

MONTHLY REPORT

OCTOBER 1957

MINERAL INDUSTRIES LABORATORY
1430 DEVINE STREET
COLUMBIA, SOUTH CAROLINA

DIVISION OF GEOLOGY
STATE DEVELOPMENT BOARD

DEPARTMENT OF GEOLOGY
UNIVERSITY OF SOUTH CAROLINA

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GEOLOGICAL ACTIVITY IN SOUTH CAROLINA

SEVERAL GEOLOGIC STUDIES ARE NOW UNDER WAY IN SOUTH CAROLINA. THESE INCLUDE FIELD WORK IN THE PIEDMONT, IN THE COASTAL PLAIN, AND ALONG THE COAST. THE LITERATURE THAT DEALS WITH THE MINERAL INDUSTRY OF THE STATE IS ALSO BEING ACTIVELY REVIEWED.

HENRY S. JOHNSON, JR., OF THE DIVISION OF GEOLOGY, STATE DEVELOPMENT BOARD, IS CARRYING OUT A PART TIME MINERAL RESOURCE STUDY OF UNION COUNTY. THIS WORK IS EXPECTED TO RESULT IN A PUBLISHED REPORT CONTAINING A GEOLOGIC MAP, A DESCRIPTION OF THE STRUCTURE AND ROCK TYPES, AND AN EVALUATION OF THE MINERAL RESOURCES OF THE COUNTY.

JAMES W. CLARKE OF THE UNIVERSITY OF SOUTH CAROLINA IS ENGAGED IN A STUDY OF THE LIMESTONES OF THE PIEDMONT. HIS REPORT, WHICH IS NOW IN PREPARATION, WILL BE PUBLISHED AS A BULLETIN OF THE DIVISION OF GEOLOGY, STATE DEVELOPMENT BOARD, AND WILL CARRY DESCRIPTIONS OF ALL KNOWN LIMESTONE OCCURRENCES. THERE WILL ALSO BE A CHAPTER ON REGIONAL GEOLOGY, WHICH IS INTENDED TO SUMMARIZE PRESENT KNOWLEDGE ON THE STRUCTURE AND GEOLOGIC HISTORY OF THE PIEDMONT.

JAMES NEIHEISEL, CANDIDATE FOR A MASTER'S DEGREE AT THE UNIVERSITY OF SOUTH CAROLINA, IS PREPARING A THESIS THAT DEALS WITH THE BEACH DEPOSITS OF THE ISLE OF PALMS, CHARLESTON COUNTY, SOUTH CAROLINA. THE FACTORS CONTROLLING THE CONCENTRATION OF HEAVY MINERALS ARE BEING GIVEN PARTICULAR ATTENTION. MR. NEIHEISEL IS ALSO MAKING A RECONNAISSANCE STUDY OF HEAVY MINERALS ON SOUTH CAROLINA BEACHES FOR THE DIVISION OF GEOLOGY, STATE DEVELOPMENT BOARD. HE IS TAKING

SAMPLES AT REGULAR INTERVALS ALONG THE COAST FROM THE NORTH CAROLINA LINE TO THE GEORGIA LINE AND IS DETERMINING THEIR HEAVY MINERAL CONTENT. RESULTS OF THIS STUDY WILL BE PUBLISHED BY THE DIVISION OF GEOLOGY, STATE DEVELOPMENT BOARD.

MR. W. K. POOSER, ALSO CANDIDATE FOR A MASTER'S DEGREE AT THE UNIVERSITY OF SOUTH CAROLINA, IS MAPPING THE FORT JACKSON NORTH QUADRANGLE. THE MOST IMPORTANT ASPECT OF THIS STUDY IS TRACING THE CONTACT OF THE TUSCALOOSA FORMATION AND THE IGNEO-METAMORPHIC ROCKS OF THE PIEDMONT.

STEPHEN S. TABER, PROFESSOR EMERITUS AT THE UNIVERSITY OF SOUTH CAROLINA, IS CONTINUING HIS STUDIES OF THE LAFAYETTE FORMATION. THIS WORK HAS RESULTED IN SOME INTERESTING DATA ON CLEAVAGE IN QUARTZ.

