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A HAND BOOK OF MAP DRAWING.

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A

HAND-BOOK

OF

MAP DRAWING

ADAPTED ESPECIALLY TO THE MAPS IN

Mitchell's New Series of School Geographies.

BY

PETER KEAM AND JOHN MICKLEBOROUGH,

TEACHERS IN THE PUBLIC SCHOOLS OF CINCINNATI.

PHILADELPHIA:

PUBLISHED BY E. H. BUTLER & CO.

829799

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PREFACE.

In presenting to the public a new work on the subject of Geography, the authors claim for it nothing more than its name implies, viz.: that it is a Hand-Book of Map-Drawing.

It is not intended to supersede the text-books of political and descriptive Geography now in use, but to accompany them, as a means of fixing more indelibly in the memory the facts therein contained.

The most effective mode of presenting a subject is through the sense of sight; and when a child has once sketched for himself the outlines of a country, drawn in the mountain-chains, traced the water-systems, and located the principal cities, he will have received more lasting impressions of its geographical features than could be obtained in any other way.

The necessities of the school-room demand a method of presenting the subject of Geography in a manner more natural and philosophical than has heretofore been adopted, yet so simple as to be within the comprehension of any pupil of ordinary capacity. We have endeavored in the present work to unite system with simplicity; and after two years' experience in teaching Geography upon the principle herein laid down, we have no hesitation in recommending it to instructors as a work tending materially to lessen their labors, and greatly to facilitate the progress of their pupils in the study of Geography.

One advantage claimed for the work is that the grouping of the States and countries has been based upon the principle of climate and productions, so that when a scholar has learned what is true of one State or country, he may readily infer what is true in a great many respects of all the other States or countries contained in that group.

The work is specially adapted to be used in connection with Mitchell's New Series of Geographies, the figures having been constructed in accordance with his scale of maps.

If the work should tend in any degree to promote a more general interest in the subject of Geography, by making it more attractive to the scholar and more satisfactory to the teacher, our object will have been attained.

Cincinnati, June, 1869.

After the pupils can draw a correct outline, either on paper or slate, the map may be completed; and, in doing so, the natural order should be followed: first the mountains, then the water-systems (lakes and rivers), then the cities and towns, &c. &c.

By this means an indelible image of the map will be formed in the minds of the scholars, with an exactness of knowledge as to boundaries, mountain-chains, the rise and directions of rivers, location of cities, &c., which could be acquired in no other way.

When the pupils have become familiar with the outline of the map, it is better to dispense with the lines of the figure, indicating it merely by points, inasmuch as heavy lines to a certain extent mar the beauty of the drawing. Thus, instead of actually drawing the lines of a square, it answers equally well to indicate it by four points, allowing the pupil to imagine that the lines extend from point to point.

The letters employed in the construction of the figures serve to simplify the explanation, but are not intended to be used before a class, where the verbal explanation of the teacher will supersede the necessity of lettering.

While the map thus drawn is before the class, the teacher should endeavor to awaken an interest in the subject, and call forth the reasoning faculties of the scholars, by directing their attention to certain results which naturally follow certain physical conditions; such, for example, as the course of rivers following the general slope of the country; the influence of navigable rivers upon internal commerce; the effect of high mountain-chains, and of distance inland, together with that of distance from the equator, upon climate.

In a similar manner the judicious teacher will be able to draw out from the class certain facts concerning the nature of the soil and the kind of productions, as well as the general character of the cities, from their location.

In this way there is a constant appeal to the highest power of the mind—reason; and the subsequent labor of memorizing the lessons from their regular text-books will be rendered comparatively easy to the learners.

No1

MAP OF THE

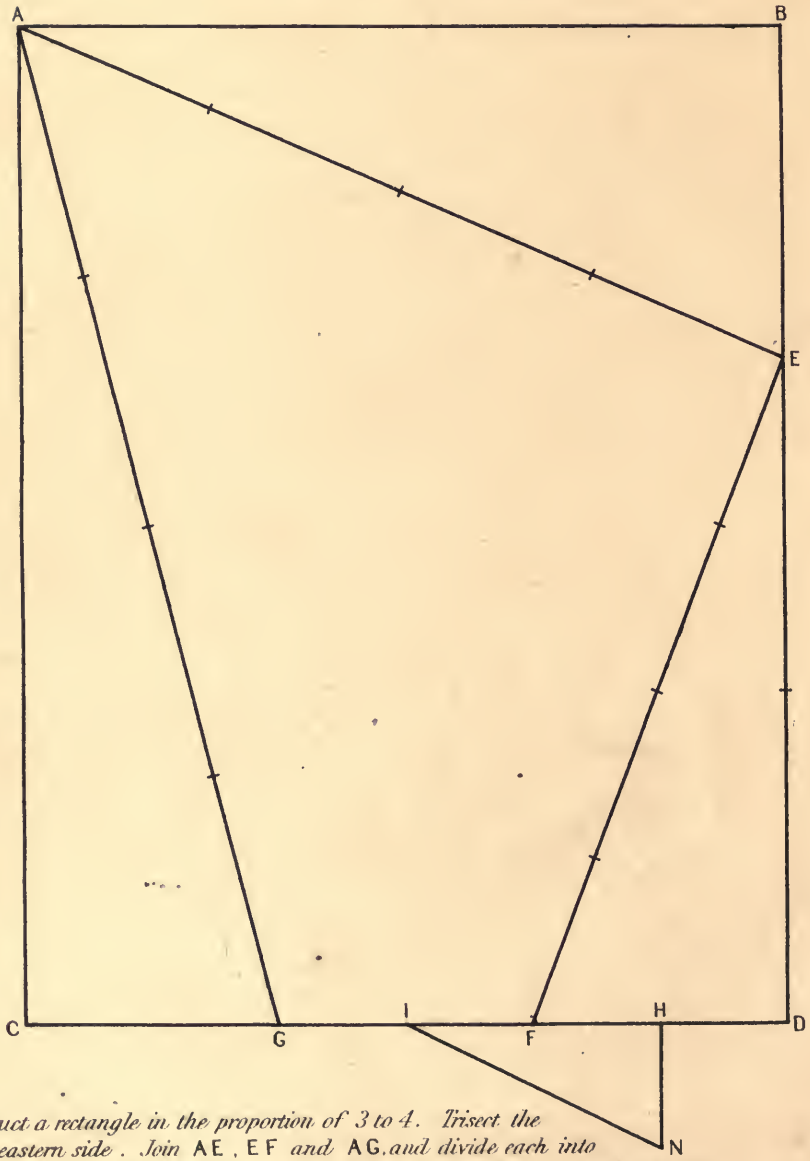
WESTERN HEMISPHERE.

Nº11

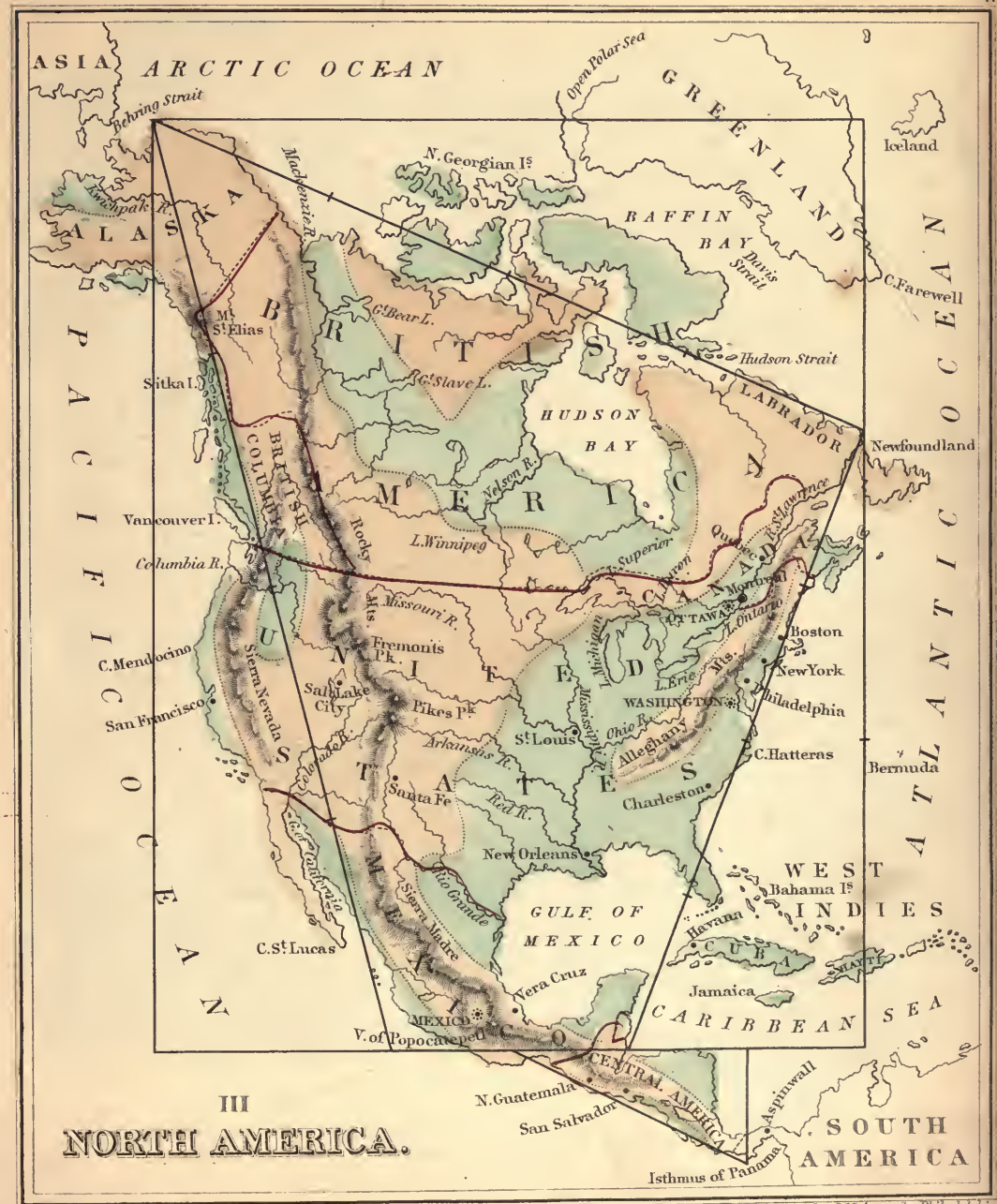
MAP OF THE

EASTERN HEMISPHERE.

