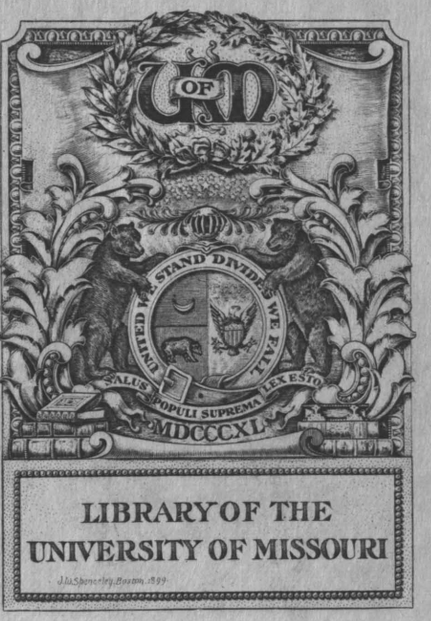

FIELD WORK IN HIGH SCHOOL GEOGRAPHY.

by

HELEN WYNKOOP, B.S. 1909.

SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in the

GRADUATE CONFERENCE
(SCHOOL OF EDUCATION)

of the

UNIVERSITY OF MISSOURI

1910.

FIELD WORK IN HIGH SCHOOL GEOGRAPHY.

I. Nature and Scope of Geography.

2. Value of Geography.

3. Position of Geography in the High School.

4. Regional Geography.

5. Use of the Laboratory.

6. Field Work.

   A. Value.

   B. Difficulties.

   C. Methods of Conducting.

   D. Progress.

   E. Outline.

FIELD WORK IN GEOGRAPHY.

Nature and Scope of Geography. In seeking to define the nature and scope of geography it is necessary to go to the leading geographers for their conception of geography rather than to try to construct a definition after having read,carefully,school texts on geography,for there is a great deal in the average run of texts books that is not purely geographic. For instance,the collodum Monument,or the old bell at Moscow,or the shattered house at Waterloo,haven't much to do with geography,yet they are all found in Frey's Complete Geography.* Nor has a systematic consideration of plant and animal life much connection with geography when they are presented in the last few chapters of the book,separated by dozens of chapters from the discussion of the countries where they are found. Yet such is the arrangement to be found in the majority of the text books now in use. Most of the confusion in regard to the limits and contents of geography is due to just such mistakes as these;the associated character of geography makes it

* Pages 82-85-86.

difficult to draw an exact boundary between geography and other sciences and it is an easy matter to bring in extraneous and ungeographical material. Geography in the schools has been organized by teachers rather than by geographers and to this fact is due the confusion that exists.

In going to authorities in the science of geography I believe it is only fair to begin with Carl Ritter who made "earth description" into the science of geography; or as William L.Gage puts it,"who imparted life to the dry bones and dust of geography"*. Up to Ritter's time geography had meant a collection of material only vaguely limited,empirical,ununified. Ritter realized that "the whole body of facts revealed by past and present discovery,must be marshaled into harmony before we gain the high pinnacle of Geographical Science". He took as his unifying principle,or point of view,the position of man on earth,that is,his relation to the earth,and defined geography as "that department of science that deals with the globe in all its features,phenomena,and relations,and shows the connection of this unified whole with man and with man's Creator"I. The Ritterian point of view and the school that followed him was a great

* Preface to Ritter's Comparative Geography.
I Ritter's Comparative Geography,page XX.

step in the development of the science of geography; from the "the study of the earth" and "all that there in is",as the little boy wrote in his essay,it was unified and made definite. But it is difficult to see why the relation of the land to the sea,the land to plants and animals,to climate,and so on through the list of the complicated interrelations of the physical features of the earth,is not as much a part of geography as any other relations. It is evident that the human relation is only one of many links in the chain,although the crowning link,the link of greatest meaning.

The Third International Geographical Congress at Venice in I88I formaly defined geography as "including the study of the surface forms of the earth and the reciprocal relations of the different branches of the organic world;being distinguished from the other sciences by indicating the distribution of things,organic and inorganic,upon the earth".*

Professor Hettner of the University of Leipsig writes;"The geography of today starts from the point of view of diversity in space and aims at a specific explanation of the nature of regions,inclusive of their inhabitants;its task is to investigate the distribution

* Third International Geographical Congress,Pp.39-40.

of phenomena in mutual dependence".*

Professor Neuman of the University of Freiberg defines general geography as "dealing with the general laws of distribution of every class of phenomena on the earth's surface".**

Professor Ule of the University of Halle defines geography to be "the investigation of the reciprocal effects of the several phenomena of a country and their causal connection".**

H.J.Mackinder of the University of Oxford says; "Topographical distribution is the essence of geography".#

Mr.Scott Keltie;"Geography is the science of the topographical distribution of the great features of the earth's surface and all that it sustains,vegetable and animal,including man himself".**

Robert Hugh Mill in his introduction to the International Geography,a collaboration of seventy authors from all parts of the world,formally defines geography as "the exact and organized knowledge of the distribution of phenomena on the surface of the earth,culminat-

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** Profs.Neuman,Ule,Scott,Journal of Geography.Vol.4, page 352.

\# H.J.Mackinder,-Journal of Geography,Vol.2Page 502.

ing in the explanation of the interaction of man with his terrestrial environment".*

Professor Davis of Harvard University says,"If I were called upon to add to the literature of definition I would say geography is the study of the earth in its relation to life. Relation is the very soul of geography."#

These definitions by the leading Geographers of the age show that geography deals mainly with the distribution of things,and the relation of the things distributed to eachother and to the physical environment. While the factor of distribution unifies and holds the science together,as it were,while it serves as some one has said,as a thread upon which the facts are strung, yet the relational or causal notion must receive and indeed is receiving more and more,the major emphasis in a rational treatment of the science. Other relations than those of position and superfisial causes must be explain ed. The vast importance of the environment upon the organic world in connection with evolution is becomming realized by modern geographers and the social scientists, as it has long been realized by the biologists. Professor Ratzel has called the earth a vast workshop,in which

* R.H.Mill,International Geography,P.2.
# W.M.Davis,Journal of Geography,Vol.4,P.I.

all living creatures,including man,have been constructed. The predominant position man occupies,he says, is possible only on this earth and under these conditions, and therefore the earth has a far deeper significance in the history of mankind than it would have merely as the ground upon which men walk and labor and in which their graves are dug. And J.W.Redway in his New Bais of Geography:"Indeed it would not be a very great breach of truth to say that a camel is a camel because of the desert;a fish a fish because of the water;a bird a bird because of the air."* The central idea in geography, then,is its distribution and its relations;with this as a focal point geography need not infringe upon other sciences to attain dignity and position,but has a distinct set of problems of its own to solve.

But as I said before the associated character of the science makes it very difficult to draw the boundary between geography and other related sciences,since the geographer must draw,on many occasions,largely from these sciences. In borrowing facts from commerce,from geology,from astronomy,from biology,there is great liability that he loose the strictly geographical point of view at times,thus making his discussion largely astronomical,geological,industrial,or biological. For instance,that the sun's light gives us day and its absence gives us night is a geographical fact dealing with the

* Page 184.

distribution of the sun's rays,while the distance of the sun from the earth,the names of the planets and constell ations are astronomical matters. But both of these groups are found in a great many of our text books.And again ,the industries of man are geographical facts treated from the point of view which determines their distribution and general character,but the processes of those industries belong rather to technical education and should not be incorporated into geography proper; this error is continually made. Any attempt,of course, to erect a wall around the field of science is artificial and fruitless,but if unity is to be preserved and not a mere aggregation of material is to be made,then the problems in that science must be grouped about its central idea and those which cannot be classified under this head must not be alowed to creep in.

With the nature of a discipline,that is,its problems,determined,it is a comparitively easy matter to determine the scope,or contents,of that science. The data employed in solving the problems of a given science, say the science of geography,in as much as it is being treated from a geographical point of view,will be geographical;the same facts may be treated from a geological point of view and so become geological. For instance,one of the problems in geography is to determine

the distribution and relations of earth features,and data used in solving this problem is geographical; but because there is a domain of phenomena belonging to both sciences equally,this same data may be used in solving a geological problem concerning the life history of the earth,and so become geological data. Geography and biology have similar relations also. When the biologist studies the relations of plants and animals to the soil,water,and climate,he is studying the geographical side of biology;when the geographer studies the distribution of plants and animals he is studying the biological side of geography. And so it is with the relations between geography and all the other sciences. The fields of all sciences overlap each other to a certain amount, and constant adherence to a central unifying idea,or set of ideas,is necessary to the separate existance of any one science.

The Value of Geography. The value of geography in education has been discussed very thoroughly,especially since the problem of educational values in general has assumed such importance,and since the corriculum has become so crowded that the weaker studies,or those judged of least value,must give place to those of greater value. Education consists in giving to the individual experiences which will aid him in his adjustments with

reference to certain social and moral ends. The problem of education is to determine to what extent these various subjects in the corriculum function toward these ends;in any given subject the question arises,in what different ways will the subject matter function in making such adjustments. Now the value of geographical facts depends,of course,entirely upon what"geographical" is taken to mean;different views on this point have occasioned wide differences of opinion in the past concerning the value of the study of geography. If only those facts that were commonly made the subjects of geographical instruction ten and fifteen years ago were included,then indeed,the part they might play in social and moral adjustments would be very slight,-"unless the man were a sailor",is the common reservation. But this type of "sailor" geography is a thing of the past. The geography that the latest and best texts try to set forth is the geography that I have indicated above;the question of value obviously assumes a different aspect from this point of view. According to William Chandler Bagly the value of a subject may fall into five different classes,that is,subject matter may function in five different ways;(a)utilitarial,(b)preparatory,(c)conventional,(d)theoretical,(e)sentimental.*

* W.M.Bagley-Educative Process,Page 225.

As any science posesses the last two,the theoretical and sentimental values,and all the common school subjects the third one,conventional value,they need not be considered in connection with geography especially. But its utilitarian value and its value as a preparation for other subjects are both important and are not possessed by other subjects to nearly the same degree.

In looking upon geography as a study of the environment in its relation to life,and especially the life of man,the utilitarian value that attaches to this subject is evident at the outset. Anything that tends to render adjustments in society more efficient is of value from the standpoint of utility;that is,what ever reduces waste,saves time and labor,increases wealth,may be looked upon as utilitarian in value. That geography possesses this value may be shown by few concrete examples of this fact.

The processes of distribution that are continually going on depend,in a large measure,upon geographical data which the Government collects and publishes,and upon geographical information received from miscellaneous sources also,to guide and direct it in its activities. Accurate information concerning different regions, such as climate,productivity,routes of transportation, and other points leads to intelligent co-opreation be-

tween nations,and between differentsections of the same country,in regard to industries,manufacture,and commerce. The rush into the semi-arid regions of Kansas and Nebraska in the early 80's was due to a great extent to a lack of knowledge of the climatic conditions of the country. Today,owing to the work of the various scientific bureaus of the government,one may ascertain the rainfall,fertility,elevation and slope of a country before investing in the land. The laborer,seeking a market for his labor is benefited just as much as the manufacturer,merchant,or home-steader;he can start off for the mining districts,for the manufacturing districts, for the wheat fields;in short the "mobility of labor"is enhanced by a knowledge of geography.

But merely a utilitarian value of geography would not justify a prominent place for it in the High Schools; nor is the utilitarian value,although of great importance,the chief value that its study brings. A value greater than the utilitarian,lies in its value as a prepararion,or more exactly as a foundation,for other subjects.

In connection with history,geography is essential if an intelligent notion of the causes of certain lines of development are to be understood;those lines,for instance,which depend upon the natural products of a coun-

try,its access to high-ways and water-ways,its situation in regard to defense and attack,and even the constitutional and social developments of a country,to say nothing of the location of cities and boundaries. Indeed,the physical environment of mankind,and of every particular race of mankind,is recognized as playing a fundamental,almost striking part in the development of the race and of the nations.

Current events,the top rung in the ladder of history,can hardly be understood without geography. It is essential to intelligent newspaper reading,an activity which undoubtedly reaches all classes from the magnate to the humblest citizen. Who could understand the recent upheavals in the far East,the delicate international relations which must be maintained,the questions which are up before the goverment on conservation of natural resources,improvments of water-ways,and other topics of national importance? And there are minor events occuring dailywhich are open to even a wider public than

those just mentioned,such,for example,as the eruption of Vesuvius and the earthquakes in Italy,the condition of our crops,the movements of our strenuous President. Geography is necessary to the understanding of the contemporary happenings of the world in which we live.

The close relation that is found to exist between

geography and history could be shown to exist between the other so-called human subjects also,literature,philology,economics,and the like. But to go on to a consideration of its relation to the sciences and its value as a preparation for this field. The study of geography is a good starting point for the study of the sciences. It is the science through which the action of each of them upon the life of man may be observed;it brings them all into correlation with one another,thus affording a broad point of view for one who is going to specialize later. Viewing the facts from the human side is the very best method,I believe,to arouse interest in these facts and will lead to a desire for a systematic and well rounded knowledge of the science.

But the subject matter is not the only value as a preparation for the sciences that geography possesses. The training in observation,in comparing and grouping the facts,that it affords when taught in the laboratory and field is one of its chiefest assets. The pupils' minds are brought into contact with facts,not words; they are taught to connect the words that they read from geographical books and hear from teachers with the facts they have observed for themselves. The value of this personal knowledge,which is to be got from geography,will be discussed more thoroughly later in a con-

sideration of the field work in geography.

The habit of reflection and combination which is developed by studying relations and causes of the phenomena which the pupil has observed is a third value in the study of geography as a preparation for science. The library and text book work that is done in most of the pupils studying does not lead to a combination of of facts nor a detection of relations between them;but rather to a following out of theory already constructed and relations already pointed out. They get into the habit of theorizing on too scanty a number of facts and upon valuing facts in proportion as they fit into their theories. Geography properly taught will train the pupil to appreciate a fact as a fact,and not as a link in a theory. And yet,although facts in nature do not come systematized and classified according to a logical and mutually exclusive principle,they do not stand isolated and alone either. They are interrelated with one another in many waysand the student is brought to see these relations "first hand";that is,he discovers them himself from maps and in the field. In other words geography will train the pupil in looking at facts and their relations rather than at theories and their explanations.

Position of Geography in High Schools. A brief history of the study of geography in our High Schools will

serve to give a proper understanding of its position today. The status of "physical geography" in the public schools of twenty years ago was not much different from that of the present in regard to the time alotted to it. It appeared in the curriculum as an elective occupying one term. But the spirit of the work,the teachers and the texts were all very different then. The school authoritiesgave the subject very little consideration,choosing the teacher for convenience sake,who was often wholly unfitted for the work. Under such circumstances the method of teaching the subject was naturally the text book method,a close following of the texts of that time;Gnyot's, Warren's,Maury's,Mitchel's. These books are very much alike;the subject matter is arranged in columns of coarse and fine print,dealing with sensational features,rather imaginary illustrations scattered about, and poor maps. Each country or topic seems to be dealt with as a unit,to be committed,I suppose,without reference to the preceeding or future topics. The whole thing must have lacked vitality. There was no laboratory or out door work either and any connection between the school work and the hills and valleys of the actual world must have been most casual or accidental. It must have lacked reality as well as vitality. As long as other subjects were taught from

texts,its lack in this respect was not felt so much;but as soon as other natural history sciences were adapted to laboratories,the nature of their subject matter and abundance of laboratory material permitting the change as soon as it was demanded,educators became more dissatisfied with geography than ever. The subject,as a result of these conditions,had very little standing in the schools;not much faith was put in it as a culture nor as a disciplinary subject;it was used as a sort of makeshift.