M. J. GREEN, PART TIME STUDENT IN GEOLOGY AT THE UNIVERSITY OF SOUTH CAROLINA, IS COMPILING

ON BEHALF OF THE STATE DEVELOPMENT BOARD ALL AVAILABLE PRODUCTION DATA ON THE MINERAL INDUSTRY OF SOUTH CAROLINA FROM EARLIEST DAYS TO THE PRESENT. MUCH OF THIS INFORMATION IS NOW SCATTERED THROUGH A GREAT MANY PUBLICATIONS, MANY OF WHICH ARE NOW OUT OF PRINT OR OTHERWISE PRACTICALLY INACCESSIBLE TO THE GENERAL PUBLIC. THIS WORK IS PROGRESSING SLOWLY BUT EVENTUALLY IS EXPECTED TO RESULT IN A BULLETIN TO BE PUBLISHED BY THE DIVISION OF GEOLOGY, STATE DEVELOPMENT BOARD.

"CATALOGUE OF THE MINERAL LOCALITIES OF SOUTH CAROLINA," A BULLETIN BY EARLE SLOAN, STATE GEOLOGIST, WAS PUBLISHED IN 1907 BUT CONTAINS MUCH BASIC INFORMATION THAT IS STILL OF GREAT INTEREST. IT IS NOW OUT OF PRINT AND IS ALMOST IMPOSSIBLE TO OBTAIN. CONSEQUENTLY, THE DIVISION OF GEOLOGY, STATE DEVELOPMENT BOARD, HAS DECIDED TO REPRINT THE BULLETIN SO AS TO BE ABLE TO GIVE THE REPORT WIDE DISTRIBUTION AT A TIME WHEN

SCIENCE AND INDUSTRY ARE JOINING IN A NEW
APPRAISAL OF THE MINERAL RESOURCES OF THE
SOUTHEAST. COPIES ARE EXPECTED TO BE AVAILABLE
IN FEBRUARY 1958.

GROUND-WATER STUDIES IN SOUTH CAROLINA

BY G. E. SIPLE

ONE OF THE GROUPS INTERESTED AND ACTIVELY ENGAGED IN GEOLOGIC INVESTIGATION IN SOUTH CAROLINA IS THE GROUND WATER BRANCH OF THE U. S. GEOLOGICAL SURVEY. THIS ARTICLE PRESENTS A VERY BRIEF DESCRIPTION OF THE AIMS AND ACTIVITIES OF THE GROUND WATER BRANCH, AND IS INCLUDED FOR THE PURPOSE OF INFORMING THOSE WHO, HERETOFORE, HAVE NOT BEEN ACQUAINTED WITH THE BRANCH OR ITS ACTIVITIES.

A LARGE PART OF THE WORK OF THE GROUND WATER BRANCH IN THE UNITED STATES IS CARRIED OUT UNDER COOPERATIVE AGREEMENTS WITH THE INDIVIDUAL STATES, OR IN SOME CASES, WITH COUNTIES OR MUNICIPALITIES. IN SOUTH CAROLINA THE COOPERATING AGENCY IS THE STATE DEVELOPMENT BOARD, R. M. COOPER, DIRECTOR.

THE AIMS OR OBJECTIVES OF THE GROUND WATER BRANCH ARE TO INVESTIGATE AND REPORT ON THE

GEOLOGY AND GROUND-WATER RESOURCES OF SOUTH CAROLINA. IN ORDER TO EVALUATE THE HYDROLOGIC POTENTIAL OF AN AQUIFER OR GROUP OF AQUIFERS IN ANY SPECIFIC AREA, A NECESSARY PREREQUISITE IS THE UNDERSTANDING OF THE LOCAL GEOLOGY, BOTH SURFACE AND SUB-SURFACE. MORE EMPHASIS IS PLACED ON THE SUB-SURFACE BECAUSE OF ITS IMPORTANCE WITH RESPECT TO THE GROUND-WATER SUPPLY.