FIGURE FOR NORTH AMERICA.



Construct a rectangle in the proportion of 3 to 4. Trisect the base and eastern side. Join AE, EF *and* AG, *and divide each into four equal parts. Bisect* GF *and* FD, *and from* H *draw* HN *equal to* HD: *and join* IN.



III

NORTH AMERICA.

Drawn & Engraved by J.M. Atwood. Philadelphia

QUESTIONS.

What is the position of the United States ?
Where are its principal highlands ?
What is their general direction ?
Describe the plateaus.
Describe the lowlands.
What lakes on the border, or in the interior ?
From the nature of the surface, what would naturally be the general direction of the rivers ?
Which rivers afford good water power ?
Which are navigable, so as to be of great value for domestic commerce ?
What is the climate of the southern part of the country ?
Of the central portion ?
Of the northern part ?
How does elevation affect climate ?
How does proximity to the sea affect climate ?
What are the principal productions of the southern portion of the country ?
Of the central portion ?
Of the northern portion ?
Name and locate the principal commercial cities.
What natural causes have contributed to their prosperity ?
Name and locate the leading manufacturing cities.
Name and locate the great agricultural marts.

IV
OF THE UNITED STATES.

Drawn & Engraved by J.M. Atwood. Philadelphia

eaus and
ntain Regions.

Plains.

A

DESCRIPTIVE LESSON

ON THE

UNITED STATES OF AMERICA.

THE United States is situated in the central part of the grand division of North America, and forms the great southern slope to the Gulf of Mexico.

In the eastern part of the country is the Appalachian mountain-system, stretching from the river St. Lawrence to within a few miles of the Gulf. From this system extend two great slopes of land, the one towards the Atlantic Ocean and the other towards the valley of the Mississippi.

On the western side of the country are two great mountain-systems, the Rocky and the Pacific. Between these two ranges is the "Great Western Plateau," about 500 miles wide, and a little over 4000 feet above the level of the sea. The central part of this plateau is called the "Great Interior Basin." This section contains a few fertile tracts of land, but in general the whole plateau is sterile.

East of the Rocky Mountains lies a barren region parallel with the mountain-chain from north to south, and having a width in some places of about 300 miles. It is almost totally devoid of moisture, and consequently of vegetation. Between this region and the Alleghany Mountains lies the largest and most fertile valley in the world. It forms the southern part of the "Great Central Plain" of North America. It has been estimated that this valley is capable of sustaining 250 millions of people, or more than six times as many as are now in the whole of the United States.

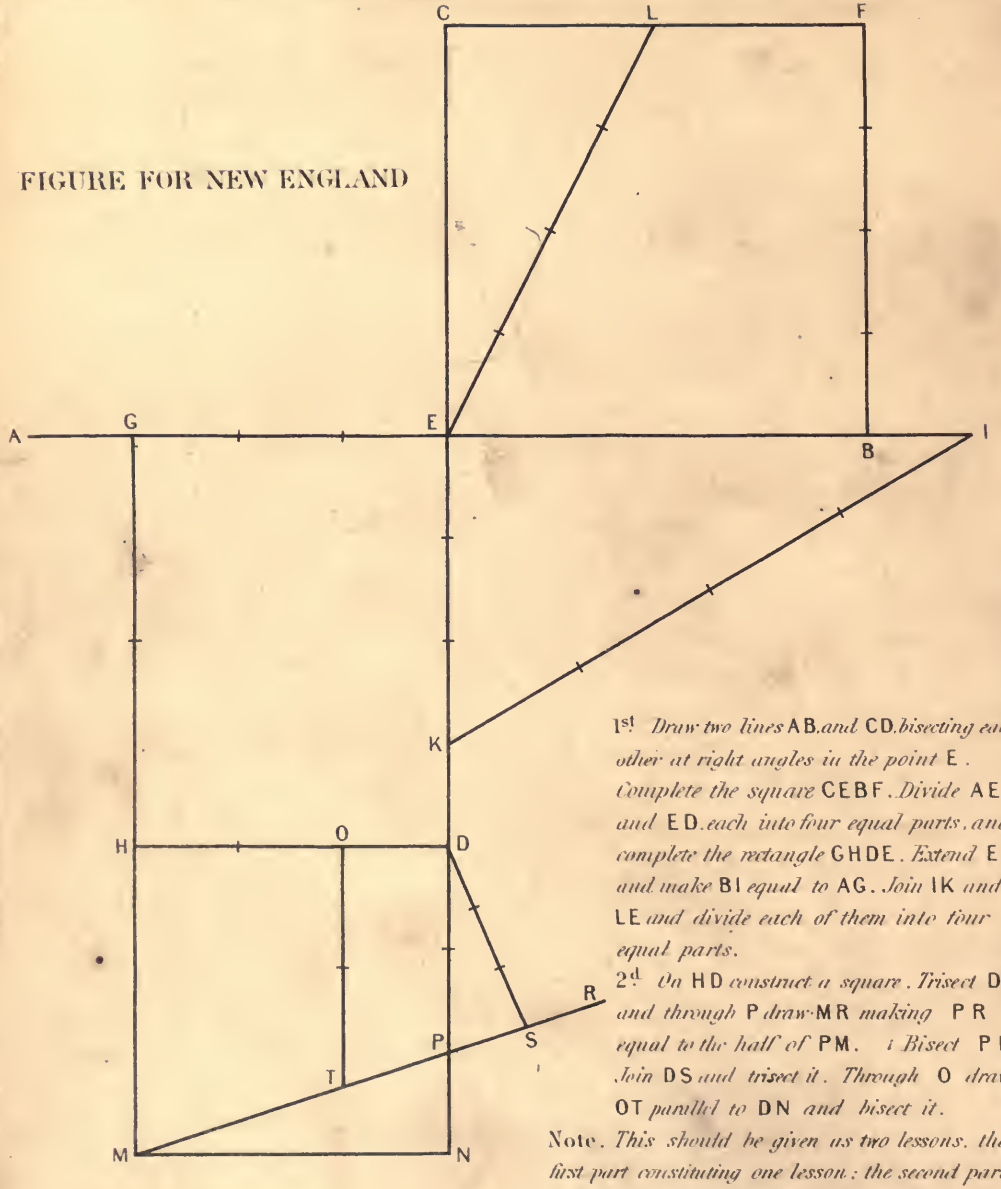
The mountain-ranges in the western part of the country are rich in gold, silver, and quicksilver, while the Appalachian range is noted for its coal and iron. Copper, lead, and iron are found in large quantities in the northern ridge between the Mississippi and Saskatchawan valleys.

The general direction and slope of the mountains determine in a great measure the course of the rivers, which may be classified under three divisions,—viz.: those that flow in a southeasterly direction, down the Atlantic slope; those that flow down from the slopes of the Appalachians and the Rocky Mountains, uniting to form the Mississippi River, which is one of the largest in the world; and the two great rivers west of the Rocky Mountains, which flow in nearly opposite directions from the centre of the Great Interior Basin to the Pacific Ocean.

From the central position of the United States on the continent, it is subject neither to the intense heat of the Torrid Zone nor to the extreme cold of the Frigid Zone. It may be said to have three distinct belts of climate, and consequently of productions. South of the parallel of 35° the climate is warm and moist, and the general productions are cotton, sugar, rice, and tropical fruits. Between the parallels of 35° and 40° the climate is mild, healthy, and pleasant, and the productions are principally corn, tobacco, and grapes; while the immense and well-watered plains afford great facilities for the raising of cattle. North of the parallel of 40° the climate is somewhat colder, and is favorable to the production of the different kinds of grain, such as wheat, barley, oats, &c. But, in consequence of the great difference in the elevation of the country, these grains will grow much farther south in some States than in others.

The position of the great cities has been largely determined by certain natural causes. These are the water-powers afforded by the numerous streams, the proximity of rich agricultural districts and extensive mineral wealth, and the course of the great highways of commerce, either foreign or domestic. While some of the cities depend upon several of these influences combined, New York, New Orleans, and San Francisco depend particularly upon foreign and domestic commerce; Lowell, Manchester, Worcester, Hartford, Rochester, and other manufacturing towns, have grown up on the rivers affording excellent water-power; while Philadelphia and Pittsburg, in addition to their water-power and facilities for commerce, have acquired great importance as manufacturing cities from their proximity to the rich coal and iron regions. Cincinnati, Chicago, and St. Louis are surrounded by great agricultural districts, and have become the principal Western emporiums of domestic trade.