Geography teaching has slowly but surely improved since that time. The subject is receiving increasing emphasis in secondary schools and in colleges. The appearance of Frye's first book in I894 marks what Richard Elwood Dodge is pleased to call the "renaissance in geography". It is a more usable text than the former texts having a more logical arrangement and laying emphasis upon the relational or causal idea. It emphasizes the home environment too,giving reality to the work. Following the report of the Committee of Ten,also I894,new books appeared suited to the phase of geography,or physiography,as they called it,which the committee advocated. This phase of the subject was developed by university professors,the subject having been abanby others,who had the attitude of trained scientists

and whose interest therefore,was primarily in the systematic classification and explanation of facts,rather than in the accumulation of a store of facts to be studied by means of comparisons and groupings;that is, they had the point of view of the investigator rather than that of the teacher. As a result of this the school texts emphasized systematic classification of earth features and phenomena;they attempted to explain theories of earth development before the facts concerning the theories had been studied. "The student has been taught to think of the earth in terms of a theory of earth development;to think of facts as mere illustrations of that theory;to think of the theory as something above and beyond and independent of the fact rather than as a conclusion drawn from a knowledge of the latter. They have been taught,consciouly or unconsciously,to think the fact of no value unless it can be fitted into the theory and into the scheme of classification. Laboratory work has been emphasized,has been urged as an absolute necessity,but the laboratory has been used to illustrate a theory and a scheme of classification,not as a means of getting data and skill for building up the theory and scheme of classification"*. Although unscien-

* Professor C.F.Marbut,-Geographical Journal May,1909.

tific as this deductive method of teaching is recognized as being,it is still the method employed in most of our "progressive" High Schools.

As a result,pupils,on leaving High School,are ignorant of the ordinary necessary information about the world. Most university professors whose courses touch on geography count on teaching the geography of the particular region involved along with their own subject. This state of affaires is due to the fact that geography from a physical point of view emphasizing abstract principles and processes has been taught rather than the broader geography from a regional point of view. The place that physical geography has won is due to the university and college authorities who have advocated it as a good secondary school science,but regional geography taught properly is stronger scientifically,more diciplinary,than high school physical geography,which consists of memorizing classifications and explanations.

According to Hettner regional geography is the material filling of the surfaces of the earth;* that is, geography should try to picture a region just as it is,

* Geographie hat mit der dinglichen Erfüllung oder dem Charakter der verschiedene Räume der Erdoberfläche zu tun. Geographische Zeitschrift.Page 683.

treating of both organic and inorganic things* and of the individual things that go to make that region just what it is and none other. He would have geography emphasize individual descriptions and local detail rather than systematic description and general statements.#

The advantages of such a course for High Schools are many. First,it is in closer touch with later life than any other course in geography.This need of the high school pupil should not be overlooked in shaping the curriculum,since the vast majority of the pupils never reach college.

Second,it is not only geography,but regional geography that is necessary for intelligent reading of newspapers and magazines and to serve as a basis for work in history and literature and the sciences;perhaps no other study is so closely connected with so many college studies. The point of view given in physical geography will not serve as this basis,for the knowledge thus gained is not capable of being applied by the pupil to large areas or regions. The subject presented from the regional side will enable the students to

* Planzen,Tierwelt und Mensch. Geographische Zeitschrift,Page 675.

\# Jede Darstellung muss eine Auswahl der Tatsachen vornehmen,die weniger wichtigen weglassen,sich auf die wichtigeren beshränken;es handelt sich dabei um eine wählende ausführliche individualiserende Darstellung. ibid,Page 675

study any other region alone in a similar scientific way.

A third advantage is that it will afford greater opportunity for the life side of geography to be developed than pure physical geography can afford. This lack of life interest in geography has been the subject of most of the criticism made of late years. But regional geography will allow each teacher to put as much emphasis on the life of the subject as she is capable of putting;in fact the study of land forms will almost force a consideration of the life that is definitely related with it. Such a treatment of geography will give the subject a fresh and lively interest for the pupils if it is put upon the high school plane of intelligence and not treated in a university graduate fashon.

That regional geography is slow to make its way into the high school curriculum is due to the fact that trained teachers are required to teach it,whereas physical geography based upon texts and definite laboratory exercises can be given to the teachers trained in the other sciences,and sometimes is given to teachers not trained in any science. Physics and chemistry,having a better standing in the curriculum,stimulate teachers to prepare to teach them,geography,on the other hand,comes in for very little consideration from either

teachers or superintendents.

Since the object of regional geography is to build up a conception of the surface of the earth as the scene of social activities*, a clear cut visual picture of that surface is necessary. Word pictures will not suffice; they will be out of proportion and inaccurate to the visual minded and extremely vague and indefinite to those not visual minded; the imaginative dhild will get grotesque images, the unimaginative child will get no images. Such a clear cut visual picture can be produced only by means of maps, which will show the distribution and relations of objects in the field in miniature. Since the field must be reduced to be studied in the laboratory it must be studied by means of representations, symbols. Here, indeed, is a problem for the teacher of regional geography, that is, to make these symbols stand out in the pupil's mind in terms of real country, to make the representation of a hill mean a hill to him; it has been claimed that not one person in a thousand could read these topographic maps.

Unquestionably most of the work in regional geography must be done with maps, since a body cannot travel over the region. Before a region can be pictured or interpreted a large body of facts must be gathered concerning it, therefore constant use and reference to them is necessary. This accumulation of individual facts

*Journal of Geology, Vol 4. P 516.

gathered from selected regions will form the major part of the workfor the high school pupil;the working over of these individual facts into generalized ideas will come later in the course,occupying comparatively little time.

Although one person in a thousand may not be able to read topographic maps about nine hundred and ninety can be trained to read them. And there must be definite concepts behind the symbols too,or all the reading that students might do would naturally mean nothing more to them than reading so much greek or latin,knowing nothing of those two languages. Words cannot build up these general fundamental concepts any more than they can build up individual pictures of a special region.

Value of Field Work. There is no method of building up this body of "first hand" knowledge except by excursions in the field where the objects themselves may be studied and "experienced" by the pupils. It is conceded by all educators that knowledge gained or discovered through the activity of the pupil himself,should form the basis upon which all other knoledge should be built. Some geographers have concluded that this first hand knowledge is to be had in the laboratory from maps. But maps without field work are just as far from furnishing first hand knowledge as a text book or lectures;a student after long experience and hard work with maps

may acquire the ability to compare and contrast different land forms,to trace abandoned river valleys,to draw profiles of river meanders,to transcribe contour maps from hachure maps and vice versa;but that same student may not be able to go out into the fields in his neighborhood and see anything of the land forms and its dissection;may not be able to see an abandoned river valley as he passes through it,will not recognize its flood plain as he walks along its banks,will not be able to calculate its depth of disection,nor will he be able to see and realize a great many other things he has studied about in the laboratory. The student has not seen these things in nature,nor has he learned to see them in nature by means of maps in the laboratory.Actual experience in the field is necessary to form those basal concepts upon which the work in the laboratory should be based;it gives a fuller meaning and realization to the work in the laboratory;it builds up clear cut,definite conceptions and gives a reality to the subject that mere reading from maps or books can never give. There is a standard story in Missouri to illustrate this lack of reality to geography in most of the schools here,an adaptation of Horace Mann's story of the children who recited glibly of the earth's features but when asked if they had ever seen this earth replied that they

never had;in St.Louis when asked about the great "father of waters" they reply in good faith that they never have seen it. This furnishing of a natural foundation and reality to geographical facts and relationships is the chief function of field work;for,whatever the type of particular field studied at home,the distant ones can always be better appreciated if the local one is observed and understood,in order to serve as a basis for comparison and contrast.

Field work is not limited in scope as some would have one think. Any region with a creek in its valley will be rich in material for this work;there will be examples to turn to on every hand. Rocks,weathering,soil, wash,streams,valleys,hills will be represented,vary ing from place to place it is true,yet maintaining essential characteritics. The capacity to see such facts may be acquired in almost any field,and used every where,in life as well as in the laboratory;this relation of field work to the general course should be brought out as clearly as possible,by correlating the home facts,as soon as they are well understood,with the general distribution of such facts in the region being studied.

Although all topics cannot be studied in the field, they do not need to be studied there. A study of land forms in the field sufficient to make the subject real,

to develope the topographicalsense,to get a clear view of the workings of earth forces,to get examples of phenomena for comparison,will lay a foundation upon which a whole course of study may be built. Carl Ritter in his Comparitive Geography emphasizes the scope of field work in the following words:"Wherever home is there lie all the materials which we need for the study of the entire globe:in the mosses and lichens on our walls the stunted growths of mountain tops may be imagined. A small range of hills may be taken as a type of the loftiest cordillera. The eye may be trained to see all the greater in the less. The study of our own district is the true key to the understanding of the forms and phenomena of foreign lands;the very first step in a knowledge of geography is to know thoroughly the district where we live."* Although the time allowed for field - work may be comparitively short,its true scope indeed is not so limited in proportion. After certain basal concepts have been established,then the laboratory work may be used to build upon this.

But just as telling can never establish concepts, neither can maps express them,unless concepts very nearly like them already exist in the mind of the student. Much of the difficulty in geography is due to the fact

* P.XXV

that teachers have taken for granted that these fundamental concepts do exist in the minds of the pupils; they have built their whole superstructure upon the assumption that the pupils,in their rambles across country,had gathered such data that only a topographer would be likely to gather. Every one has seen a river, water flowing down hill between parallel banks;but everyone hasn't seen it digging its channel,sending streamlets back into the hillside,and carrying off the waste from the slopes,widening its channel,eating the bluffs down stream,and straightening its course by cut-offs;if one has not seen these things,field work has still its function to perform. In the old fashioned text book geography symbols in the form of words were habitually put in the place of ideas;in the so-called "new geography" symbols in the form of maps may get no further towards conveying to the mind the underlying thought than words,if the maps are not reinforced by personal experience,it is absolutely necessary as a foundation for study in the laboratory,for inexperienced pupils cannot read the proper meaning into pictures of phenomena they have never seen. Map symbols have the advantage over word symbols only in that they are more precise, more accurate,more graphic in denoting distributions; but the concept based upon personal experience must be

behind maps as well as other symbols. And so in order to make objective teaching the Keynote in geography,field work must be its foundation.

Field work,properly conducted,will develope a feeling of self-reliance in the pupil. In using text books as a mine from which to dig information he learns to depend upon it as the source of all information in that subject and unconsciously assumes the attitude of whatever is in it,is right. Not only this passive attitude is developed,but the text book method fails to develope initiative,independence,vigor in attacking a new problem;it does not encourage the investigative attitude of mind. This is shown by the student's willingness to lean on authority,to look for some sign or expression from the instructor when confronted by a new situation without the sustaining power of the text. It is only through the student's own solution of a problem that he gains true intellectual development. The power of observation, imagination,reason is best developed under conditions which stimulate the mental activity of the individual by offering opportunity for the exercise of all his powers. Field work offers this opportunity. Every region is rich in problems that develop initiative and independence,that bring out the self-reliance of the pupil,that make mental effort a joy to him rather than

a drag upon him,for he realizes his own capacity and is thereby encouraged to trust himself in advancing toward new subjects of study. Such results as initiative,independence,vigor of attack,pleasure and interest in the subject,will abundantly justify the time spent in the field.

It is unquestioned in educational circles that training in research,in scientific habits of thought,is of greater value than information;the ability to observe facts,to draw conclusions from them,to test these conclusions,in other words to arrive at conclusions rather than jump at them,marks the well educated,well balanced man from the man of superficial training. Field work affords a splendid opportunity for such training,in its methods of investigation. The students are trained to use their eyes and originality in thoughtful study of objects;their minds are brought into contact with facts, not words,when,instead of reading of them,they are led to see the hills and valleys,to notice the rocks they are made of,to observe the courses of rivers and brooks, and to notice the structure of plateaus and plains. Thus the study of geography has the same disciplinary value as any of the experimental sciences,for observation is the basis of them also. Not the hasty and careless observations as are made by people in the ordinary affairs

of life,for observation is not mere looking,it is discrimination. This ability must be developed by a systematic dicipline.

In order to make the most out of the excursions as a training in observation,care should be taken to advance no inference that may not clearly be drawn from the facts before the pupils;if questions arise to which the facts gathered give no answer,let them go unanswered for a while and trust to the pupils' curiosity to search out the facts needed to explain them. This will encourage an active,investigative attitude,a necessary thing in good field work.

In the field the pupils' authority is the field itself;the instructor is merely a guide setting the problems before the pupils and asking suggestive questions; there is no such thing as a text. It is the student who gathers the facts,who arranges them and compares them. In the work of arrangement and comparison,the student will be led to ask into the causes and relations of the facts in nature;when shown a fact he will inquire into its cause,when shown many facts he will inquire what relations,if any,exist. He will be led,for instance,into asking what connection between the hills and the kind of rock,between the soil and the rock,between cultivation and the soil,and other relations that are suggested to

him. Even though errors of statement and wrong conclusions do occur,the work of observation and discovery will be beneficial;the ability to see relations is worth much more to a pupil than information about facts that are not studied relationlly;for his mistakes will be cleared up as he goes further on whereas errors from out of books are often never cleared up;again,facts from out of books fade from the memory while the habit of observation lays the foundation for continually learning new things. Unquestionably something more than information will be gained from field work. The training in observation,in arranging and comparing,in drawing deductions,and preparing hypotheses that it affords is a training in research that many university students even would do well to receive.

In seeking relational causes the pupil will learn to look at the region as a whole and seek to discover what related causes have made the region what it is. When this point of view has been reached by the pupil it will be an easy matter to turn from the field work at home to foreign fields in the laboratory;to regional geography in other words. The symbols on the maps will be interpreted by him into real hills and slopes,into real rivers and valleys,and the work will possess a naturalness and interest that it could not possess otherwise.

Difficulties of Field Work. Ofcourse there will be difficulties to be met and overcome in the work. The first great difficulty that the average teacher will encounter,the greatest of all perhaps,is her own lack of preparation and training. It is well known that teachers of geography in the secondary schools are forced to lean heavily upon the texts and manuals,good or bad,for the simple reason that the teaching of geography is given to teachers irrespective of their training in the subject. An investigation which took up the question of the preparation of geography teachers in the High Schools of the middle West,showed there were only fifty percent of them that had ever had a college course in geography and only five percent were especially trained for their work.

With teachers thus limited a close following of the manual is ordinarily all that can be expected. But it is possible for a wide awake teacher to overcome this lack of preparation by taking suggestions from books and current literature on the subject and adapting them to the local field. A thorough investigation of the home locality will give a foundation to these suggestions which will make them comparitively easy to follow and will doubtless reveal many possibilities not suggested elsewhere. The teacher,in short,must get out first and

learn to see before she can hope to teach others to see. Field work in geography is becomming a prominent feature in the summer schools in a great many colleges and universities;teachers who are able to take advantage of any such courses will find plenty to chose from,that will make their subsequent work more vital to themselves and to their pupils as well.

Another serious difficulty in the study of geography in the field is the lack of manual or guide for the teacher. This is due partly to the newness of the subject and partly to the fact there can be no universal outline that would fit all fields,or even a majority of them. The subject matter of each course must be made to fit local conditions. Any guide to be useful at all, must be planned out by each teacher with reference to the field she is working in. The outlines so far published are vague,incomplete,rather meant to offer suggestions than submitted as a course to be followed closely. This lack of a guide goes right back to the preparation of the teacher for its remedy,since it will require good hard work from a trained teacher to make such a guide;or perhaps good hard work from an enthusiastic teacher would accomplish results.

