do. Later, these simple experiences, as well as others which accrue, can serve as points of reference as the pupils engage in science investigation of increasing depth and which require a wider range of experimental methods and skills.

In order to operate effectively in such a program, elementary teachers will need to find and make full use of opportunities to:

a. Indentify the facts about diseases, electricity, foods, soils, the growth of plants, the process of arriving at truth, the

relationship between science and the lives of individuals which they and their pupils need.

b. Clearly identify the wide range of values which can be promoted in science classes in an effort to increase the efficiency of pupils as they meet situations which affect their growth and well-being. This process should lead individual teachers to select values for their science class rooms which are appropriate in terms of the needs of pupils and in terms of the teachers fund of science information and skills.

c. Evaluate science activities in terms of their effectiveness in producing definite and desirable pupil growth in ability to make and interpret science investigations.

It is the conviction of the committee that every teacher, regardless of the curriculum plan under which he operates, should identify and make provisions for the establishment and maintenance of continuity in certain aspects of pupil growth. In science these aspects include:

1. Increasing skill in observation for significant details evidenced by consecutive samples of observation records.
2. Wider variety of and increasing competence with manipulative skills evidenced by class or individual records of skills used and the ways in which they were used.
3. Increasing skill in developing satisfactory explanations, and predictions of science phenomena based on science principles and facts evidenced by such things as the courses of action taken by pupils in science situations and consecutive samples of explanations and predictions made by pupils.
4. Increasing skill in the use of problem solving methods and tools evidenced by consecutive samples of plans for investigation developed and carried out by individuals or groups.
5. Increasing skill in the use of a variety of communication skills in the reception and transmission of ideas evidenced by the pupil's speech, consecutive samples of his written expression, samples of art forms which he uses, and his use of audio-visual devices.
6. Increasing skill in the application of science principles to the creation of devices and ideas which can be used to enrich personal or community living evidenced by such things as photographs or descriptions of devices developed by pupils, pamphlets or other written materials developed by pupils for community consumption, descriptions or photographs of useful devices or arrangements made in the pupil's home as a result of his science work at school, and the degree of discrimination used by pupils in regard to consumer goods and services.
7. Increasing acquisition of science facts evidenced by factual information tests.

At the elementary level the child is interested in himself to the extent that he relates his experiences and activities to his personal life but the secondary school pupil has adolescent interests.

At the secondary school level, the pupils' personal and social relationships are changing rapidly and these changes are reflected in things which pupils do, wish to do, or sometimes refuse to do. Sex understandings, vocational explorations, marriage, adult life, community life represent areas of strong interest. The strong desire to explore, to discover what they can or cannot do should be fully appreciated and recognized by the junior high school teacher.

The diversified interests and ambitions of junior high school pupils must be met with a carefully organized diversified science classroom approach. There must be opportunities for individuals or groups to work at different science tasks determined by clearly identified pupil ambitions and purposes. Georgia science teachers must have the courage and skill to provide opportunities for these diversified interests. Page by page assignments in a single textbook are not likely to result in the science outcomes which teachers and pupils expect. Teachers and pupils must acquire for classroom use reading materials on a sufficiently wide variety of topics. Some of these should give detailed directions for doing those things which pupils want to do. This may call for a pamphlet explaining how to repair an electrical appliance, leaflets or books explaining how to stuff a fur-bearing animal, books or pamphlets in which the pupils can find answers to specific science questions which challenge them. Under such a plan the teacher must be able to unify the different problems and investigations which pupils wish to undertake. This unification can be accomplished when teachers are able to identify the relationships in these problems and the science principles which are common to such problems. Here is a point where Georgia colleges and universities can assist in-service and pre-service science teachers.

When pupils reach the senior high school, many of them have developed well-defined science interests that are related to vocations, recreation, personal health, or other aspects of living. The enrollment in science classes is smaller yet greater differentiation may be necessary. Teachers and other school authorities face the problems of adjusting science courses to the wide range of abilities and interests represented in the senior high school. At present, schools are experimenting with two types of science programs for the senior high school. One program includes courses in biology, physics and chemistry for those pupils especially interested in science careers, college science work or vocations related to special sciences. The other program includes courses, often having the same name but using different materials and studying different problems, for those pupils who expect to have little or no later contacts with academic science.

Most of the Georgia Negro schools, like schools all over the country, must plan to accommodate wide ranges of abilities and interests in one class. Here is another point where colleges engaged in the preparation of teachers can cooperate in the development of high school science education. Since colleges have essentially the same situation in college science classes, and since prospective teachers are in these classes, colleges might indicate by example, classroom organizations which are effective in meeting the wide range of abilities and interests in science classes.

SPECIFIC SUGGESTIONS AND IMPLEMENTING TECHNIQUES

A. There should be instructional materials in science appropriate to various grade levels throughout the elementary and secondary schools.