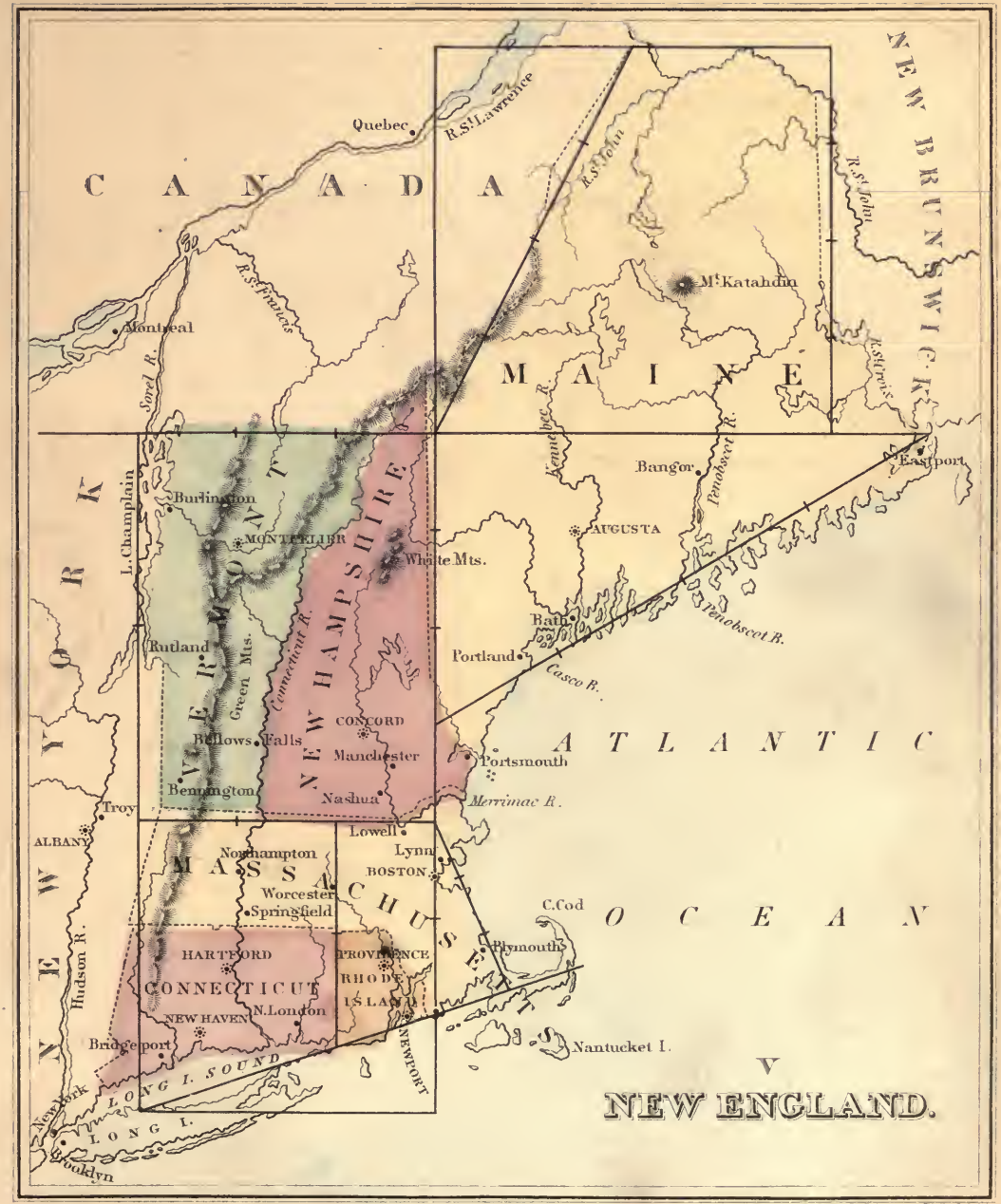
FIGURE FOR NEW ENGLAND



1st. *Draw two lines* AB *and* CD *bisecting each other at right angles in the point* E. *Complete the square* CEBF. *Divide* AE *and* ED *each into four equal parts, and complete the rectangle* GHDE. *Extend* EB *and make* BI *equal to* AG. *Join* IK *and* LE *and divide each of them into four equal parts.*

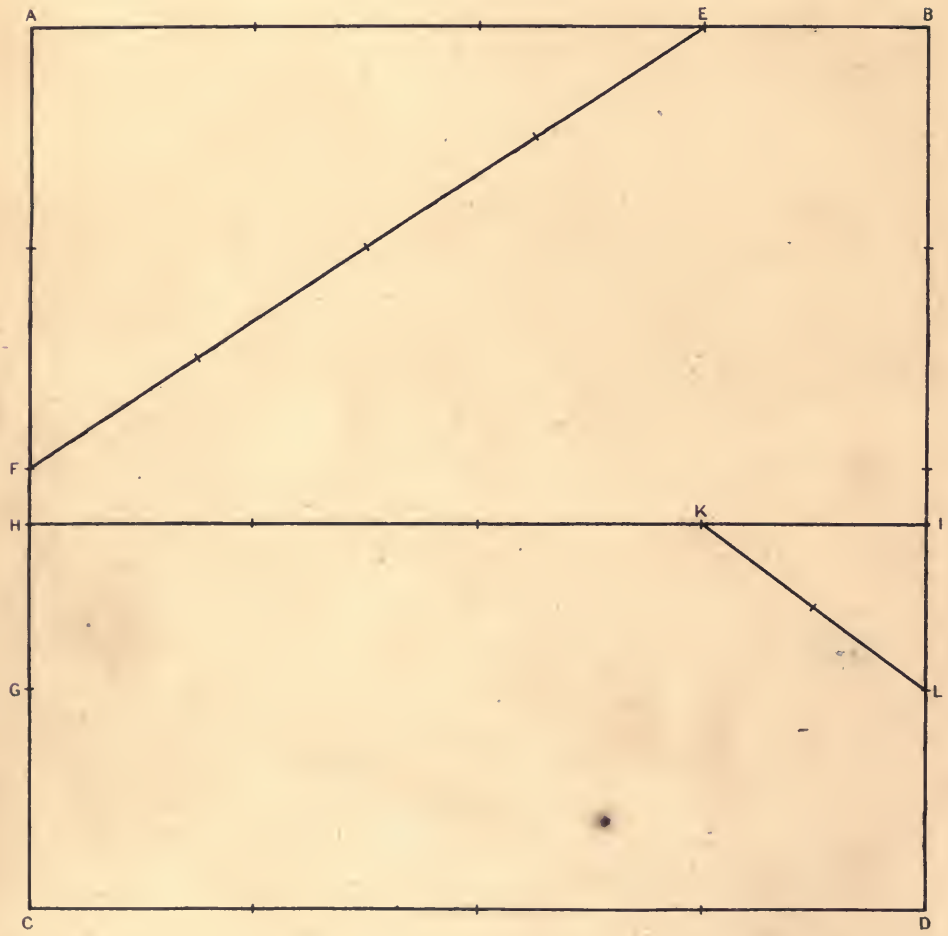
2d. *On* HD *construct a square. Trisect* DN *and through* P *draw* MR *making* PR *equal to the half of* PM. *Bisect* PR *Join* DS *and trisect it. Through* O *draw* OT *parallel to* DN *and bisect it.*

Note. *This should be given as two lessons, the first part constituting one lesson: the second part the other, but may be united in reviewing.*



Drawn & Engraved by J.M. Atwood. Philadelphia

FIGURE FOR NEW YORK, PENNSYLVANIA & NEW JERSEY.



Construct a square and divide each side into four equal parts. Join EF *and divide it into four equal parts. Through* H, *the fourth of* FG, *draw* HI *parallel to* CD *and divide it into four equal parts. Join* KL *and bisect it.*

VI
NEW YORK, PENNSYLVANIA & NEW JERSEY.