While the two chief difficulties are those of the teacher and guide there are minor ones to be met also.

The matter of climate restricts the excursions to the beginning and end of the course. But most of the field work should come right in the beginning,so if the time is used to advantage this factor will not be a serious drawback. The weather will interfere at times also;this cannot be overcome except by having the field course elastic enough to use every bright day in the field whileother days can be spent on work in the laboratory pertaining to the local field.

Since the excursions can hardly be limited to the hour or two alloted to other high school subjects,conflicts are numerous and the pupils will often want to leave in the middle of the lesson. To remedy this the field exercises should be made a regular part of the programe and a fair amount of time set aside for it. This is not asking too much considering the short duration of the field course.

The number of pupils that one teacher can successfully handle is limited to ten or fifteen at the most, if realy good field work is to be done,owing to the close supervision of each individual that is necessary, especially in the beginning. In the city High Schools, just where the work is most needed,this is more or less of a serious difficulty since the average class will have from twenty five to thirty pupils in it. Under such

conditions the dicipline will have to be more strict. Their attention must be demanded in the field almost to the same extent as in the classroom,and even so the work will be less thorough in the given time.

Method of Conducting Field Work. In general any method of conducting the work that will rouse the effort of the pupil and hold their interest will be the best method. If the class is a large one the problems might be talked over in the class room before starting. Directions can be more easily given here concerning the main points to be noted,and a sort of anticipatory interest will be aroused. The students' knowledge of the field will be found to be incomplete,haphazard,vague; they will realize how little they have observed up to this time and even little things brought to their attention later in the field will be well received by them. In most cases,however,it is better to bring the problems before the students after the field has been reached,thus giving the work a definitness and reality that will be helpful to the pupils. Sketches and maps should be made in the field and immediately inspected by the instructor so that any correction can be made while still before the facts. No formal report will be necessary in connection with the trip as the maps should be made to record all the essential points.

A definite area having been selected,the student

should be set to work to make as accurate and comprehensive a map as possible,considering the training of the class and the time allowed. In order to construct such a map it is absolutely necessary to know thoroughly the plan of the whole field. Thus the essentials of good teaching are involved,that is,an aim for the pupil,in this case the construction of a map,which requires the subject-matter of the lesson,a thorough knowledge of the field,to accomplish.

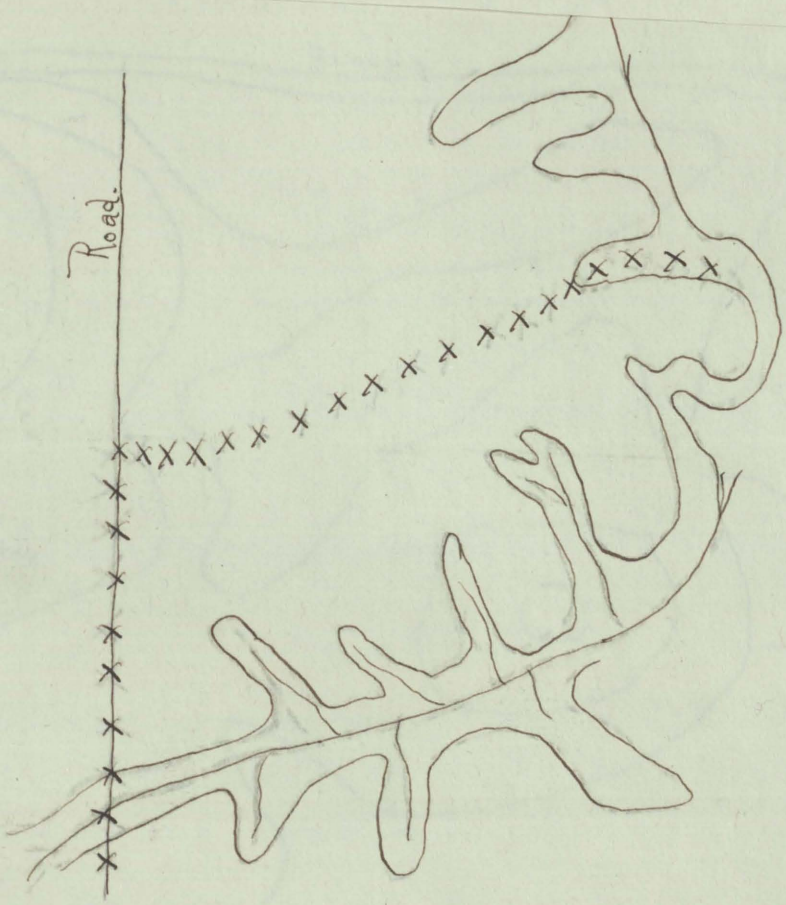
The making of maps will not only involve a thorough knowledge of the field but will train the student in accurate geographic expression as no other means could. Knowledge belongs to a student intimately only when he can express it accurately and concisely;the map affords opportunity for such expression. The ability to see things in the field and to express what is seen comes only with practise in this work. On the first trip the student is able to see only the big things,only the general plan of the country. And even though he sees the general plan he cannot put it on paper at first with any degree of accuracy. This is shown by the following set of maps which were made by students after one trip in the field. They are all indefinite,inaccurate,almost characterless as far as fitting any definite area is concerned. It shows that although the students may see and

be able to describe the field in words they have not gained an accurate knowledge of the relation of objects. Their effort to construct a map of the region shows them this defect very emphatically.

Student's Map.

First Trip.

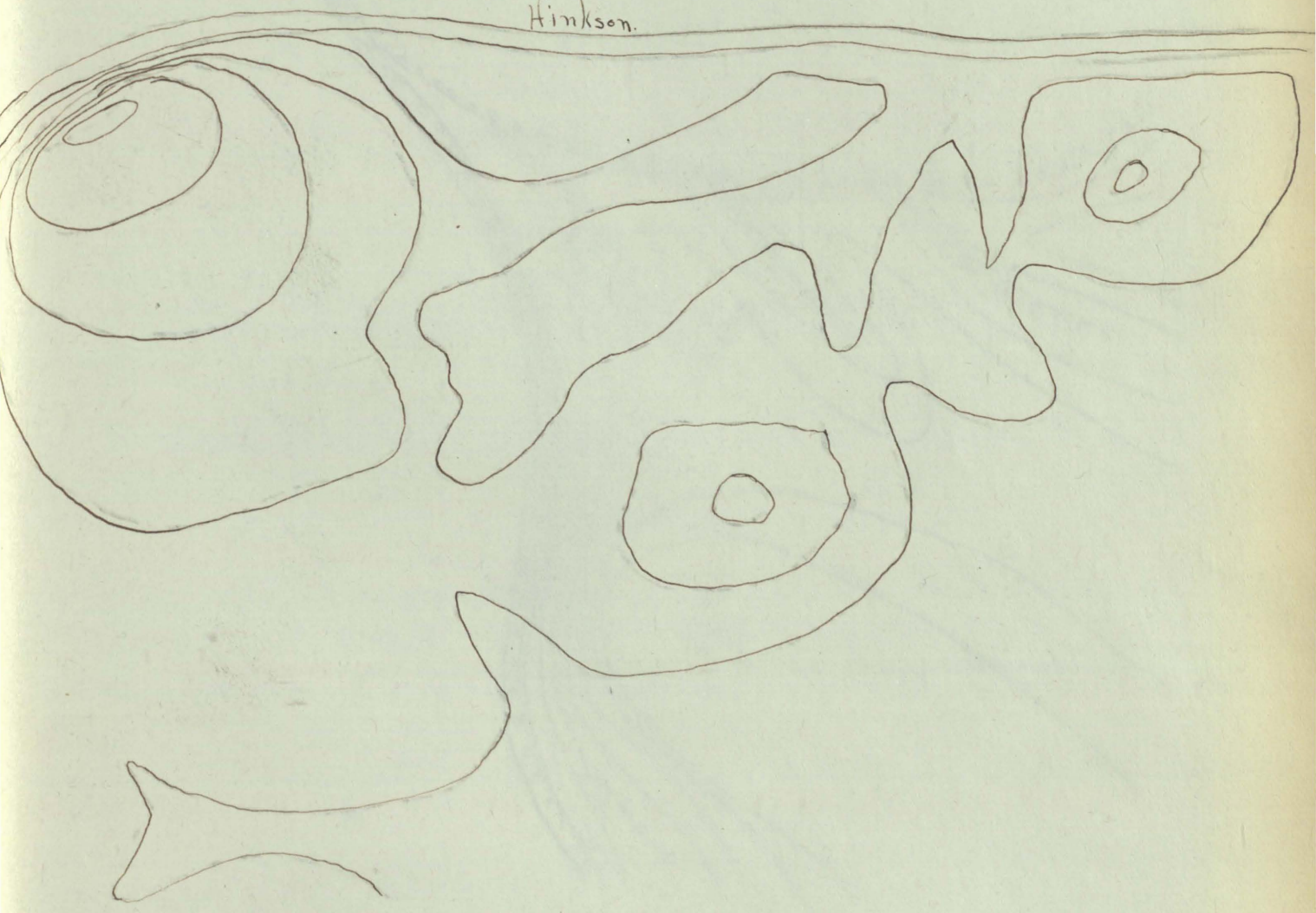
SET A



Students Map.

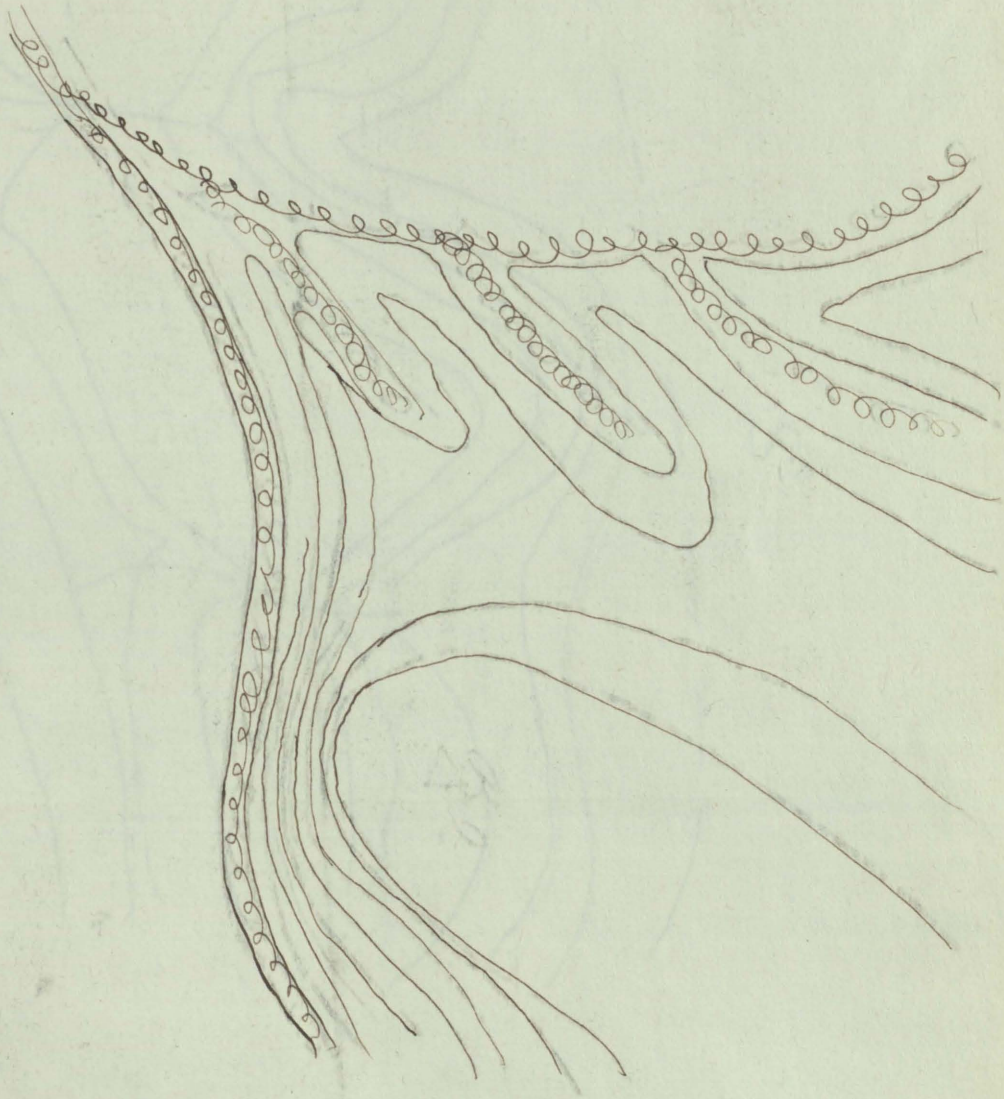
First Trip.

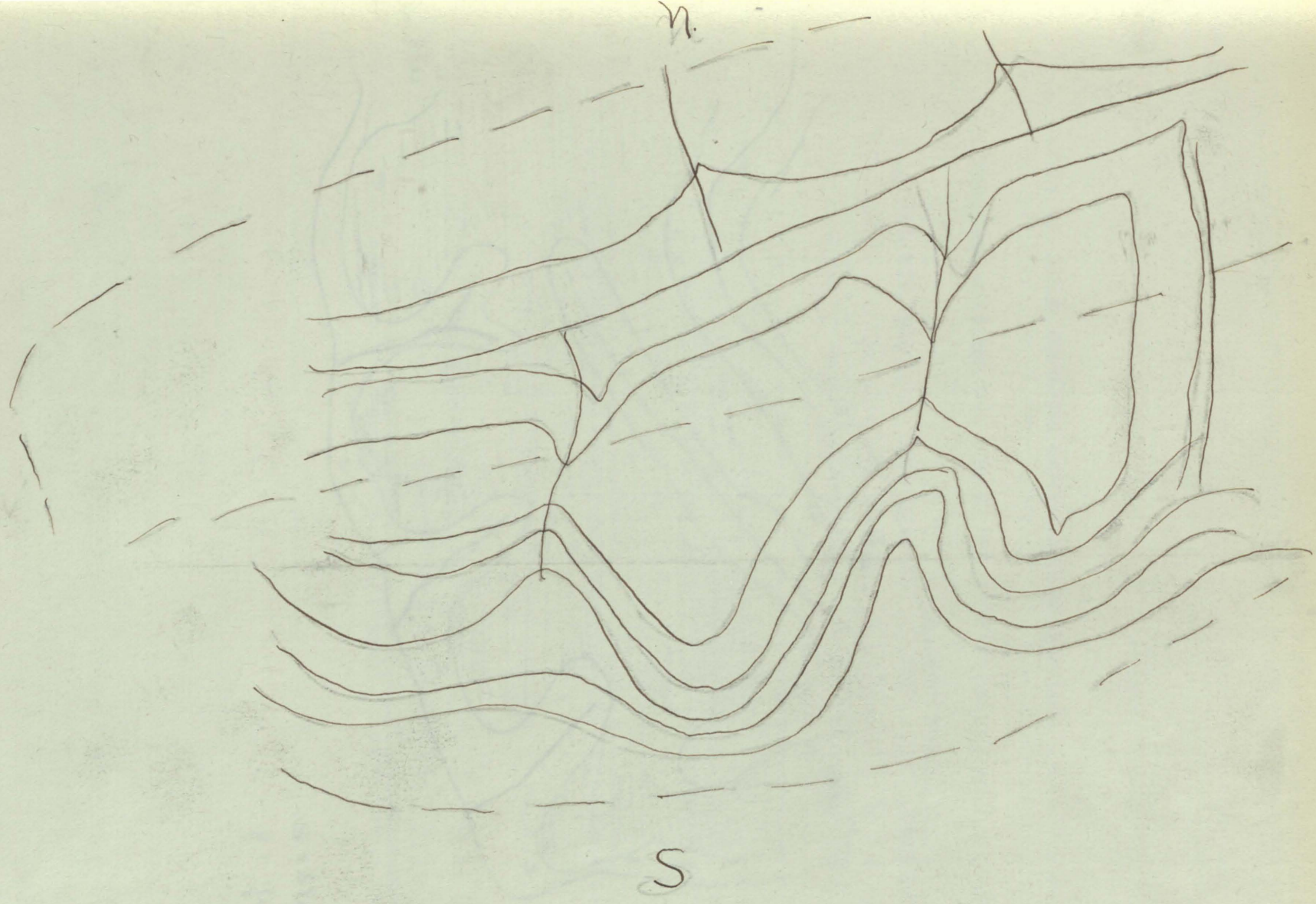
S.