1. Sources of these instructional materials:

a. College teachers of science should work with their students to collect and develop these materials.

b. Teachers of science in the elementary and secondary schools should also develop these materials.

c. Teachers of science should meet in regional meetings throughout the state with consultants to develop such materials as can be developed in this way. The teachers attending these meetings should be college teachers, high school teachers, and elementary school teachers who are engaged in teaching science.

2. Recommendations for the publication and distribution these materials.

a. It is recommended that these materials be gathered, edited, and distributed to science teachers through some central office, for instance, the Committee on Publications and Cooperation with the Georgia State Department of Education and other educational agencies could serve as this central agency.

b. It is recommended that these materials be distributed also through the publications of Jeanes teachers.

c. It is recommended that a fund be set up in the budget of the Georgia Teachers and Educational Association to underwrite the distribution of these instructional materials.

d. It is recommended that the Committee on Science Instruction of the Georgia Committee on Cooperation in Teacher Education be given the responsibility, which it is willing to accept, for stimulating, organizing, and editing these materials to be used for instructional purposes.

B. It is suggested that various kinds of opportunities should be provided for the in-service training of science teachers in the elementary and secondary schools.

1. Consultant and follw-up service should be made available to those schools that want the service of a consultant to help them in their science programs.

2. Sectional or regional meetings of teachers of science throughout the state would help as a further in-service effort.

3. Summer workshops or related types of professional opportunities such as special courses would help to provide periods of uninterrupted study for purposes of developing instructional materials and also for further developing a background in science knowledge and skills.

4. It is suggested that the Georgia Committee on Cooperation in Teacher Education recommend that the program committee of the State Teachers and Education Association arrange for a sectional meeting for science teachers and that the Committee on Secience

Instruction have the opportunity of arranging for the program which would consist of science demonstrations, descriptions of projects contemplated and those under way, and other activities which would help to stimulate further interest in science teaching.

5. Sectional meetings of Jeanes teachers along with science teachers in both secondary and elementary schools would help further to coordinate the effort to improve science instruction.

6. The professional growth of science teachers could be helped through the use of more extensive library facilities.

It is further noted that suggestions 2, 3, and 4, could be under the supervision of the consultants until such time as it seems wise to centralize the supervision of all science instruction on the elementary and secondary levels under one head, who, without giving title for the office, would serve as supervisor of science instruction.

C. It is suggested that the pre-service training of science teachers in colleges be strengthened.

1. The Committee on Science Instruction suggests to the Committee on Cooperation that it in turn recommend to each college interested in teacher training that it make an intensive review of its curriculum offering with a view to meeting the needs of science instruction at the secondary and elementary levels.

2. It further suggests that the Committee on Cooperation investigate the possibility of getting aid for subsidizing the expenses of college teachers of science to help them to study in order to insure their professional growth as teacher trainers.

3. It suggests further that college teachers become more conscious of good teaching and themselves show by example through good teaching the kind of teaching they expect their students to do when they go out to teach.

D. The Committee on Science Instruction feels that superintendents, supervisors, and principals are also vital to any program of science instruction in the schools.

1. It suggests that the Committee on Cooperation recommend to the State Department of Education that, once purposes are determined, it urge the superintendents to

make it possible for schools to purchase equipment in keeping with needs.

2. It suggests that supervisors and principals should be aware of these purposes and needs and cooperate in facilitating the provisions of suitable equipment.

E. The Committee on Science Instruction suggests to the Committee on Cooperation the continuation of this Committee on Science Instruction and, proposes that at such time when there is a supervisor of science in Georgia schools, this Committee could serve in an advisory capacity.

February 9, 1945

The Committee:

Dr. S. M. Nabrit, Atlanta University, Atlanta, Cairman.

Dean W. W. E. Blanchet, Fort Valley State College, Fort Valley, Secretary.

Mr. W. H. Brown, Secondary School Study, Atlanta.

Mr. W. Clay, Georgia State College, Savannah.

Mrs. M. D. Dempsey, Consultant to Jeanes Supervisors, Atlanta.

Mrs. W. H. Dennis, Moultrie Colored High School, Moultrie.

Dr. H. V. Eagleson, Clark College, Atlanta.

Mr. Clinton Gibson, David T. Howard Junior High School, Atlanta.

Dr. A. P. Graves, Morris Brown College, Atlanta.

Mr. Lawrence Harper, Paine College, Augusta.

Mrs. Ellen S. Murray, Albany State College, Albany.

NEWS FROM HERE AND THERE

Suggested Plans for Reorganization of the United States Office of Education

A reorganization of the United States Office of Education that would enable it to serve the States in the devlopment of their educational systems more effectively than is now possible is proposed in its annual report, transmitted to the Congress by Federal Security Administrator Paul V. McNutt, FSA reported.