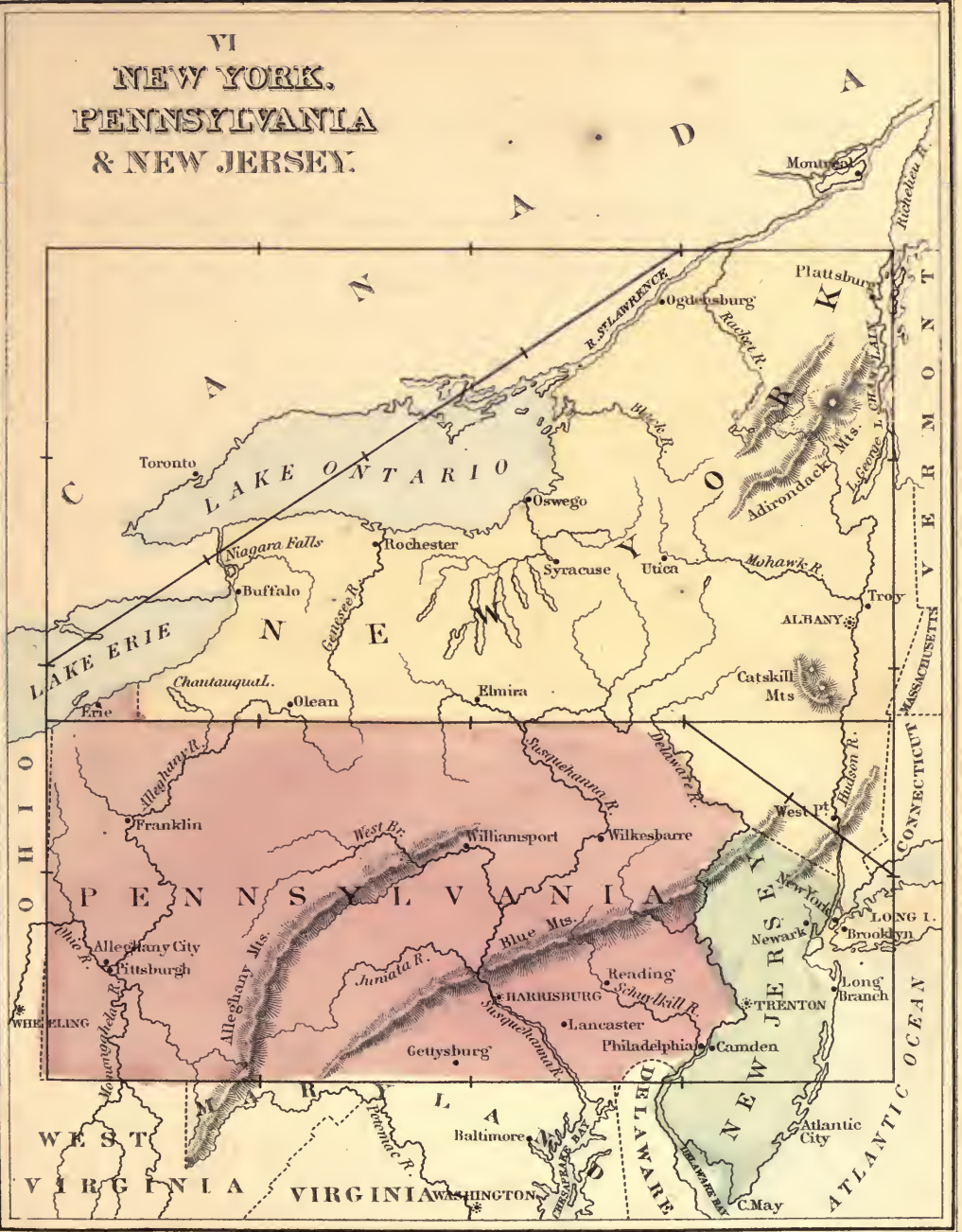


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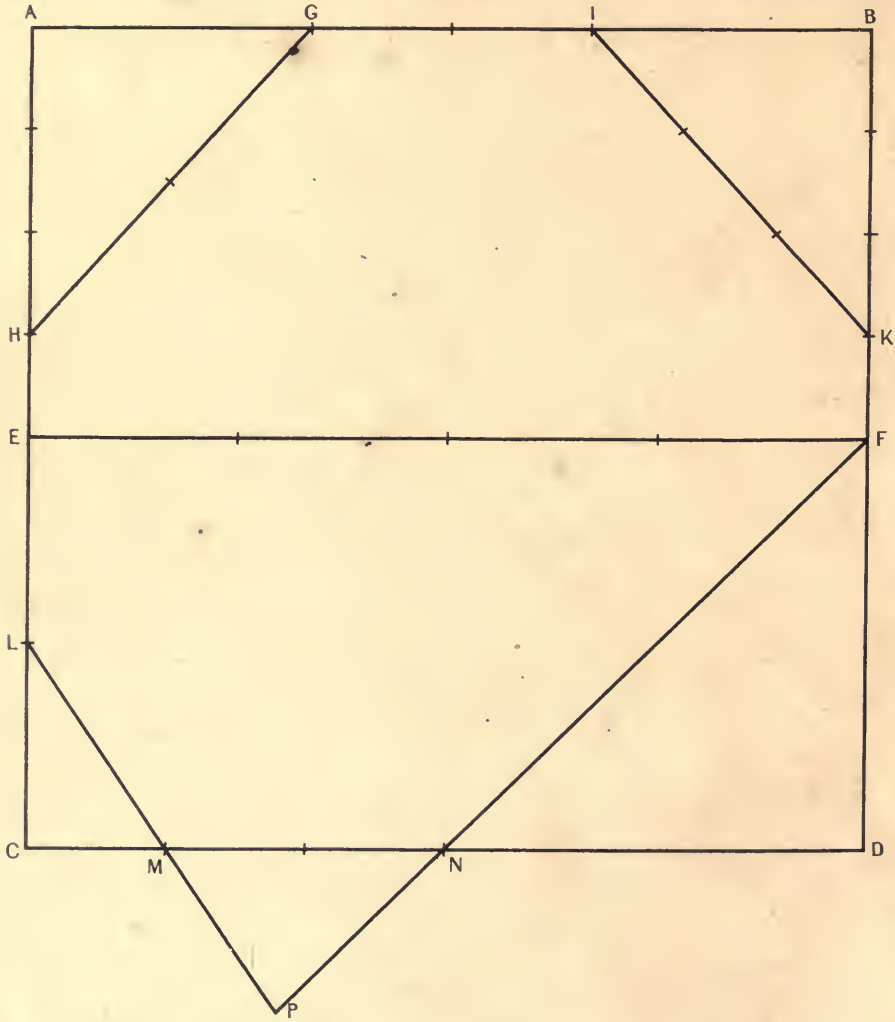
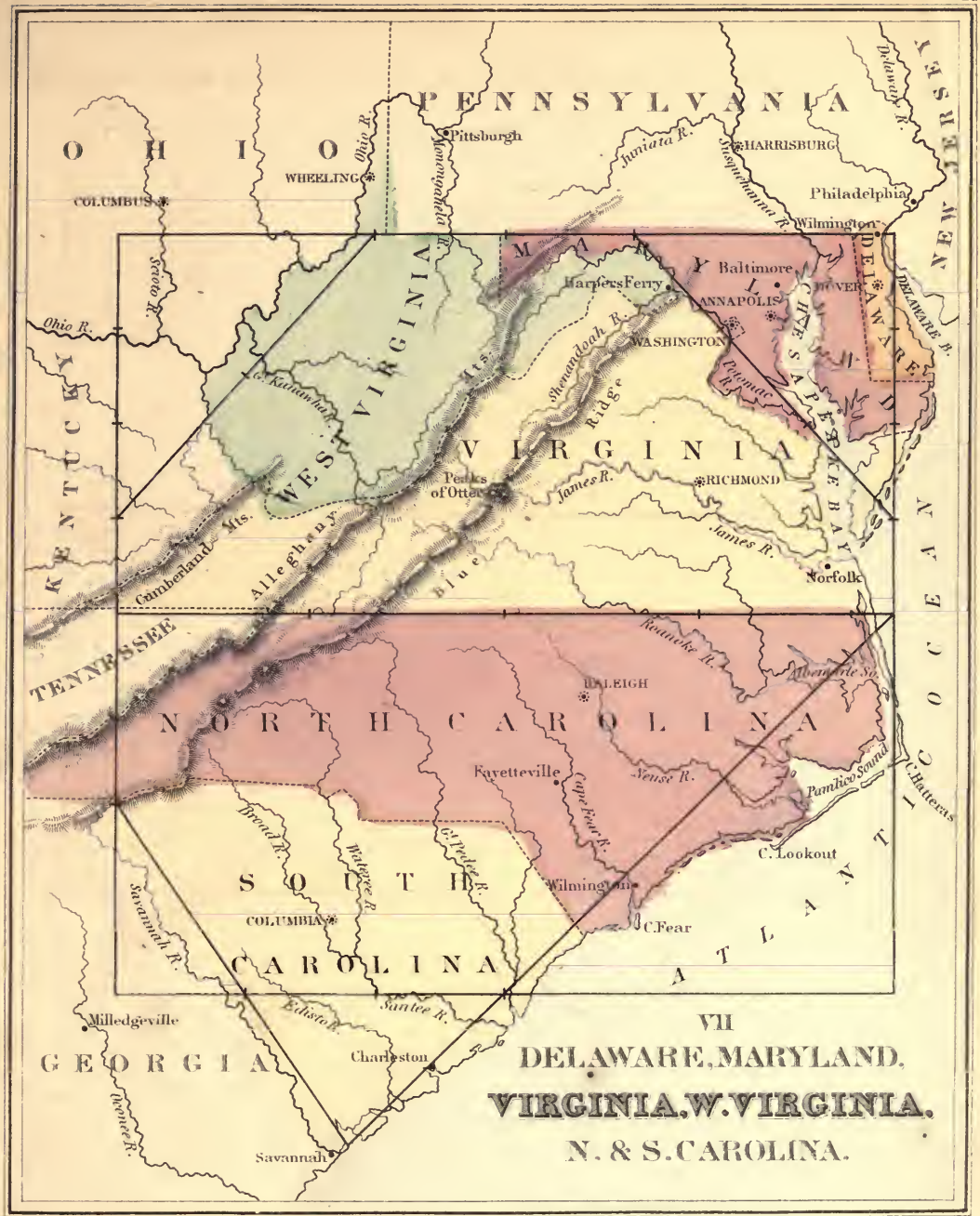
FIGURE FOR DELAWARE, MARYLAND, VIRGINIA, W. VIRGINIA, N. & S. CAROLINA.