N.

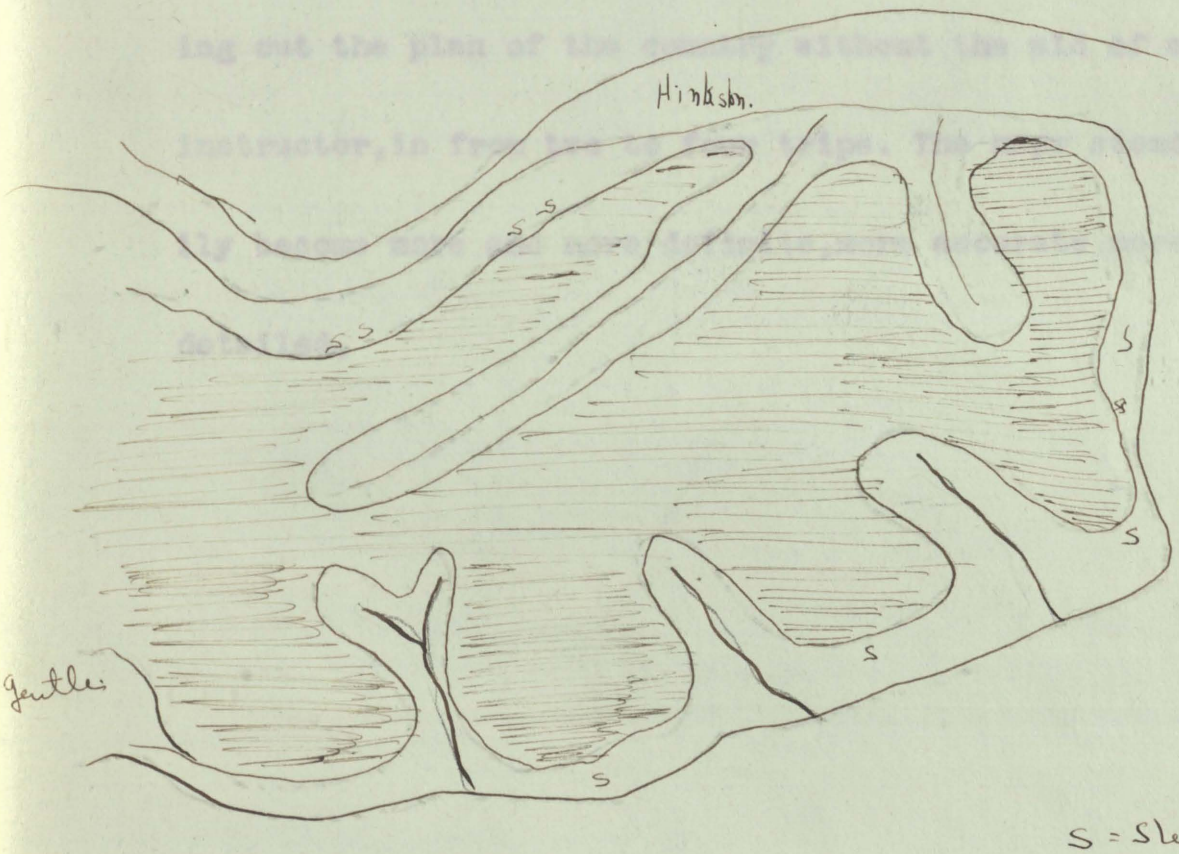
Students Map.
First Trip.




N.
S

Students Map.

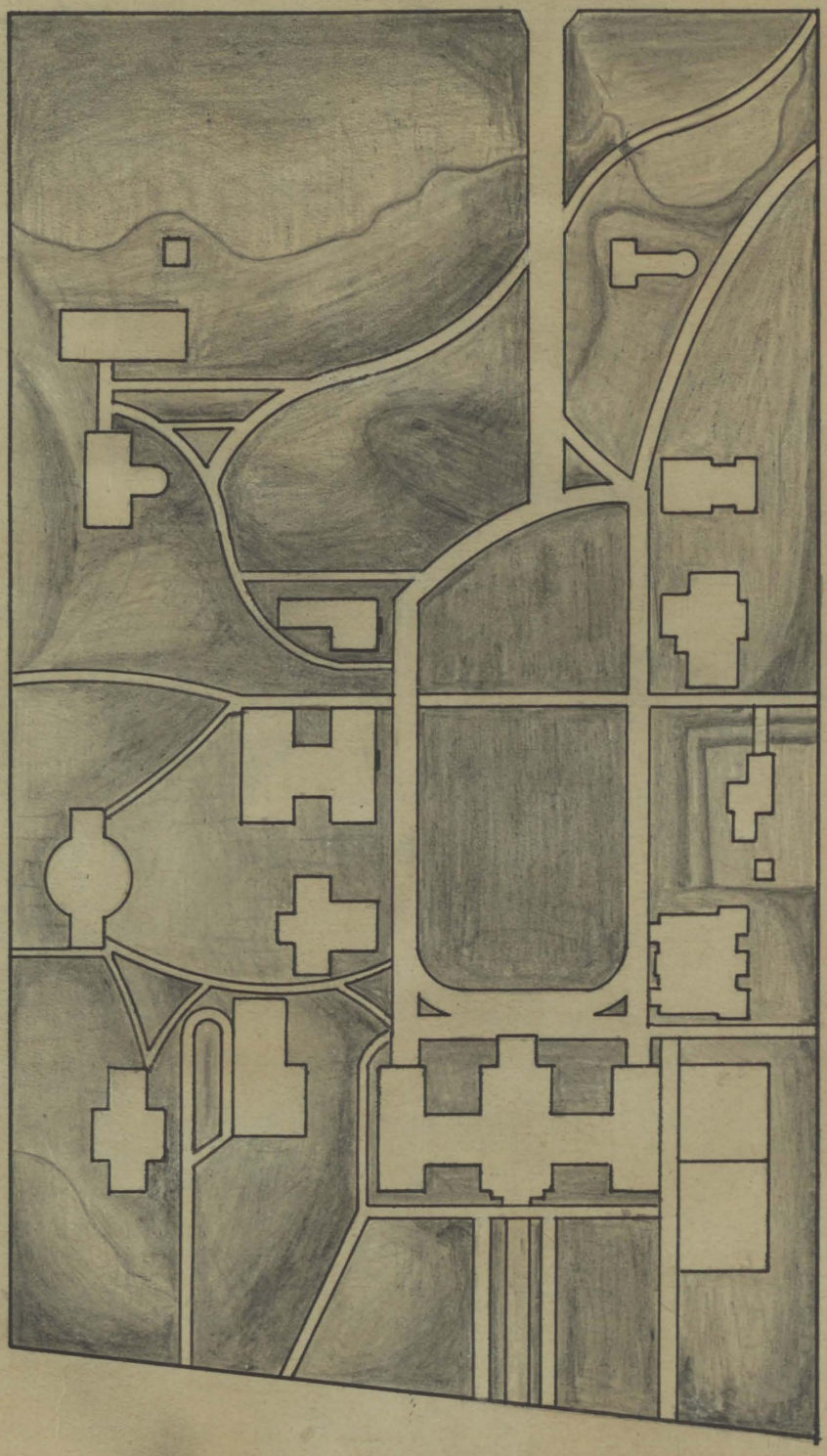
First Trip.



S = Steep Slope

g = gentle Slop

Sets B and C show the rapid progress made by students in this work of correlating eye,hand,and country. These excursions were made by the students alone,working out the plan of the country without the aid of an instructor,in from two to four trips. The maps steadily become more and more definite,more accurate,more detailed.



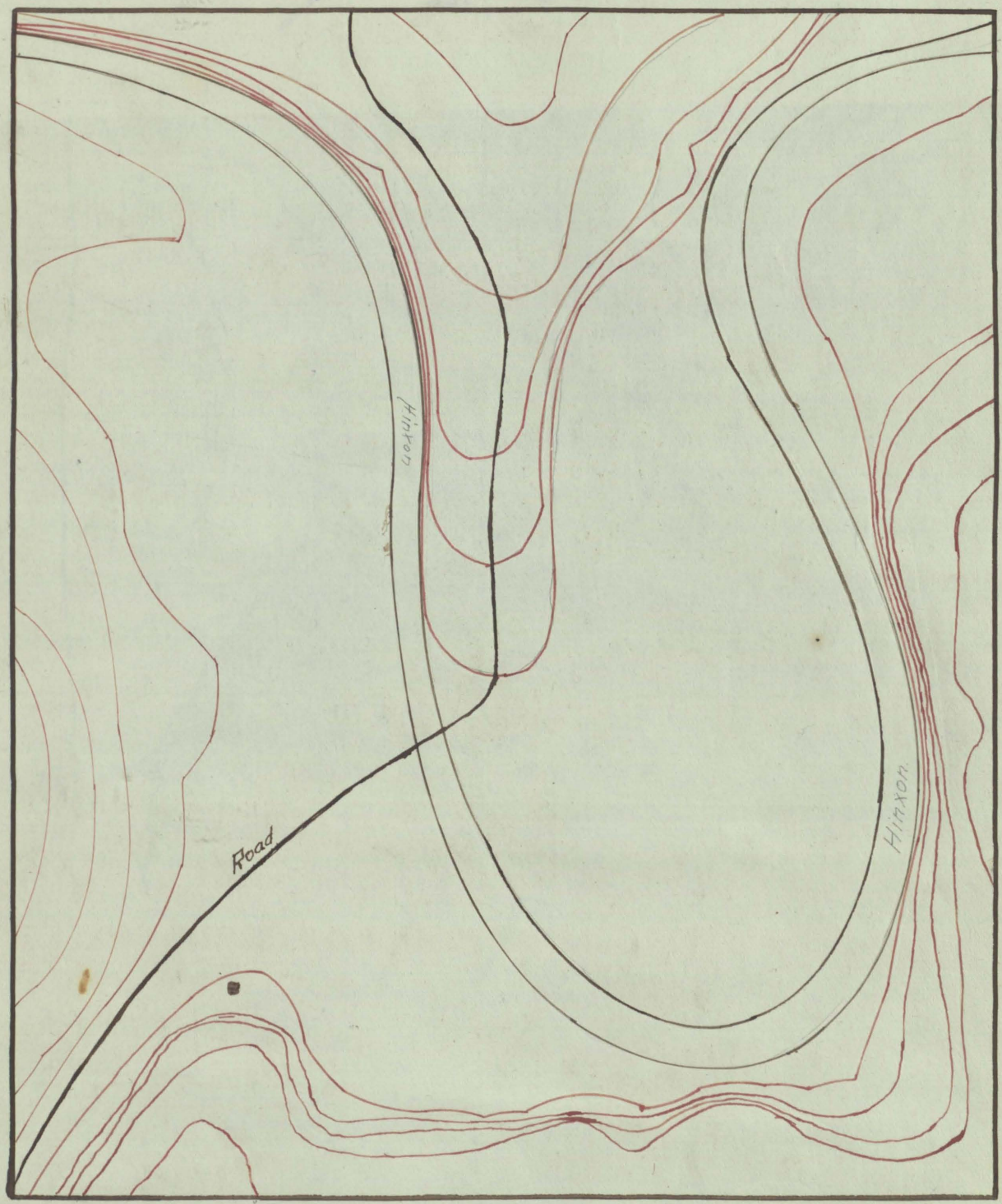
Champ.Mayfield.

2/25,'10.

"Classic Hinxton."

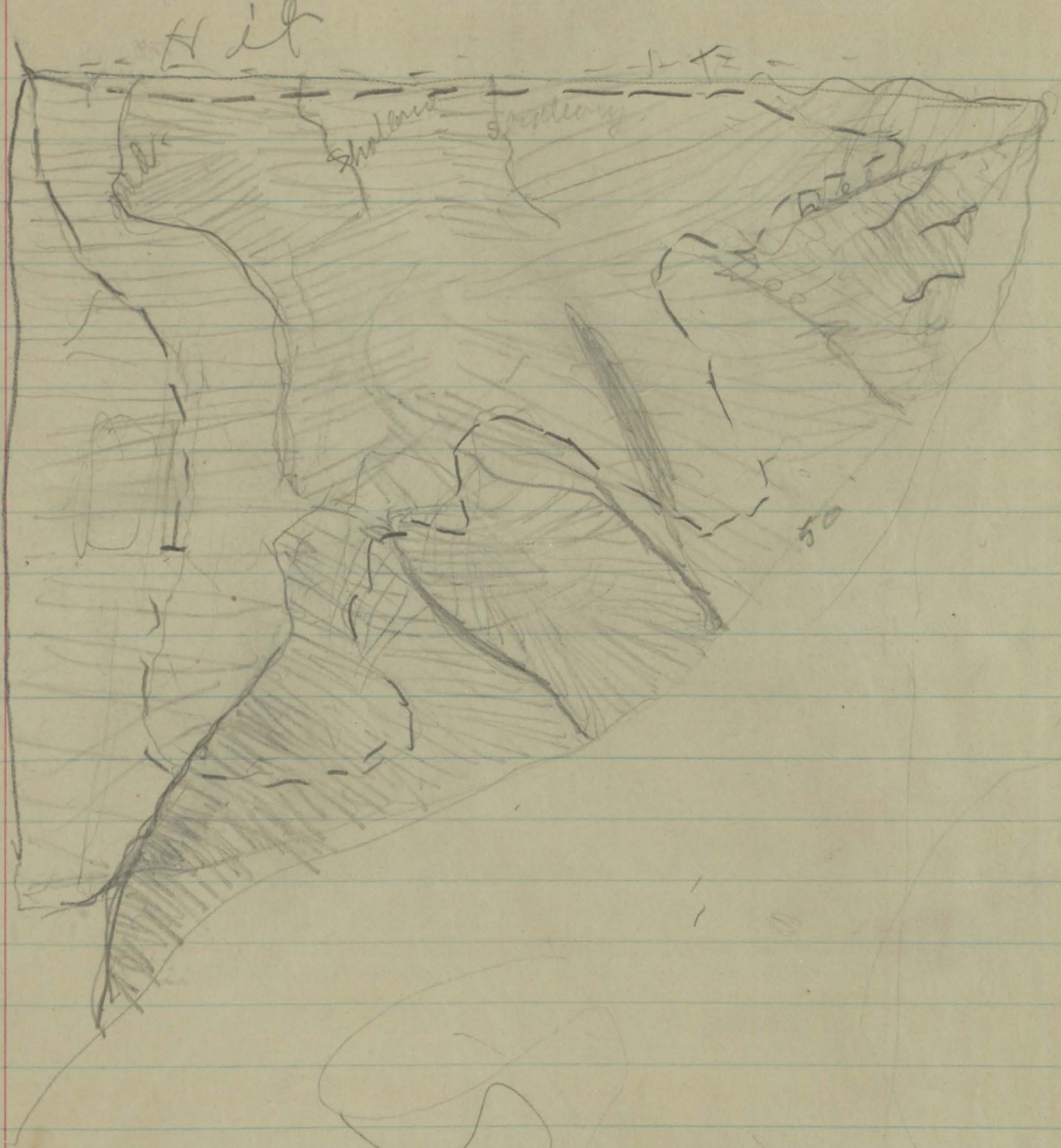
P.S. This is about one inch too long for it width.