The plan, recommended by John W. Studebaker, Commisioner of Education, provides for the establishing of eight divisions. These divisions, respectively, would be concerned with elementary education, secondary education, vocational relations, auxiliary services and central office services.

As now organized, Mr. Studebaker explained, the Office of Education, a constituent unit of the Federal Security Agency, cannot give the states and educational institutions the help they continuously request. The Office does have a small division for higher education, one which deals with vocational education, and another concerned with international educational relations. But there are no divisions primarily concerned with elementary and high school education. The report points out that at present there is only one specialist for high school education in the Office "even though the outstanding educational development of the twentieth century has been the growth of American secondary education."

Mr. Studebaker said that while the present organization has been modified in a number of respects in recent years and adjusted to meet emergency needs, it nevertheless is still largely based on traditional groupings of personnel and functions, rather than on sound principles of efficient organization, which can be applied "only by a thorough-going reorganization."

"The Office of Education should be reorganized and strengthened," said Commissioner Studebaker in his report, "so that it may give national leadership and assistance to the educational systems and institutions of the several states in meeting the long-term educational demands of the post-war period."

Endorsing the Commisioner's recommendation, Mr. McNutt said he sees this reorganization as a means of providing assistance to the states and educational institutions in meeting the difficult problems that confront education in the years immediately ahead. He pointed out that among these problems, the educational needs of veterans will be of paramount importance.

The proposed plan, Mr. McNutt said,is in line with the recommendation made by the President in his budget message that the basic structure of the Office of Education be changed to facilitate service to the states in the development of more adequate educational programs "with proper emphasis on all the various aspects of education."

Mr. McNutt explained that the Office of Education, established

77 years ago, has not kept pace with the growing demands for services. "It has become clear," he said, that the existing understaffed organization of the Office cannot possibly provide the services which educational systems and institutions in the states have the right to expect of such a Federal agency.

"The proposed reorganization," he continued, "would carry out recommendations repeatedly made by the National Council of Chief State School Officers of the American Association of School Administrators, the National Congress of Parents and Teachers, and numerous other national and state organizations including those representing elementary and high school principals and classroom teachers."

Mr. Studebaker explained that the adoption of the plan for reorganization of the Office will safeguard the principle of state administration of education. He said the proposal throughout clearly supports the generally accepted policy of state educational control.

"Although the U. S. Office of Education should not be permitted to interfere with the control and administration of education by the several states," the Commissioner said in his report, "it can, if properly organized and maintained with sufficient staff, greatly facilitate their educational work. For many years, the Office of Education has conducted research, carried on studies, made surveys and investigations, published reports and otherwise sought to disseminate its findings in order to help the people of the states to improve their systems of education. It has issued numerous bulletins and other publications dealing with a variety of educational problems. It has helped to secure a more general appreciation of education's importance to the national welfare, and it has been instrumental to some extent in bringing about gradual improvement in educational programs and practices. Nevertheless, it must be admitted that its influence has been altogether inadequate and its work extremely limited when measured against the need for educational leadership in a great Nation.

"Unless it was expected that the U. S. Office of Education would have some degree of influence in aiding the people of the United States in the 'establishment and maintenance of efficient school systems' and in the promotion and improvement of education throughout the country, it seems unlikely that the Congress would have established such an Office in the first place; or, having established it and given it powers largely advisory and hortatory, would have continued to vote appropriations for its

work throughout more than three quarters of a century. The whole history of the U. S. Office of Education demonstrates that it is perfectly possible for the Federal Government to exert a wholesome influence on educational development in this country without in any way interfering with the control of the schools by the people themselves acting through their state and local governments or board of trustees."

SCIENCE AND FOLKLORE

Folk sayings about weather signs are often more truth than fiction, when they are based on sound, continuous observation. The scientific facts behind some folklore were recently demonstrated by Professor Ralph Clauser and Louis C. Jones, of New York State College for Teachers.

"Dew on the morning grass means a fair day." Frequently true, says Mr. Jones. Dew is water precipitated out of the atmosphere. The sweat on a pitcher of ice water, for example, is really dew. When the sun goes down, the surface of the earth loses heat. Then it gets cold enough to reach the dew point of the atmosphere around it, dew is formed. Heat is lost rapidly when the sky is clear; but a cloudy, moisture-laden sky blankets heat to the earth's surface, with the result that little dew is formed. Thus dew on the grass usually means a fair day.

"A ring around the moon foretells a storm." The ring is caused by water vapor in the atmosphere. Moonlight reflected through it is dispersed into a ringlike haze. The more vapor, the larger the ring seems. And the amount of vapor in the atmosphere is an indicator of how soon rain will fall.