1st. *Construct a square, and bisect it with the line* EF. *Divide the lines* AE, EF, FB *each into four equal parts. Trisect* AB, *and join* GH, IK, *and bisect the middle section of* AB.

2d. *Bisect* CD *and* CE. *Join* FN *and extend it indefinitely. Trisect* CN, *and through* M *draw* LP *meeting the line* FN *produced.*

Note. *This is intended to be used as two lessons.*



VII

DELAWARE, MARYLAND, VIRGINIA, W. VIRGINIA, N. & S. CAROLINA.

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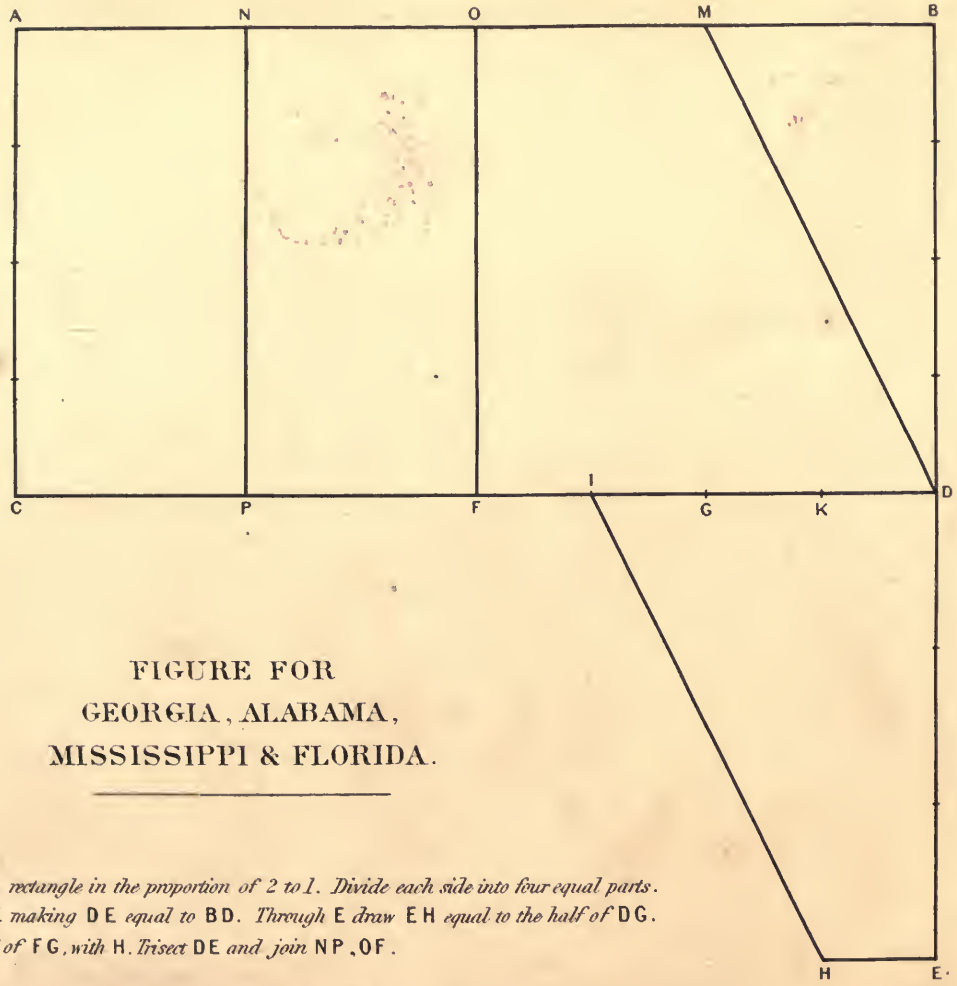
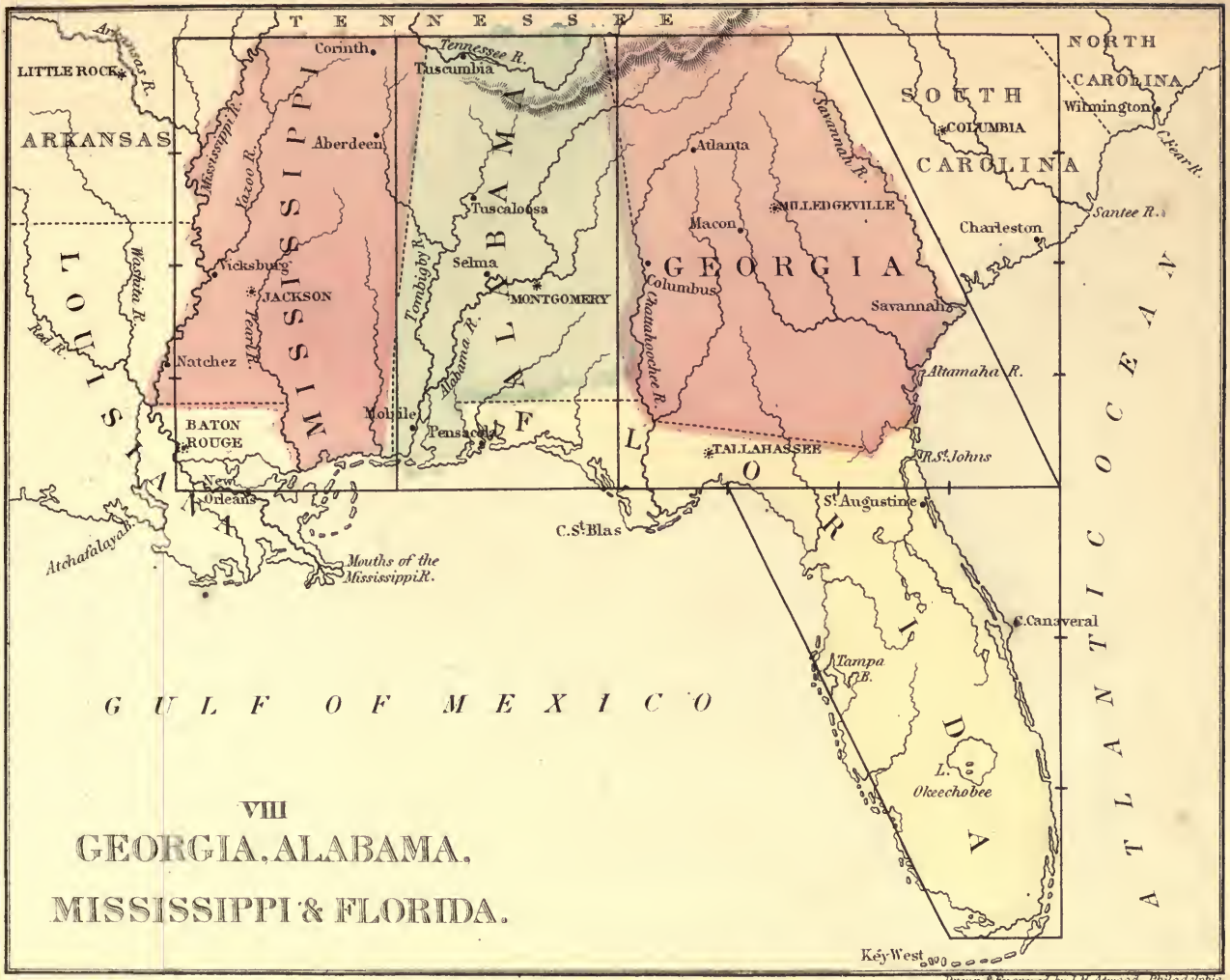


FIGURE FOR GEORGIA, ALABAMA, MISSISSIPPI & FLORIDA.

Construct a rectangle in the proportion of 2 to 1. Divide each side into four equal parts. Extend BD *to* E *making* DE *equal to* BD. *Through* E *draw* EH *equal to the half of* DG. *Join* I, *the half of* FG, *with* H. *Trisect* DE *and join* NP, OF.