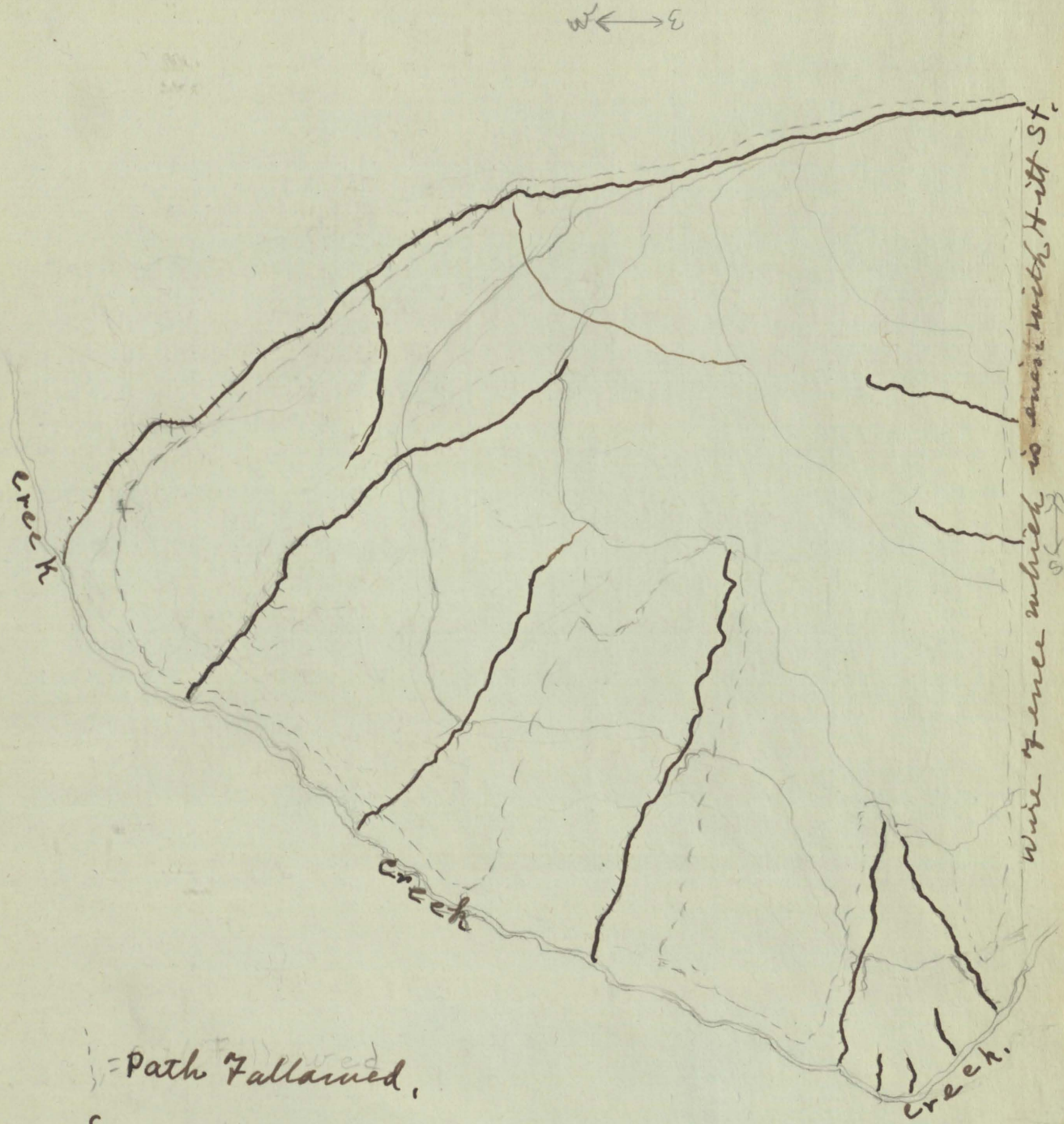
Sketch of Hinxon



C. Mayfield. 4/10, '10.

First attempt





= Path Followed.

= Ravines.

= Deep Ravines.
all others shallow
Hill about fifty feet
above the creek;
gradually slopes away
from the creek.

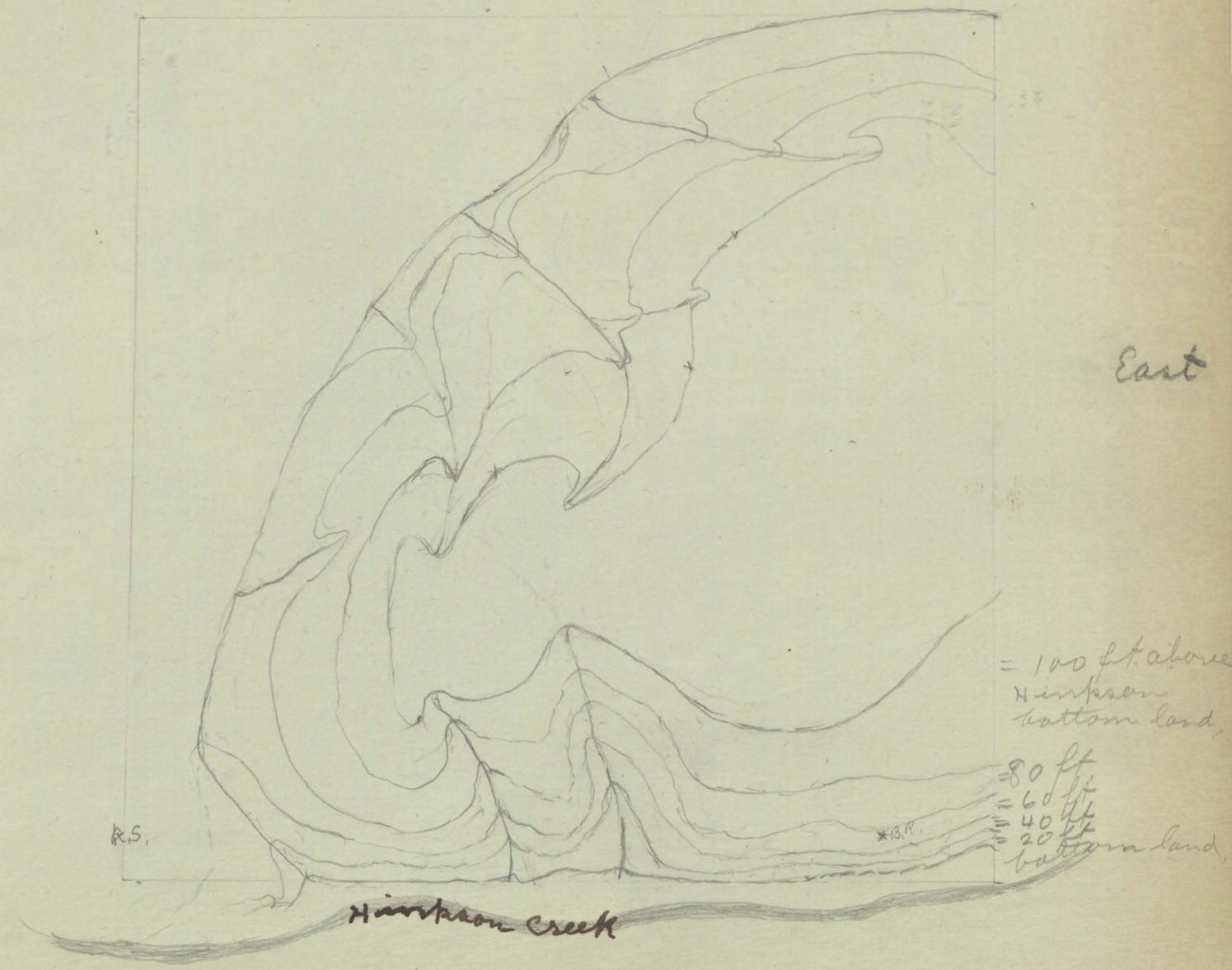
× = Rollins Spring.

second attempt

First draft of 3rd attempt.

West.

East

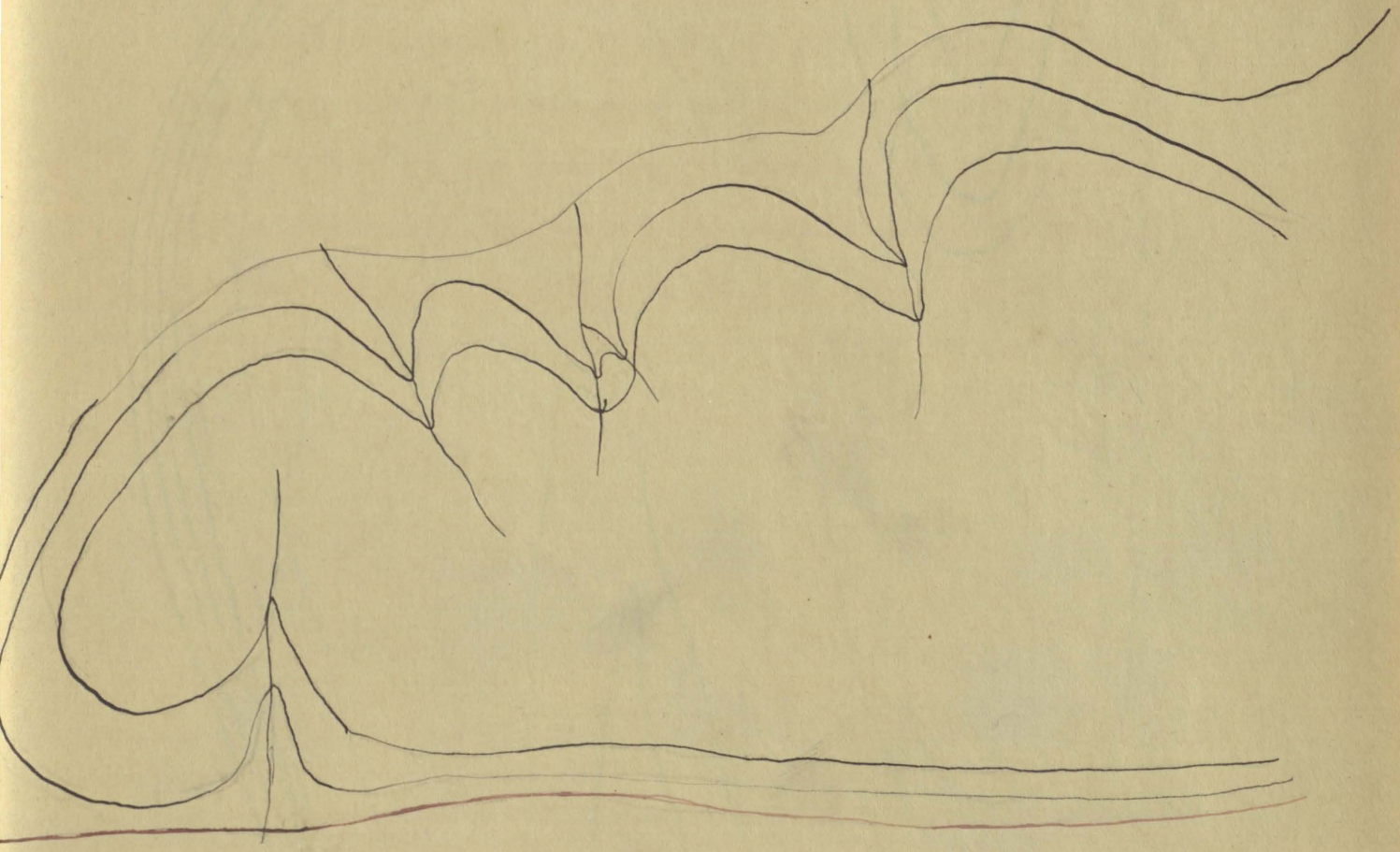


Third attempt at Hinkson region South

Set D shows what High School pupils can do after four trips into the country. This set of maps shows a far better grasp of the plan of the country than the university students could boast of after a single field excursion and is nearly on a par with the third and fourth trips of the university student. It shows,therefore that what is necessary and indispensable is practice rather than maturity to attain good results,that is,tha ability to see and express objects of the field.

High School.

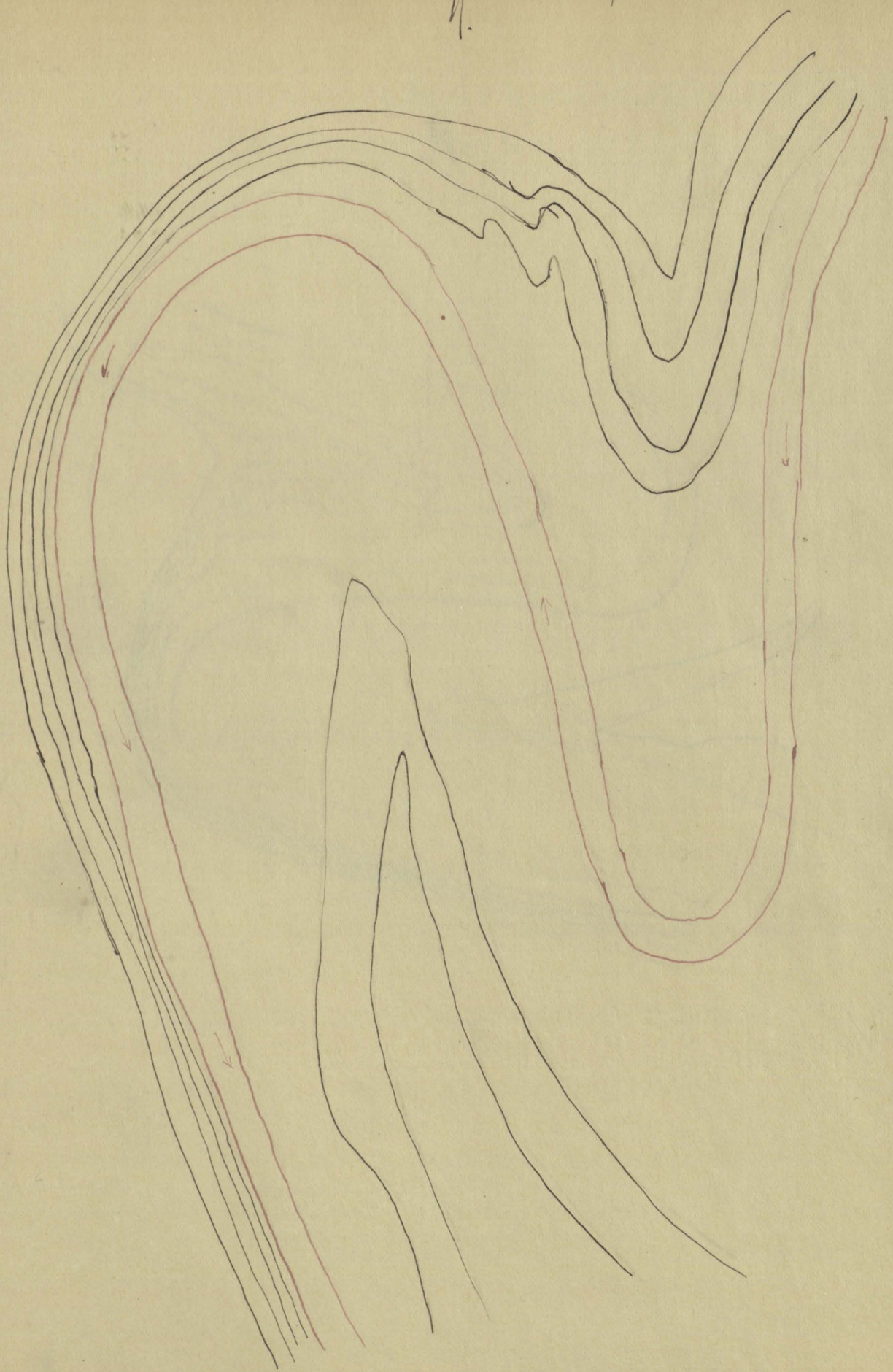
11.