"Rain before seven, clear before eleven." Most of the U. S. enjoys cyclonic climate, with cyclones and anticyclones, or alternation low and high pressure areas. As a high pressure area moves into a region to succeed a low, there is sometimes a hard shower which lasts only a short time. Before or with this shower the wind shifts from southerly to westerly. If such a shower starts before seven, it is likely to stop before eleven.

"Seeing the underside of leaves means rain." During a cyclone or low pressure area, says Mr. Clauser, the air tends to rise, and in rising turns the leaves. Low pressures mean rain.

— *Pathfinder*

FALSE HEALTH NOTIONS

An appalling number of the CCC boys questioned in a survey believed in the false health notions listed below. Their home and school health training had done little to dispel the mists of these "old wives' tales."

1. Feed a cold and starve a fever.
2. Grape seeds cause appendicitis.
3. Eaten in a month without an "R," oysters cause ptomaine poisoning.
4. Tuberculosis is inherited.
5. Boils purify the blood.
6. Malaria is due to night air.
7. Tomatoes induce cancer.
8. Cancer is inherited.
9. A child can't have measles or scarlet fever more than once.
10. Wearing a metallic ring prevents rheumatism.
11. Children who grind their teeth at night have worms.
12. A mad dog always foams at the mouth.
13. Color blindness is a disease that can be cured.
14. Rubbing one eye will get a cinder out of the other.
15. Frequent cutting of the hair brings about thicker growth.
16. "Growing pains" are a natural result of growth in children.
17. A cat will kill an infant by sucking its breath.
18. Whiskey is an antidote for snake bite.
19. A sudden fright can mark the child of an expectant mother.
20. Cousins who marry will have children of inferior intelligence.

Let us hope that from such a need as this study reveals a broad new program may develop by which all our men and women may learn to nurture the healthy body that must be precursor to a healthy mind, a healthy life, and a healthy world.

— *Hygeia*

BOOK REVIEWS

PRACTICAL FARMING FOR THE SOUTH

University of North Carolina Press

Chapel Hill $2.50

Great emphasis is now being put on the importance of the teaching of science in our public school system. Too frequently "science" is thought of as some isolated body of knowledge that must be taught in a well equipped laboratory with the aid of a text book so labeled. There is also a tendency to separate students into groups according to whether or not they need to study science.

Contrary to these concepts, science is the basic principles determining success or failure, whatever our vocation or activity. Frequently these principles might be better taught and understood outside of special science laboratories or by text books which are confined to special areas of science.

A basic knowledge of science is merely to understand that we are surrounded by a world of forces that are governed by natural *laws* which (laws) can not be changed by man; and to understand the general working of these laws sufficiently well to work in accord with them, rather than against them, in whatever area of life we may be engaged.

Practical Farming for the South is a book that points out the working of these natural laws (science), in a most practical and interesting manner, as they affect the every day lives of all people, with special reference to the lives of rural people. In the main the book is a practical discussion of the working of these natural laws (science) as they affect soil moisture, soil fertility, acid and alkali soils, plant and animal growth and reproduction, the improvement of plants and animals, the control of insect and disease pests of plants and animals, sanitation, the home water supply, electricity in the home, and many other problems of every-day life in school, home, and community.

To those public school teachers who wish to teach science in the most realistic and vital way, this book will be of inestimable value.

FREE MATERIAL AVAILABLE ON REQUEST TO SCIENCE TEACHERS

School Equipment News (Monthly), The School Executive, 470 Fourth Avenue, New York, New York.

Service, Cities Service Company, Colorado Building, Washington, D. C.

College Health Review (Monthly, November through May), Division of Hygiene and Public Health, School of Medicine, Howard University, Washington, D. C.

Georgia Health, Georgia Department of Public Health, 12 Capitol Square, Atlanta 3, Georgia.

The Negro, a Selected List for School Libraries of Books by or About the Negro in Africa and America, State Department of Education, Nashville, Tennessee.

School Health Monographs, Welfare Division, Metropolitan Life Insurance Company, New York, New York.

The Milvay Notebook, Chicago Apparatus Company, Chicago 22, Illinois.

Aminco Laboratory News, American Instrument Company, 8030-8050 Georgia Avenue, Silver Springs, Maryland.

The Scenic South, Standard Oil Company, Atlanta, Georgia.

Sugar Research Foundation (Publications), 99 Wall Street, New York 5, New York.

School Calendar, American Book Company, New York, N. Y.

The Laboratory, Fisher Scientific Company, 711-723 Forbes Street, Pittsburgh, Pa.

Cenco News Chats, Central Scientific Company, 1700 Irving Park Road, Chicago, Illinois.

Laboratory, Scharr & Company, 754 Lexington Street, Chicago, Illinois.

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