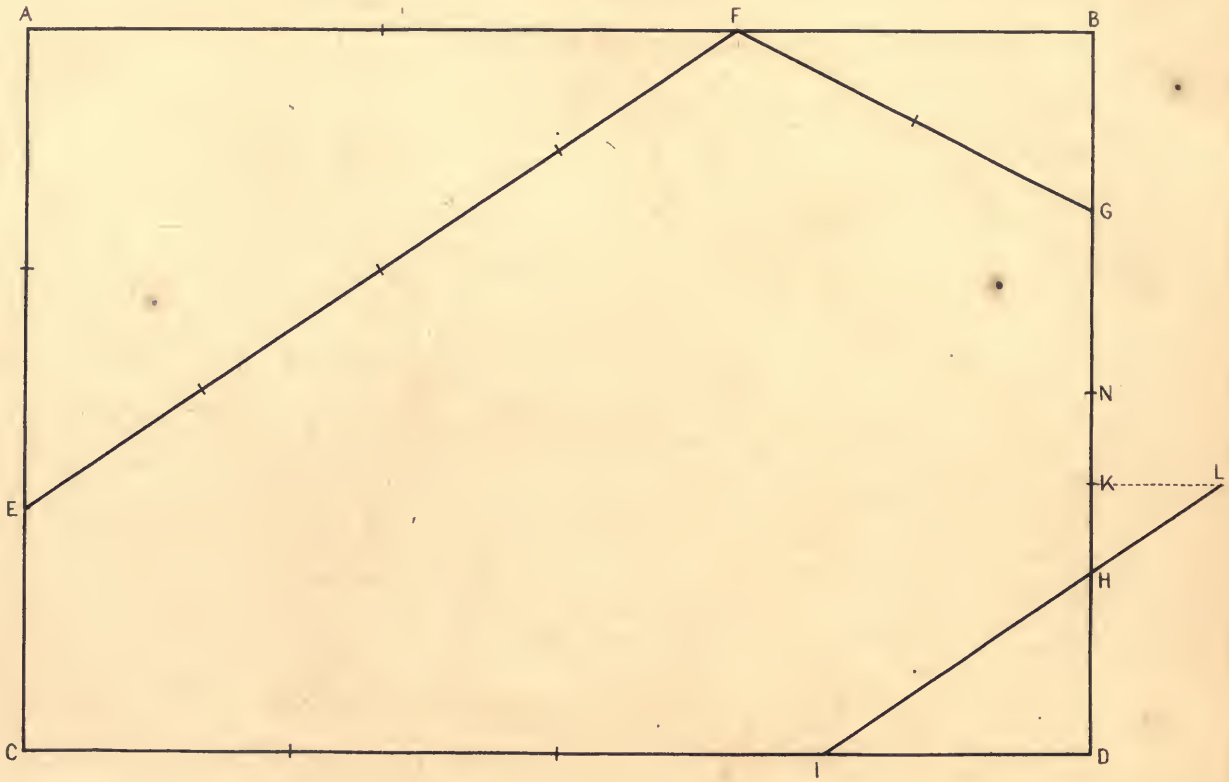


VIII

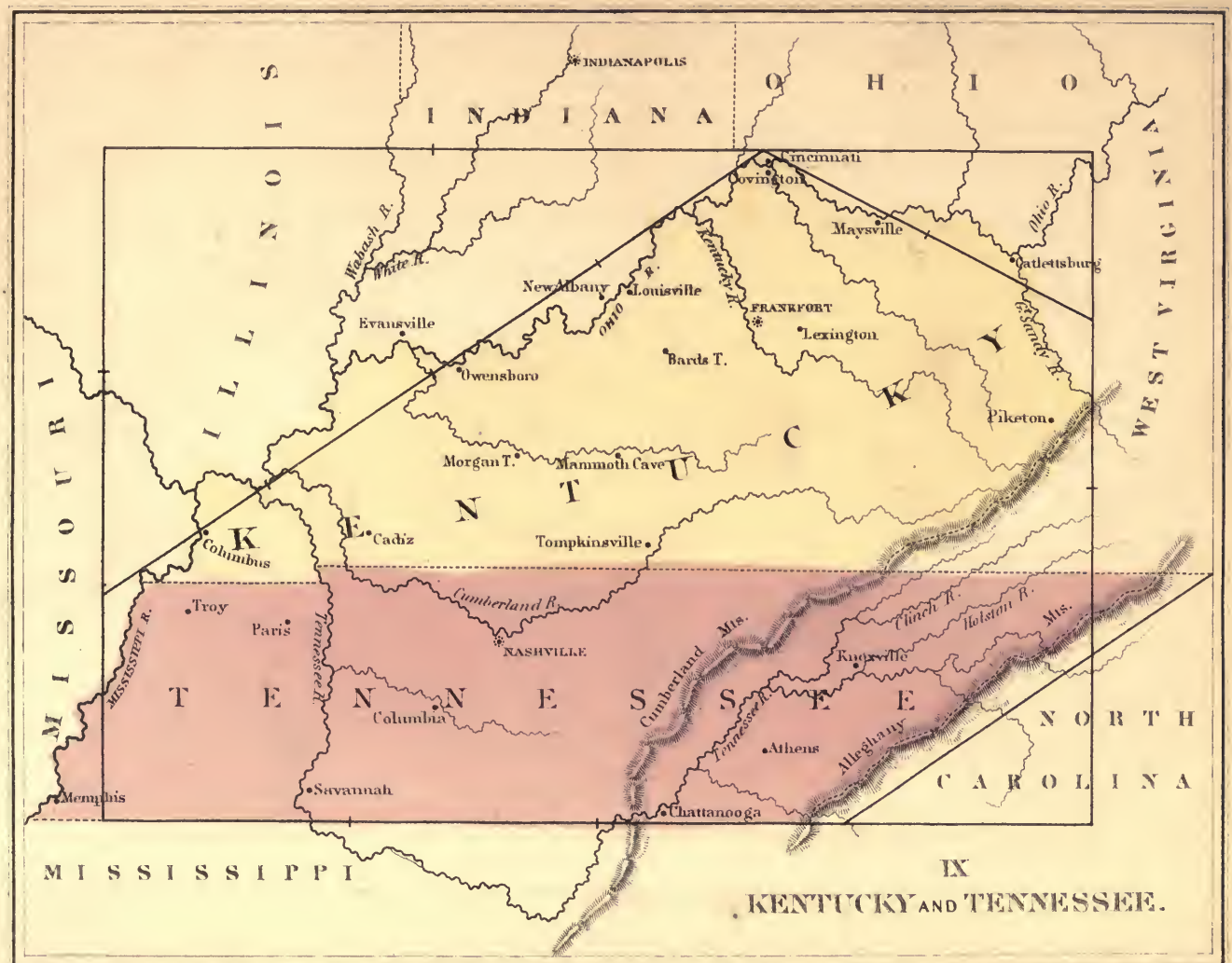
GEORGIA. ALABAMA. MISSISSIPPI & FLORIDA.

Drawn & Engraved by J.M. Atwood, Philadelphia

FIGURE FOR KENTUCKY & TENNESSEE.



Construct a rectangle in the proportion of 3 to 2. Divide the northern and western sides into three equal parts, and the southern and eastern sides into four equal parts. Join EF, *and* FG, *and* IH. *Extend* IH *and let it meet the line passing through* K. (HN, *bisected*) *Divide* EF *into four equal parts, and bisect* FG.



IX

KENTUCKY AND TENNESSEE.

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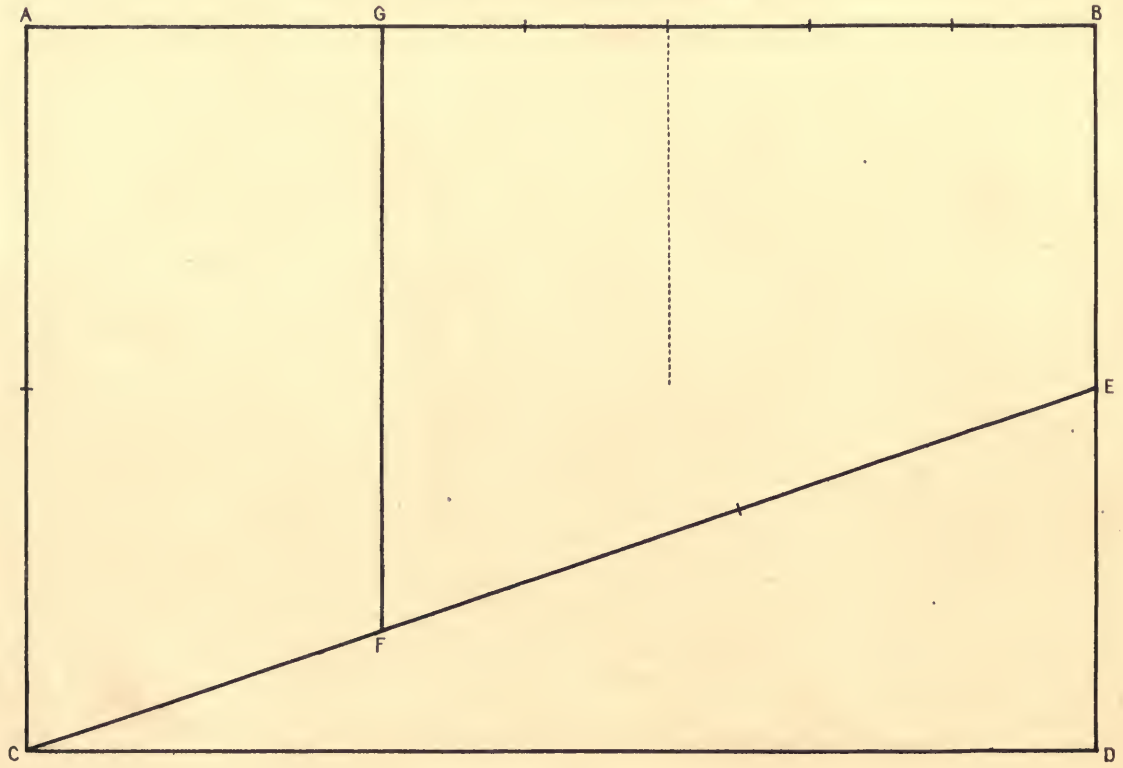
FIGURE FOR OHIO, INDIANA & ILLINOIS.