IN ORDER TO DETERMINE THE GEOLOGY AND HYDROLOGY OF ANY AREA IT BECOMES NECESSARY TO UTILIZE THE PRACTICES AND PROCEDURES ASSOCIATED WITH SEVERAL SCIENCES, BUT PRINCIPALLY THOSE OF GEOLOGY, PHYSICS, CHEMISTRY, AND ENGINEERING. IN THIS EFFORT, THE ENTIRE RANGE OF GEOLOGICAL PRACTICES IS UTILIZED, AS FOR EXAMPLE, AREAL GEOLOGIC MAPPING, PALEONTOLOGY, PETROGRAPHY, AND PETROLOGY; SUB-SURFACE METHODS, INCLUDING STRUCTURE CONTOUR MAPS, PEG MODELS, CONVERGENCE MAPS, ELECTRIC WELL LOGS, GAMMA-RAY AND NEUTRON LOGS, SURFACE RESISTIVITY TRAVERSES, SEISMIC TRAVERSES,

AND OTHER GEOPHYSICAL MEDIA. THE CHEMISTRY OR GEOCHEMISTRY OF GROUND WATER IS AN EFFECTIVE TOOL IN THE SOLUTION OF MANY STRATIGRAPHIC PROBLEMS. THE PRESENCE OF BURIED FORMATIONAL UNITS WHOSE INCLUDED GROUND WATERS HAVE DISTINCTIVE CHEMICAL COMPOSITIONS, AS FOR EXAMPLE A LIMESTONE, MARL, OR DIORITE, IS READILY ESTABLISHED IN THIS MANNER. DISTINCTIVE QUALITY OF WATER DIFFERENCES BETWEEN SEVERAL FORMATIONS IN THE CRETACEOUS AND TERTIARY SYSTEMS HAVE BEEN DETERMINED AND USED TO ADVANTAGE IN THIS STATE.

PLANS FOR A COMPLETE ANALYSIS OF THE STATE'S GROUND WATER RESOURCES BEGAN WITH A RECONNAISSANCE STUDY OF GROUND-WATER CONDITIONS EXISTANT OVER THE ENTIRE STATE. THEN FOLLOWED MORE INTENSIVE STUDIES OF AREAS COMPRISING A COUNTY OR A GROUP OF COUNTIES, AND EVENTUALLY THE INVESTIGATION WILL APPLY TO MORE RESTRICTED AREAS. INTEGRATED WITH THESE AREAL STUDIES ARE THE SPECIAL STUDIES CONDUCTED FOR DEFENSE PURPOSES, SUCH AS THAT

COMPLETED FOR THE ATOMIC ENERGY COMMISSION
IN AIKEN, BARNWELL, AND ALLENDALE COUNTIES AND
THE ONE IN PROGRESS FOR THE NAVY DEPARTMENT IN
JASPER, BEAUFORT, AND COLLETON COUNTIES. PRESENTLY
OUR COUNTY AREAL STUDY IS COMPRISED OF THE SEVEN
COUNTIES OF CHESTERFIELD, MARLBORO, DARLINGTON,
DILLON, FLORENCE, MARION AND HORRY. A STUDY OF
THE FLOOD-PLAIN DEPOSITS OF THE PIEDMONT AREA
TO DETERMINE THEIR POTENTIALITIES AS PRODUCTIVE
AQUIFERS, IS CURRENTLY IN PROGRESS. IN ADDITION,
A STATE-WIDE WATER-LEVEL PROGRAM IS CURRENTLY
IN PROGRESS IN WHICH A NET OF OBSERVATION WELLS
ARE MEASURED PERIODICALLY OR CONTINUOUSLY BY
INSTRUMENTATION. THE STATUS OF WATER LEVELS AND
ARTESIAN PRESSURES, AS MEASURED IN SOUTH CAROLINA,
ARE REPORTED ANNUALLY IN WATER-SUPPLY PAPERS.

ANOTHER PART OF THE PROGRAM CONSISTS IN
PROVIDING BASIC DATA WITH WHICH INDUSTRIES,
MUNICIPALITIES, DRILLING COMPANIES, OIL COMPANIES,
GEOLOGISTS, AND THE GENERAL PUBLIC MAY ANALYZE

OR INTERPRET THE GEOLOGIC AND HYDROLOGIC FACTORS
PERTINENT TO THEIR OWN SPECIFIC PROBLEM.