S.

High School.

N.



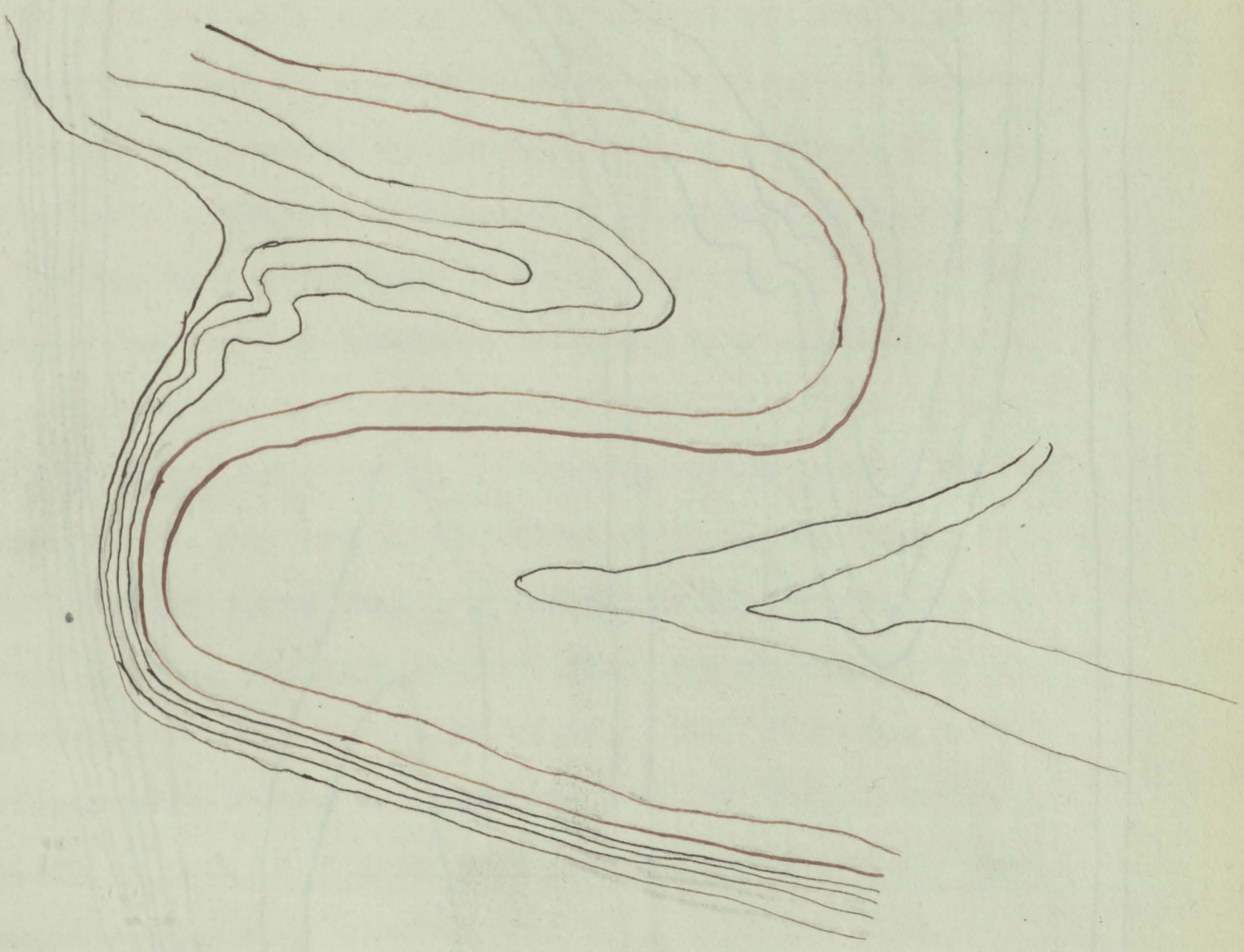
W.

E

S.

High School

N.



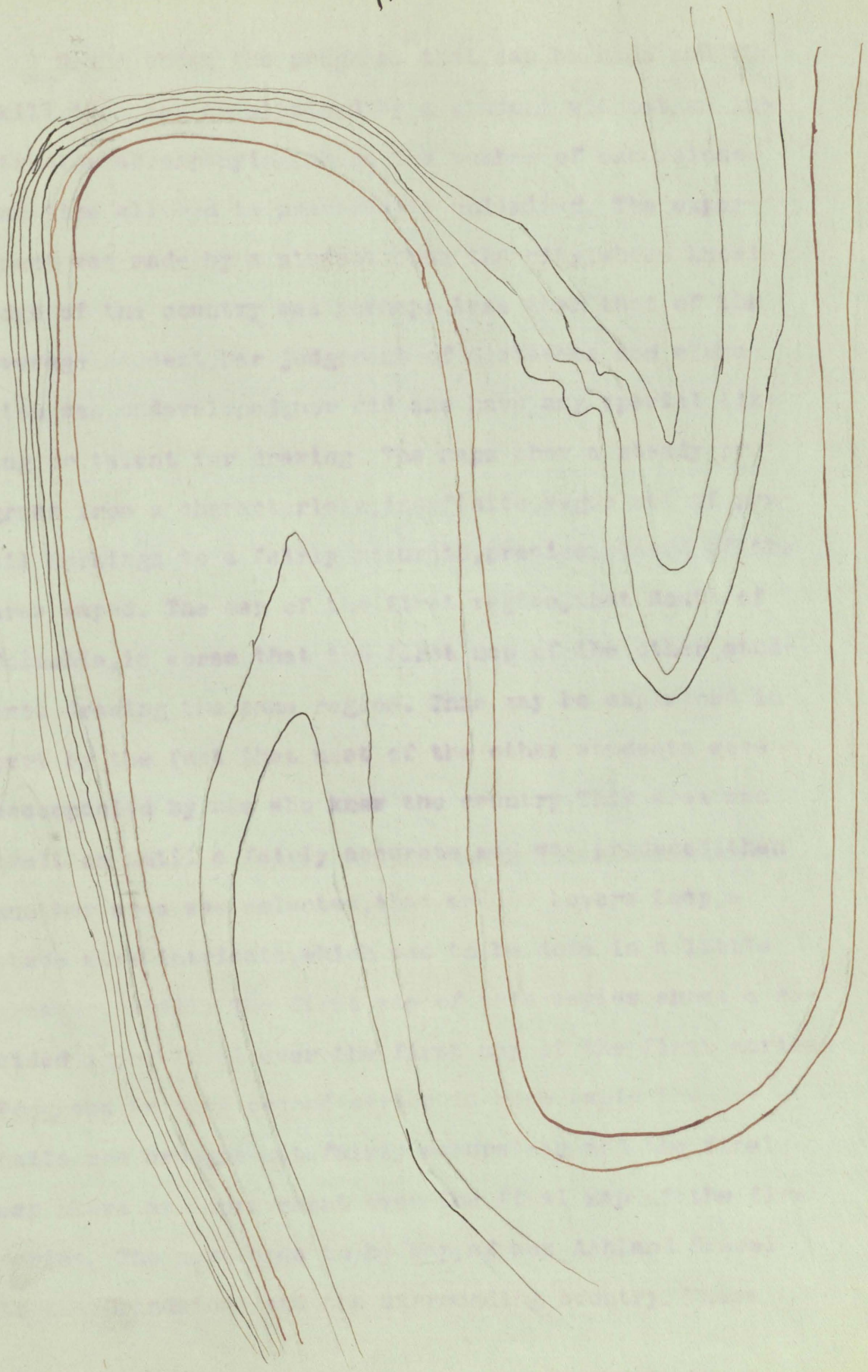
W.

E.

S.

High School

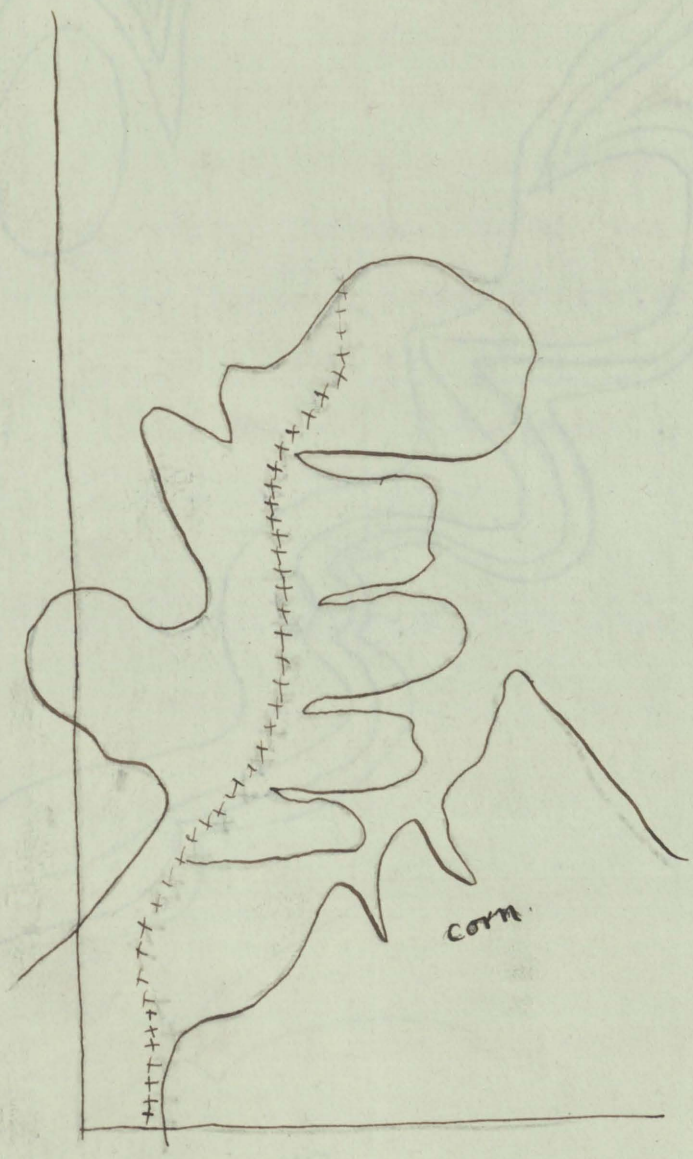
η.



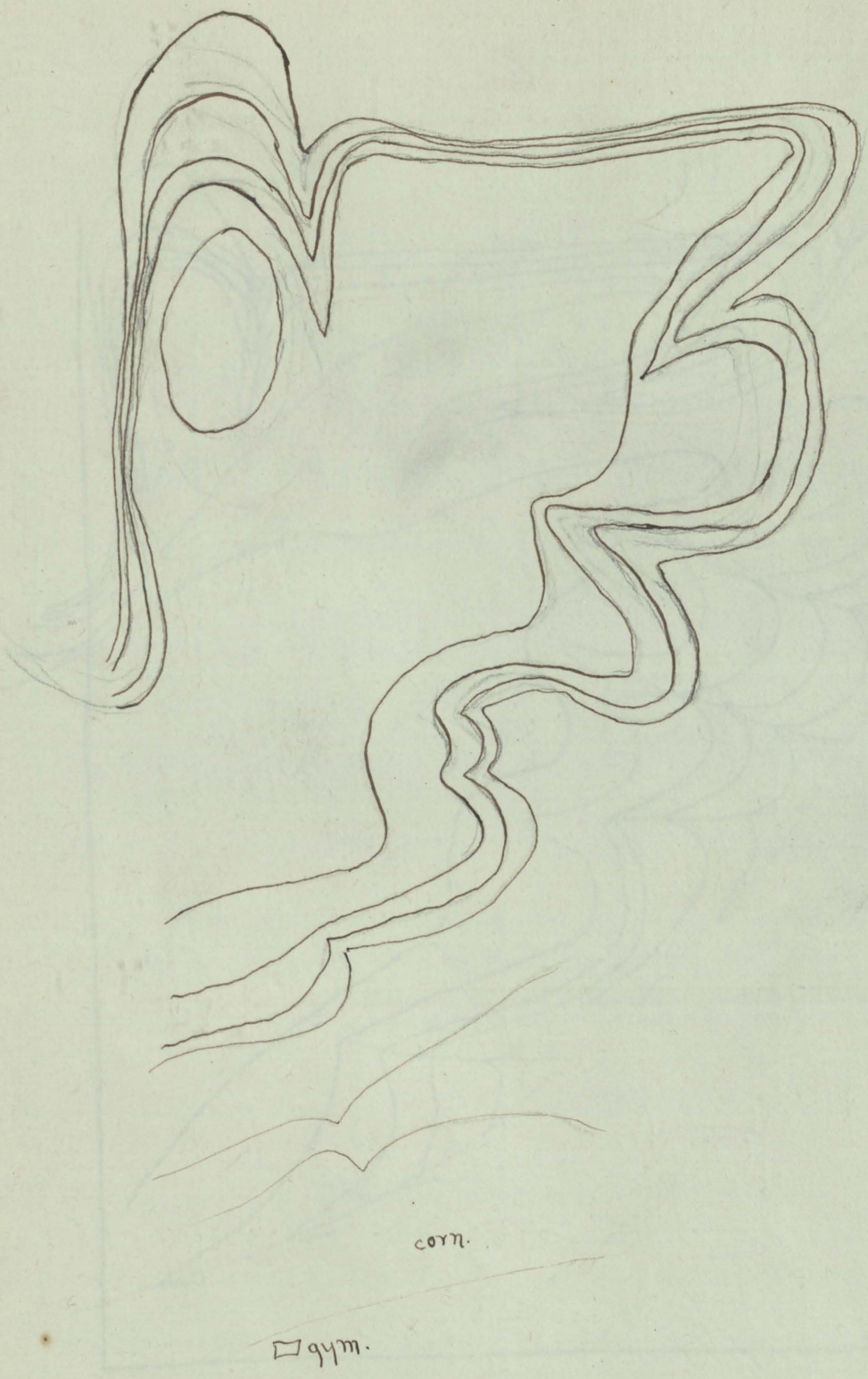
Set E shows the progress that can be made and the skill that can be attained by a student without an instructor accompanying,where the number of excursions and time allowed is practically unlimited. The experiment was made by a student from the city,whose knowledge of the country was perhaps less than that of the average student,her judgement of distances and elevation was undeveloped,nor did she have any special liking or talent for drawing. The maps show a steady progress from a characterless,indefinite,vague set of pencil markings to a fairly accurate,precise,record of the area maped. The map of the first region,that South of Columbia,is worse that the first map of the other students drawing the same region. This may be explained in part by the fact that most of the other students were accompanied by one who knew the country.This area was dwelt on until a fairly accurate map was produced;then another area was selected,that around Lovers Leap,a shade more intricate,which was to be done in a little greater detail. The first map of this series shows a decided improvement over the first map of the first series. Progress in this second series is more rapid,the details are brought out fairly accurately, and the final map shows an improvement over the final map of the first series. The next area to be mapped was Ashland Gravel to the Grindstone and the surrounding country. These

maps show a steady progress also;the first map drops behind,perhaps,what might be expected from a consideration of the preceeding maps,but this third area was mastered more quickly than the others showing the halt in progress to be only temporary. The fourth series of maps shows the whole region from Ashland Gravel to Providence Road, thus including the areas worked out in detail,mapped as a whole. This more comprehensive,more intricate, more detailed map is done with greater accuracy and greater precision than any of the others.