Construct a rectangle in the proportion of 3 to 2. Bisect BD, *and* AC. *Join* CE, *and divide it into three equal parts. Through* F, *draw* FG *parallel to the side* AC. *Divide* GB *into five equal parts.* Note. *The boundary line between Indiana and Ohio should be first dotted down opposite the point* E. *This will give a fixed point for the north bend of the Ohio River.*

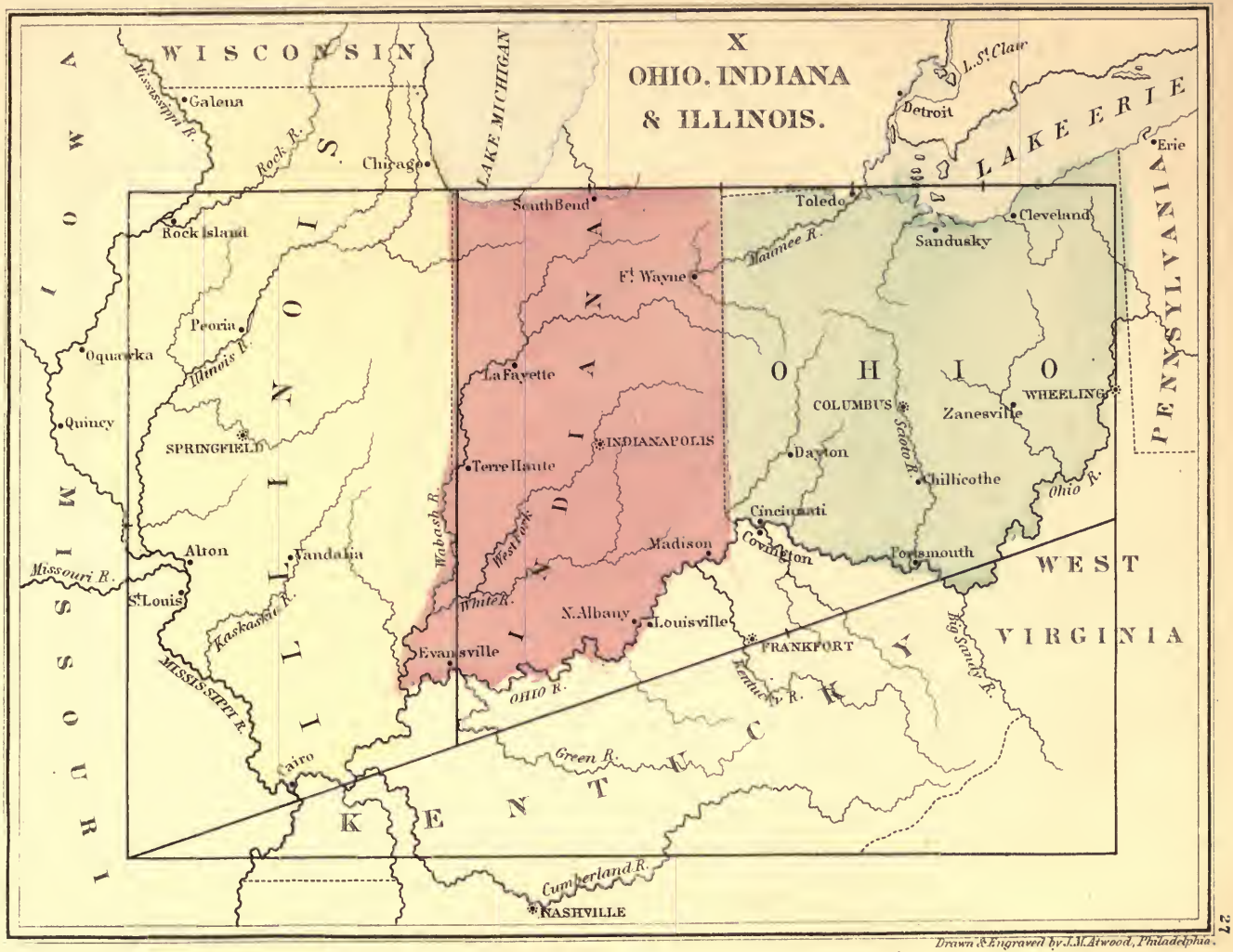


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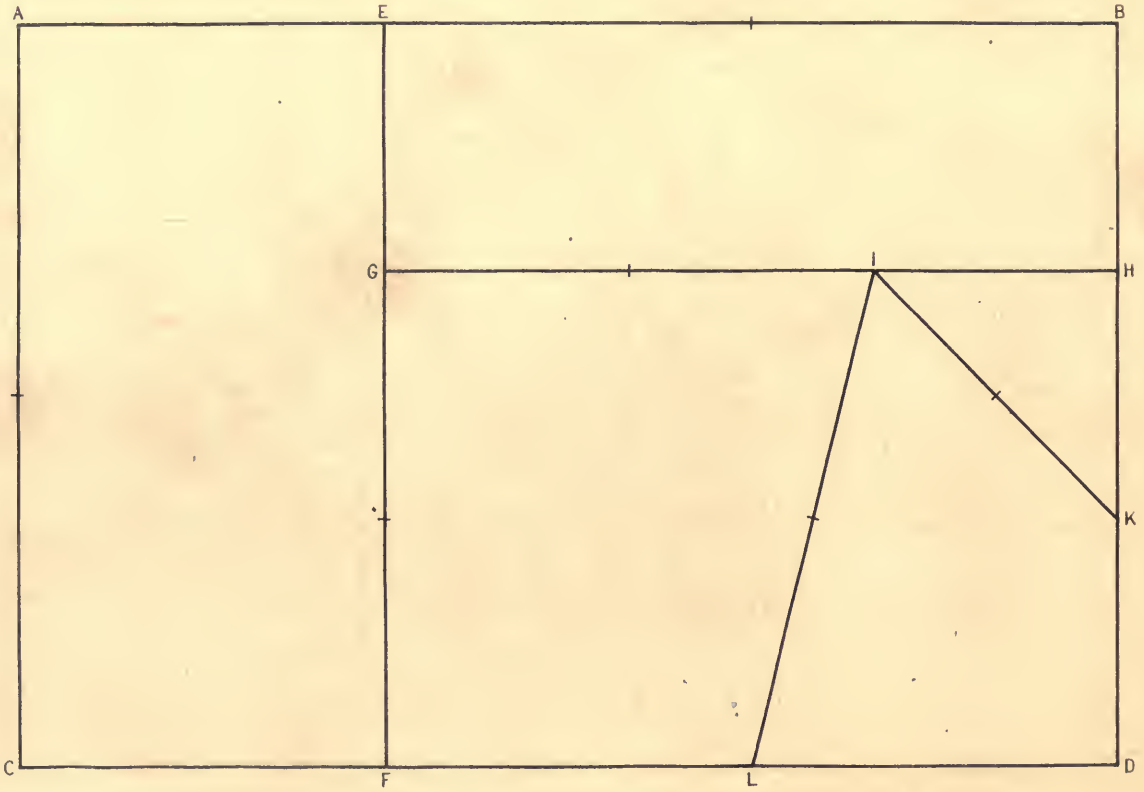
FIGURE FOR MICHIGAN, WISCONSIN & MINNESOTA.



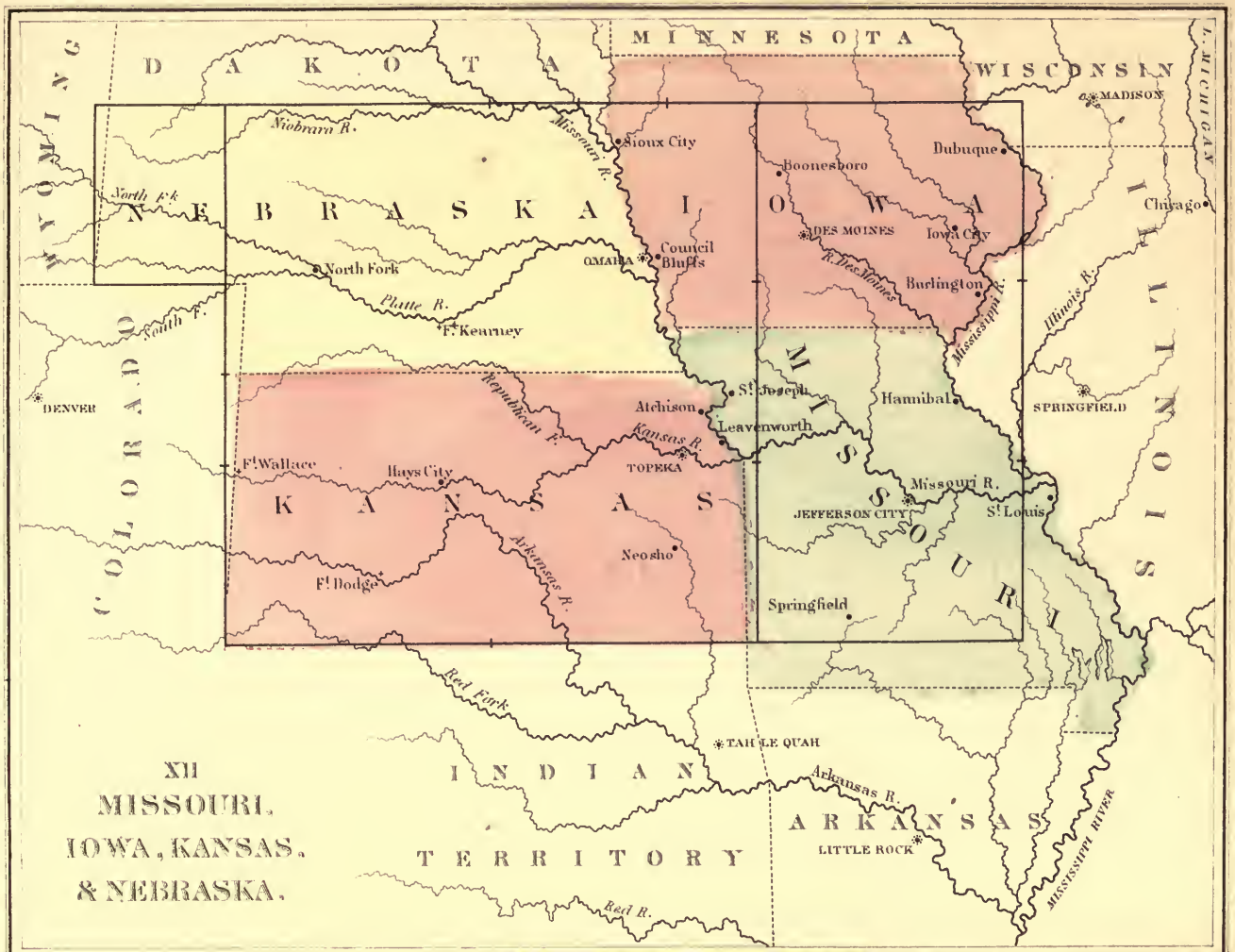
Construct a rectangle in the proportion of 3 to 2. Bisect AC, *and trisect each of the other sides. Join* EF *and trisect it. Join* GH *trisect it. Join* IK *and* IL, *and bisect each of them.*

