

**THE ENVIRONMENT
OF
VASSAR COLLEGE**

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The environment of Vassar College by George Burbank Shattuck

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GEORGE BURBANK SHATTUCK

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AWOSTING FALLS, LAKE MINNEWASKA.

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EDITED BY GEORGE BURBANK SHATTUCK

New York State is a continent in miniature. Within its borders nearly every type of relief is represented, and its hydrography includes the ocean, sounds, bays, estuaries, rivers, lakes, and inland seas. The ancient massif of the Adirondacks and the uplift of the Catskill Mountains are to New York, what the highlands of Brazil and Venezuela are to South America. The Appalachian Mountains, which form such a characteristic feature of the Middle Atlantic states, extend over into southern New York. The Lake Plains call to mind similar features surrounding Michigan and Huron, while the Coastal Plain, which borders the eastern margin of North America, from Mexico to New Jersey, is well developed in Long Island.

If we turn our attention to the rivers we find the analogy is still more striking. What the Amazon-Madeira drainage is to South America, the Hudson-Mohawk rivers are to New York. The Erie-Ontario-St. Lawrence system may be compared to the Nyanzas and the Nile, and to witness anything approaching Niagara one must visit Victoria Falls on the Zambesi, or the cataract of the Iguassú River in Brazil.

The distribution of these valleys and uplands is another striking feature of the New York topography. On the eastern margin, the Hudson-Champlain depression permits easy communication across the entire State, from New York City on the south to Canada on the north. The lowlands along the Great Lakes and St. Lawrence River play a similar rôle on the western border, while between the two, is the famous Mohawk Valley, the gateway to the West, and the connecting link between the Mississippi Basin and the

Hudson. These valleys, together with their innumerable tributaries, ramify the entire region and make communication possible throughout the State.

This route has always been the great natural highway between East and West. First the wild animals made use of it in their migrations, and then, in rapid succession, the Indian, explorer, hunter, pack-horse, freight-wagon, canal-boat, railroad-carriage, telegraph, telephone, and automobile. Within these same valleys again, in the early days of settlement, many forts were built to check communication, and fierce battles fought to reopen it; while in modern times, what proved of such strategic importance during the struggle for political control, has since been shown of equal advantage in the contest for commercial supremacy. From New York City at the mouth of the Hudson, to Buffalo at the mouth of Lake Erie, is an unbroken chain of industrial centers, called into existence by the response of man to his environment. The rolling uplands on all sides of these great valleys are devoted to agriculture and mining, while the rugged mountain districts of the Catskills and Adirondacks have been given up to great summer playgrounds of a strenuous people. New York, therefore, with its diversified topography, its vast natural resources, its superb facilities for communication by rail and water, its immense production of farm and factory, its great metropolis and financial center, has well been named the "Empire State." It could with equal propriety be called the "Continental State." Near the heart of this region Vassar College is situated, while all about it, within easy reach, are condensed the geographic types of a continent and the social activity of an empire.

What an ideal environment for study and research is at our very doors! If it is desired to illustrate some important point in geology, a short excursion will bring the student and the rocks together. If the problem is one of botany, the region is noted for its rich flora, and bounds in varied plant societies. If the question relates to a foreign fauna or to ancient life, there are the museums of New York

and Albany, while both banks of the Hudson are dotted with factories—great workshops of applied science.

In the sphere of the humanities the field is even richer. Where on this continent are the different stages of our history better illustrated than in the Hudson Valley? Where can the student of sociology, politics, economics, and commercial geography find a more fertile field for observation, or more important problems for solution? Art, archaeology, and psychology, all of these are stimulated by the collections, libraries, and institutions within easy reach, and even literature has played its part, for in our neighborhood Irving discovered Ichabod Crane, and the Catskills where Rip Van Winkle slept out the twenty years, are in full view of the College Campus.

In the following pages the professors of certain departments of the College have pointed out in more detail, some of the opportunities for study and observation, afforded by the peculiar environment in which Vassar is situated. In this discussion the natural resources will be considered first, and later, those phases of the environment introduced by man.

ASTRONOMY

MARY W. WHITNEY

The range of preference for the site of an observatory is large as regards surface position. The data of astronomy being for the most part at an infinite distance relative to the size of the earth, it matters comparative little what the latitude and longitude of an observatory may be. Any location within thousands of miles would serve equally well, if the atmospheric conditions were equally good. If the state of New York contained an accessible mountain top, free from shifting air currents and fairly free from cloud caps, astronomers would gladly appropriate its summit for their investigations, and the observatories of the North and East would doubtless seek for working stations upon it.

The atmospheric conditions of Poughkeepsie are as sat-

isfactory as can be obtained within the limits of the State. They preclude certain delicate observations of fine detail, such as the surface features of planets, or close double-star measures. The canals of Mars, so interesting and baffling to astronomer and layman alike, are not within our reach, though our telescope is quite the equal of that of Schiaparelli of Milan, who first studied them. Vast fields remain, however, when we exclude investigations requiring superior purity of atmosphere.

Co-operation in astronomy is fundamentally important, probably more so than in most other sciences. From the first foundation of an observatory, when its longitude must be determined by a series of telegraphic exchanges of clock-beats with another observatory, to its latest effort in scientific contribution, co-operation must play an essential part. Therefore a location, such as Poughkeepsie, within easy communication with Columbia, Harvard and Washington has marked advantages. Harvard observatory is a center of distribution. Astronomers all over the world telegraph to Cambridge whatever observations they have made, which may have any bearing upon the work of other observatories, and Harvard sends abroad rapidly made duplicates of these communications. Harvard's immense photographic library, containing reproductions of the configurations of the sky taken at certain regular intervals, is at the service of every astronomer, and its Arequipa station in Peru supplies photographs of the southern sky, which are included in the Cambridge storehouse. If a new star or a new variable star is discovered at any observatory, a study of this Harvard collection will in all probability give the history of the star before its detection by the eye.

A small observatory, like that of Vassar College, designed especially for instruction, can carry on no large individual scheme of investigation. But it can fit into one or other of the many vacant spaces in some general plan. It cannot take photographs, but it can examine photographs taken elsewhere. This it has recently done through co-

operation with the observatory of Columbia University, which in turn co-operated with the Helsingfors observatory of Finland. Vassar cannot carry on an unbroken series of observations on variable stars, but it can co-operate with Harvard, and send its observations to that organizing center. It can share in the plan of the German committee on cometary orbits, and can aid, as it is at present doing, in bringing into line all the known data regarding the motions of comets.

Fortunately, all these general designs have flexible time limits. The periods of the astronomical worker, like the periods of astronomy itself, are not confined to months or years, and are therefore well suited to the interstitial character of the undertakings of a teaching observatory. The almost world-wide problem presented to astronomers during a few months of 1900, by the near approach of the planetoid Eros, has not yet been carried to its ultimate solution, nor will it be for several years to come. Into this problem Vassar did not enter, but it hopes soon to take part in a large scheme of co-operation, headed by Professor Kapteyn, of Groningen, Holland. This scheme is based on the study of stellar photographs, taken at the various contributing observatories, and all bearing upon the investigation of the form and dimensions of the universe of stars.

The astronomical libraries of Harvard, Columbia and Washington have on many occasions aided in the work of the Vassar observatory, and in a way that would not have been feasible had our location been a remote one.

GEOLOGY

GEORGE BURBANK SHATTUCK

The study of the earth is naturally pursued in the open. Lectures are helpful to outline what has already been accomplished, laboratories are of aid in analyzing processes, but to Nature we must turn for data and inspiration. What has the field in our vicinity to offer? For the study of