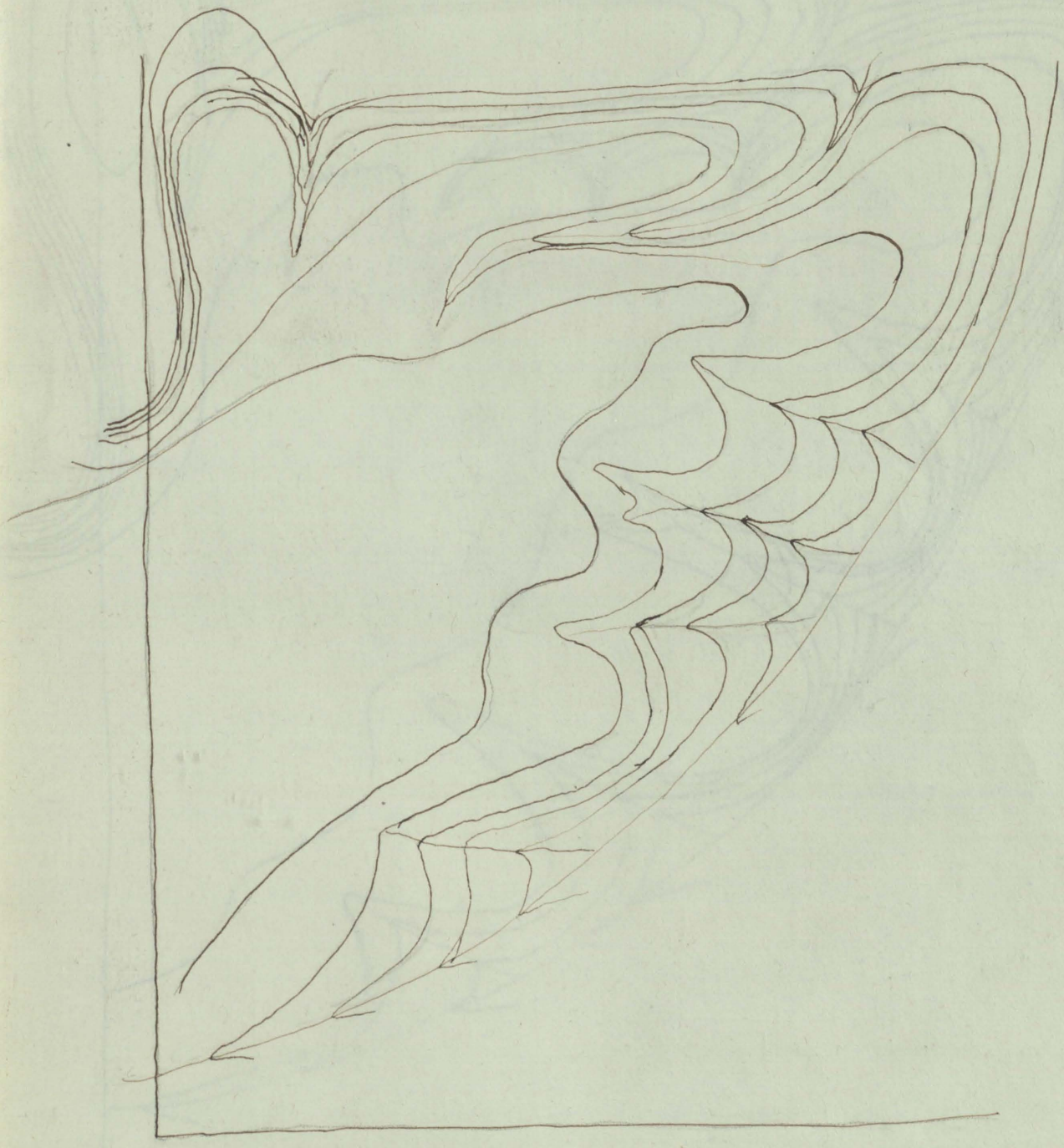
Region South of Colombia.



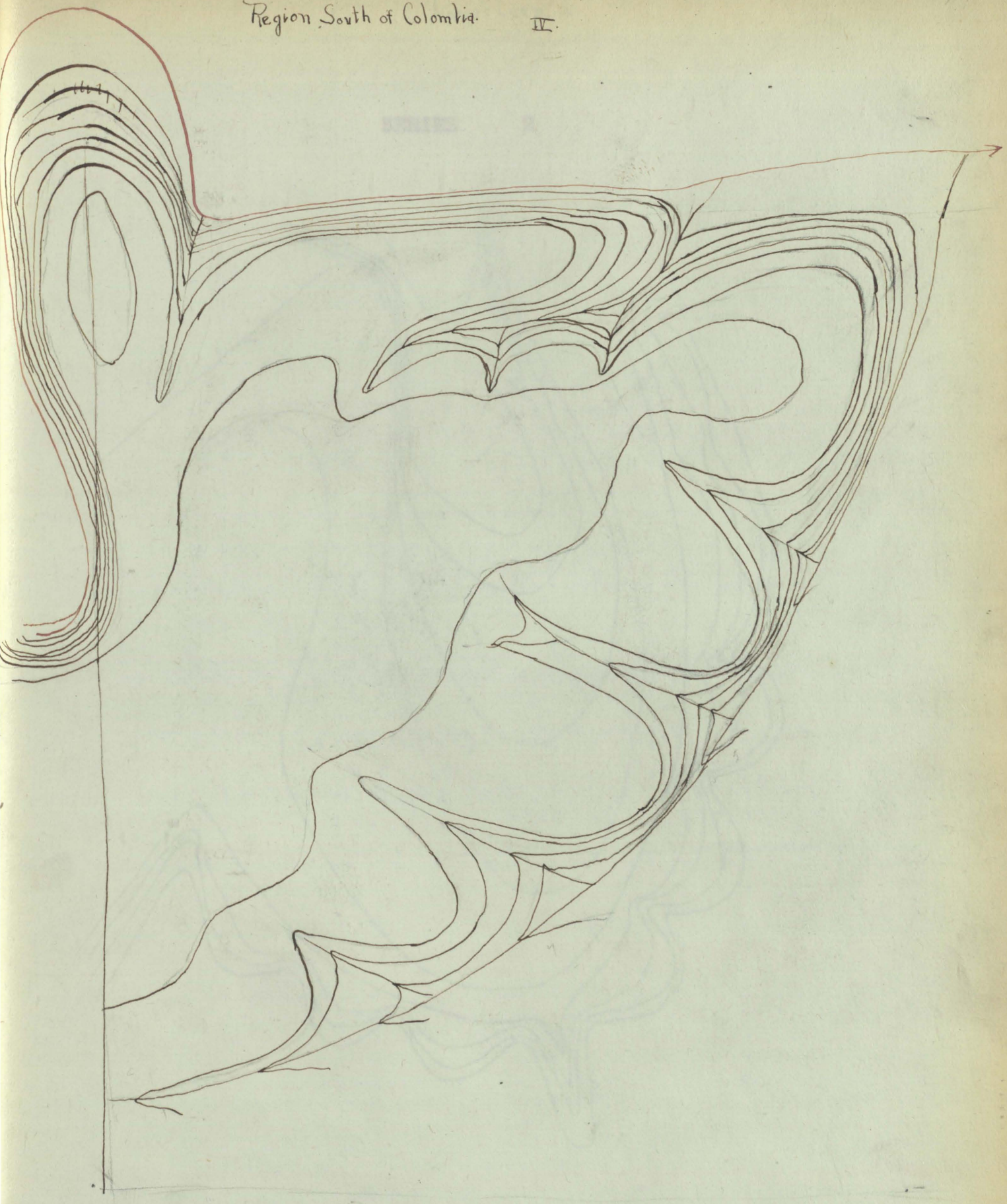
Region South of Colombia. II.



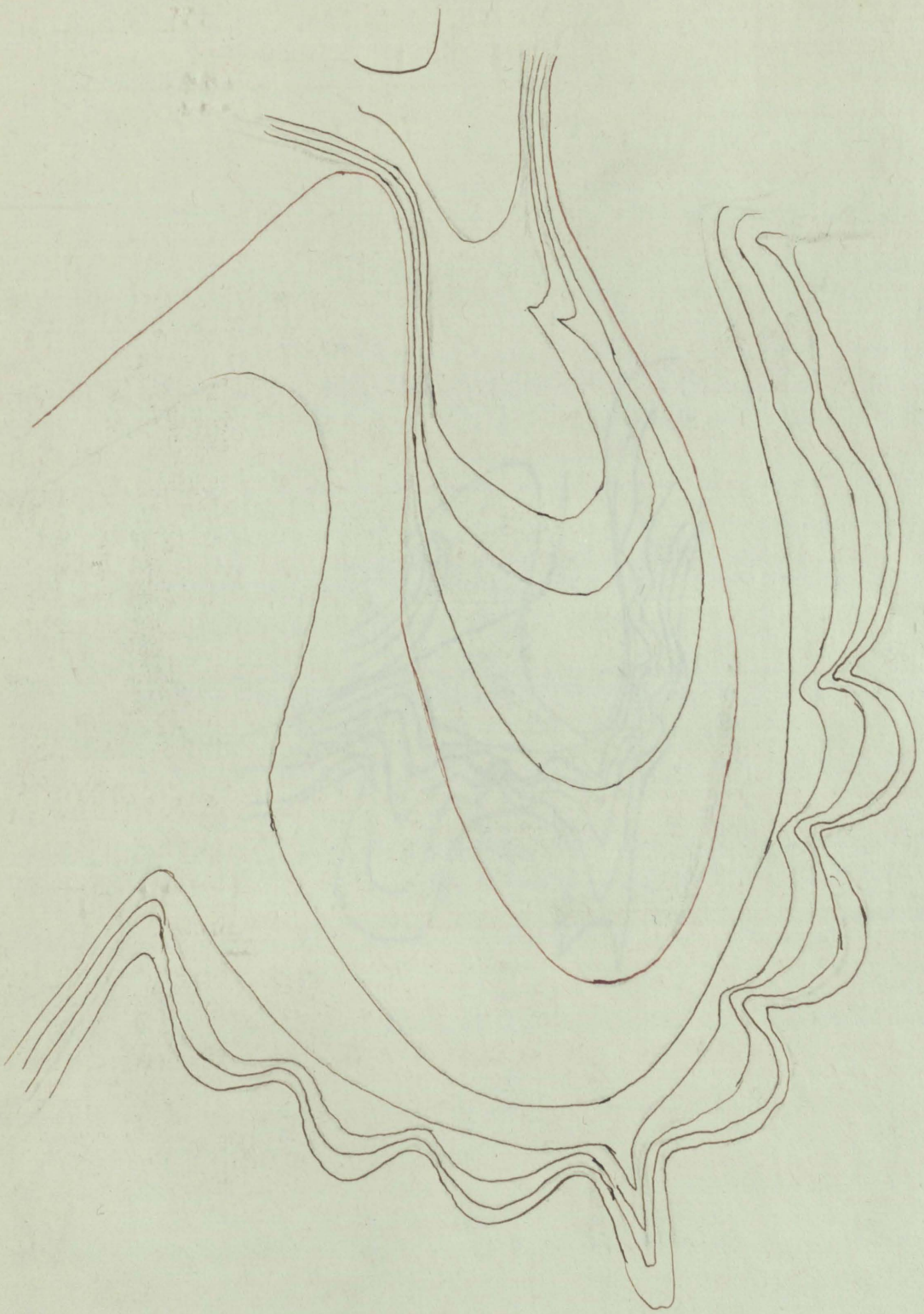
Region South of Colombia. III.



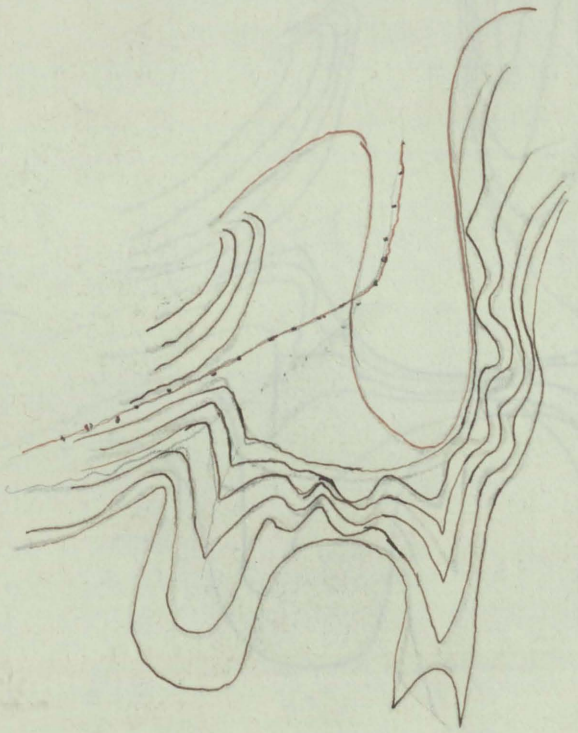
Region South of Colombia. IV.



Lover's Leap. I.

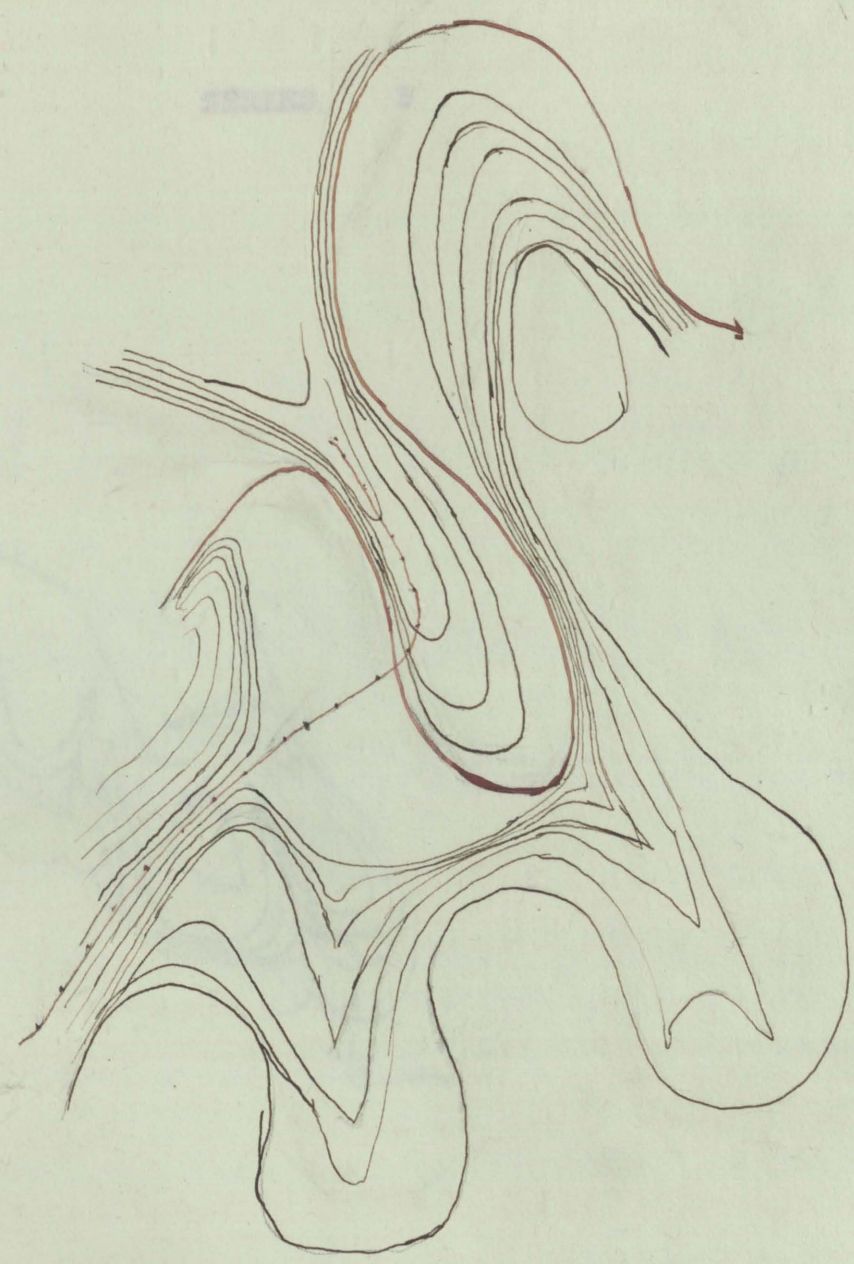


Lover's Leap II



Lover's Leap. 44

Lovers Leap.



Ashland Road #1.

N.

S.

Ashland Road # 2.

2

N.

S.

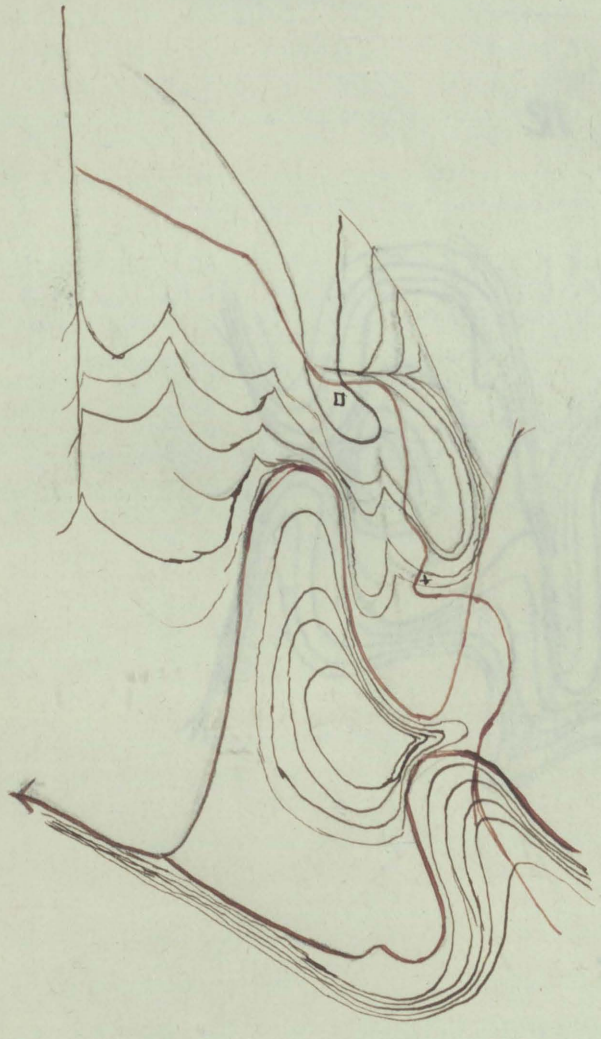
Ashland Road # 3.

N.

S.

Ashland Road # 4.

N.



S.

Map from Ashland Road
to Providence Road.
(along the creek.)

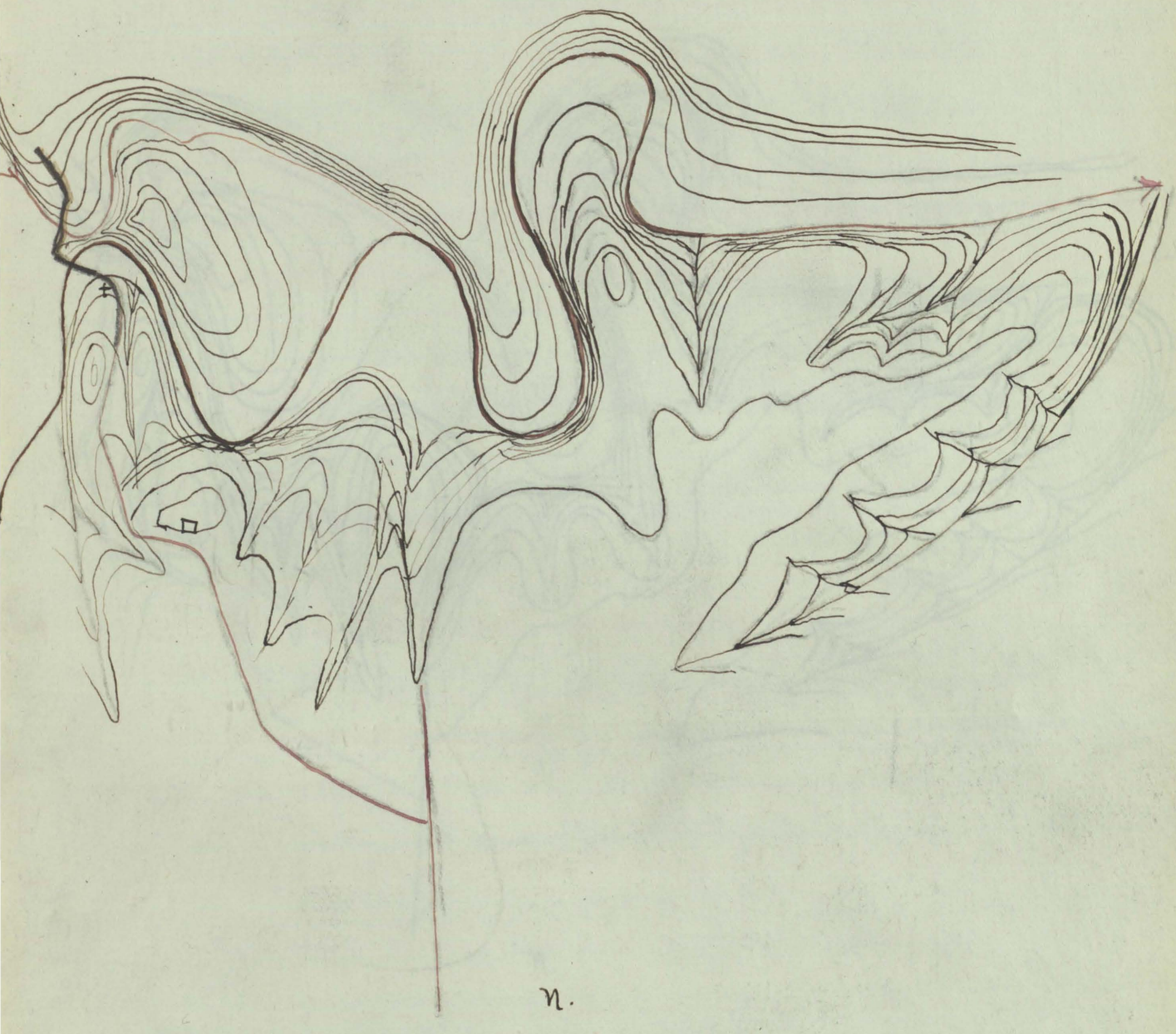
#I.

S.

N.

Map of Hinkson from Ashland Road to Providence Road. #2.

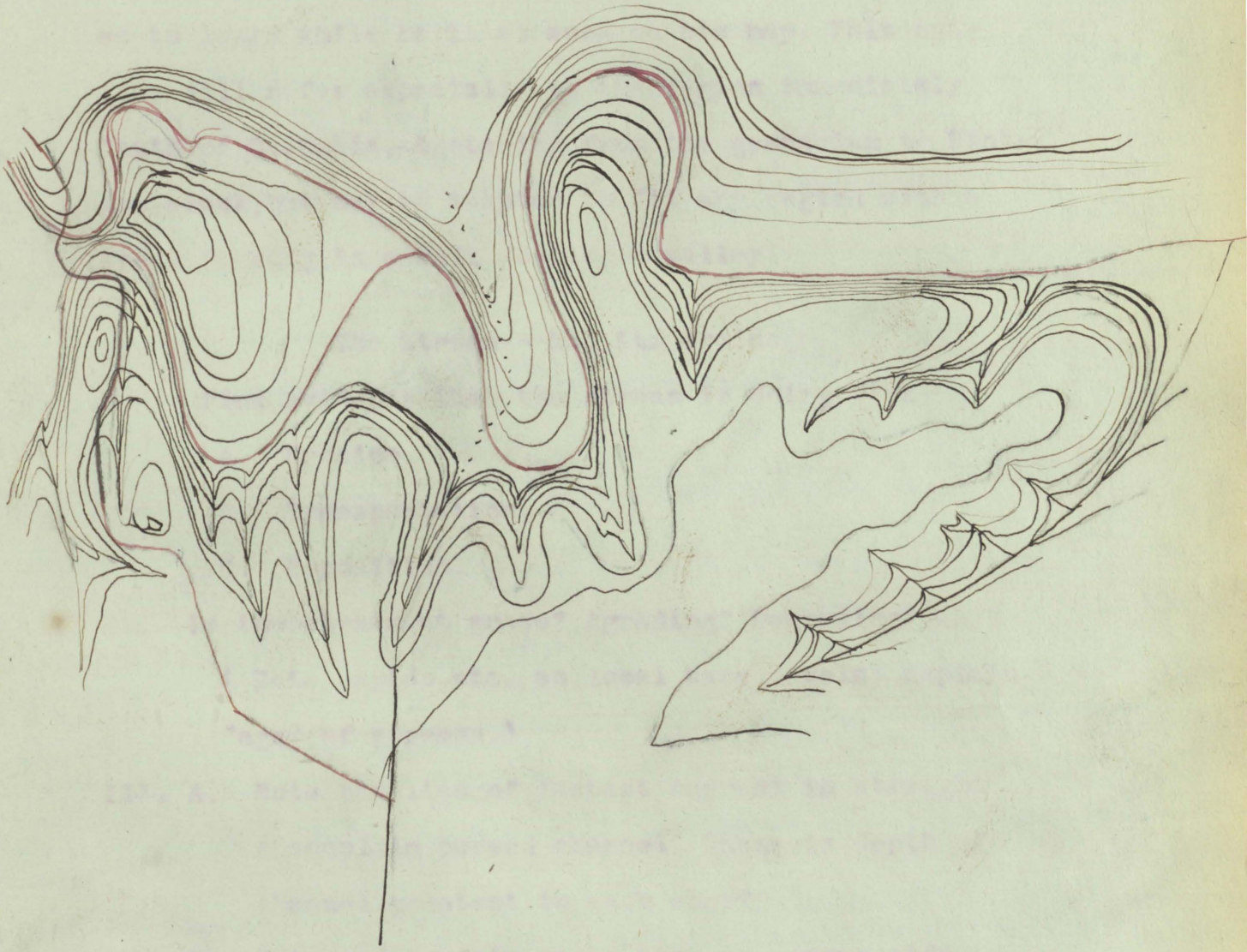
S



N.

Map of Hinkson from Ashland Road to Providence Road. #3.

S.



N.

Outline of Field Work. The following is an outline of the subject matter that the student might be expected to learn while he is at work on his map. This outline will refer especially to the region immediately South of Columbia,stretching from the gymnasium to Hinkson creek,but may be adapted to fit any region with a creek flowing in a well developed valley.

The Stream---Map its drainage.

I. Find evidence that the stream is doing work.
   A. Erosion.
   B. Transportation.
   C. Deposition.

II. Is the stream at grade? Agrading? Degrading? Why?
   (Note rapids etc. as local base levels; explain "age" of streams.)

III. A. Note the line of fastest current in straight channel;in curved channel. Where is depth of channel greatest in each case?
   B. Note and explain steep bank on convex side of stream;sloping bank on concave side.

C. Note and explain meanders;note meanders migrate down stream. Find example of cut-off.

D. Note and explain flood plain developes on concave side of stream.
(Give examples of different stages of river development in the laboratory.)

E. Note the distribution of sand and gravel along the banks. How related to form of channel.

IV. A. Where does this waste come from? Where going?

B. Explain how valleys get wider as they get older.
(Visit the stream,if possible,after a rain to bring this out forcibly.)

C. How is this waste formed? (Process of weathering on an exposed ledge. In time the ledge worn down;waste more slowly removed;decay also slower. May show how youthful forms are temporary compared to old age.)

D. What stage of disection or development is this area in?

E. In the long past is this all the work that has been done? (Bring out the facts of the uplift of the earth's surface. Note the structure of the rocks and fossils for conformation.Bring in examples from other re-

gions in the laboratory. Coastal plains, plateaus, folded structure.)

The matter of supplementing the field work with the laboratory work is an important phase of the work. It widens the scope of the field and serves to keep the laboratory and field closely associated in the minds of the students. Says Professor Davis of Harvard University in regard to thus correlating the two; "Every item encountered in the local field may be shown to have its fellows elsewhere in the world and the value of field work is thus greatly increased; every local item comes to aid the conception of an ideal type, the generalized representation of a class which includes many distant examples as well as the local example through which its acquaintance was first made. Field work thus becomes naturally associated with laboratory work".* A personal knowledge of the subject matter which is outlined above will give the student sufficient training and information to take up any other region in the laboratory and study it intelligently.

To sum up briefly the function of field work and its position in the course of study:

1. It trains the student in the art of observation.
2. It makes the student self-reliant.
3. It furnishes certain basal concepts for the student to work with.

* Vol. I, page 66.

4. The difficulties can be overcome by the teacher who energetically attacks the problem.
5. A manual to suit local conditions can be adapted from other manuals.
6. Results accomplished by the students show what progress can be made in the work.

BIBLIOGRAPHY.

I. Journal of Geography I902-I909.
The Mason Press, Syracuse N.Y.

2. Ritter,Carl *Comparitive Geography.*
American Book Company New York.

3. Redway,J.W. *New Basis of Geography.*
The Macmillan Company, New York,I90I.

4. Bagley,William Chandler *Educative Process.*
TheMacmillan Company, New York, I905.

5. Mill,R.H. *International Geography.*
D.Appleton and Company, New York,I906.

6. *Third International Geographical Congress.*
Government Printing Office, I885.

7. Hettner,Alfred *Geographische Zeitschrift.*
B.G.Teubner,Lipsig , I905.