MICHIGAN, WISCONSIN & MINNESOTA.

Drawn & Engraved by J.M. Atwood, Philadelphia.

FIGURE FOR MISSOURI, IOWA, KANSAS AND NEBRASKA.

Construct a rectangle in the proportion of 3 to 2. Trisect each side. Bisect EF *and extend* AB, *making* AH *equal to the half of* AG. *Join* IK *and trisect it. And trisect* IG. *Complete the rectangle* AHLE.

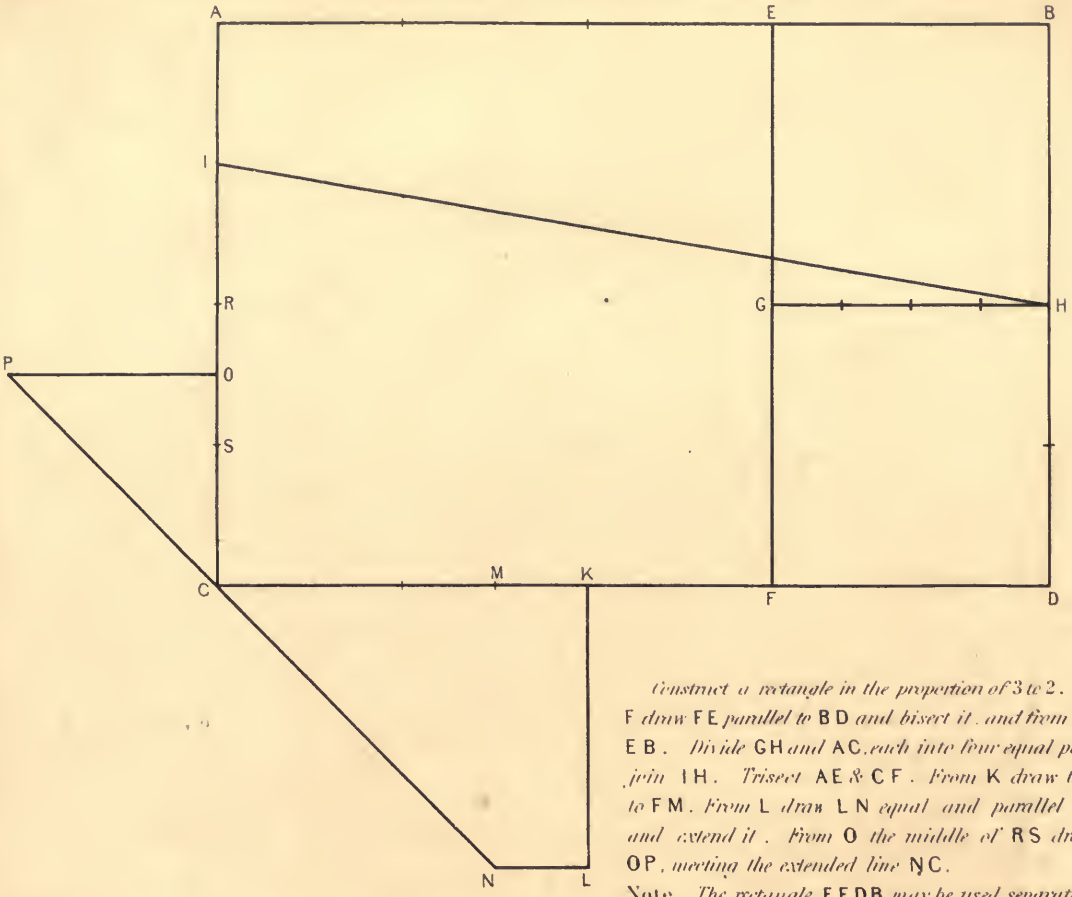


XII

MISSOURI, IOWA, KANSAS, & NEBRASKA.

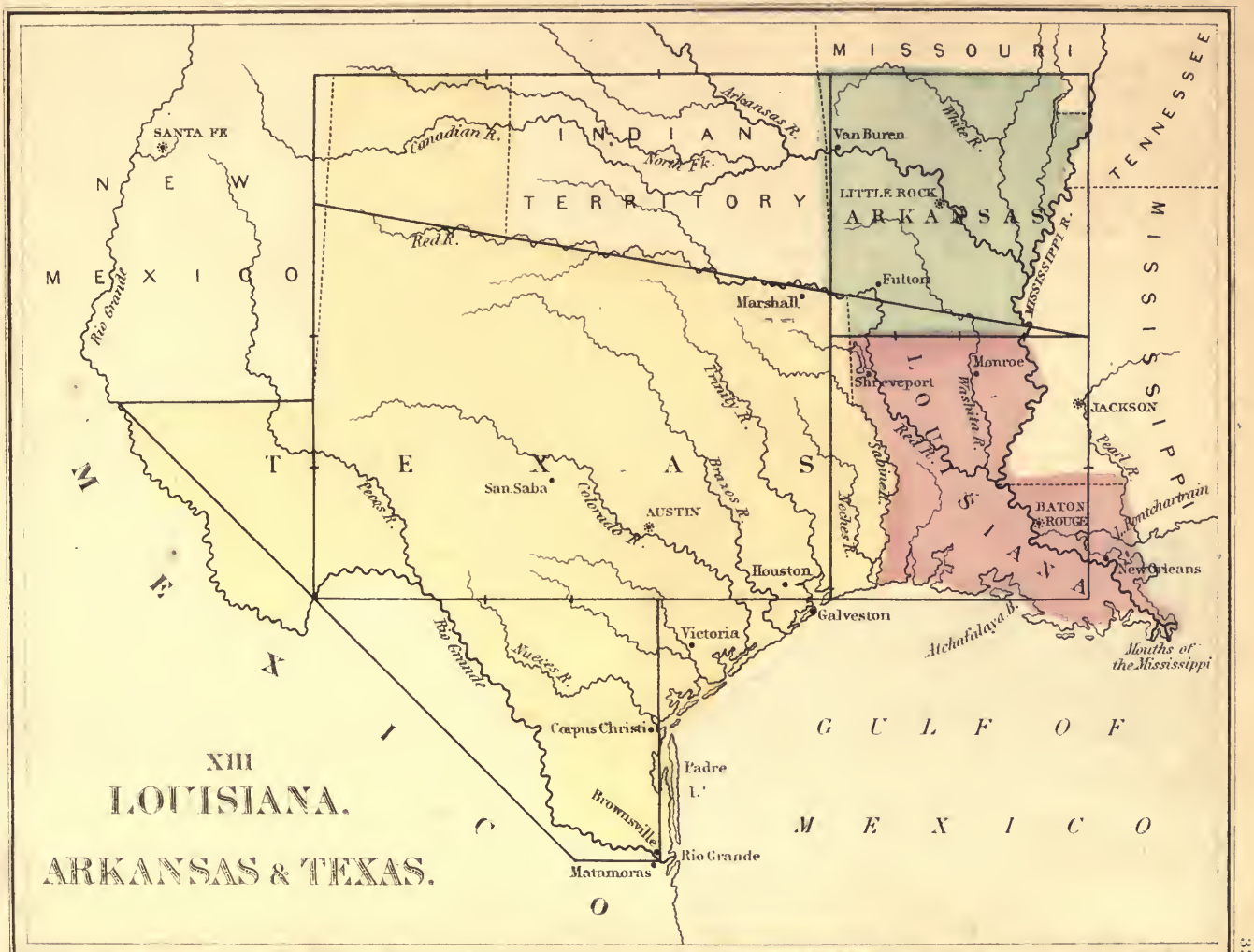
Drawn & Engraved by J.M.Atwood, Philadelphia.

FIGURE FOR LOUISIANA, ARKANSAS & TEXAS.



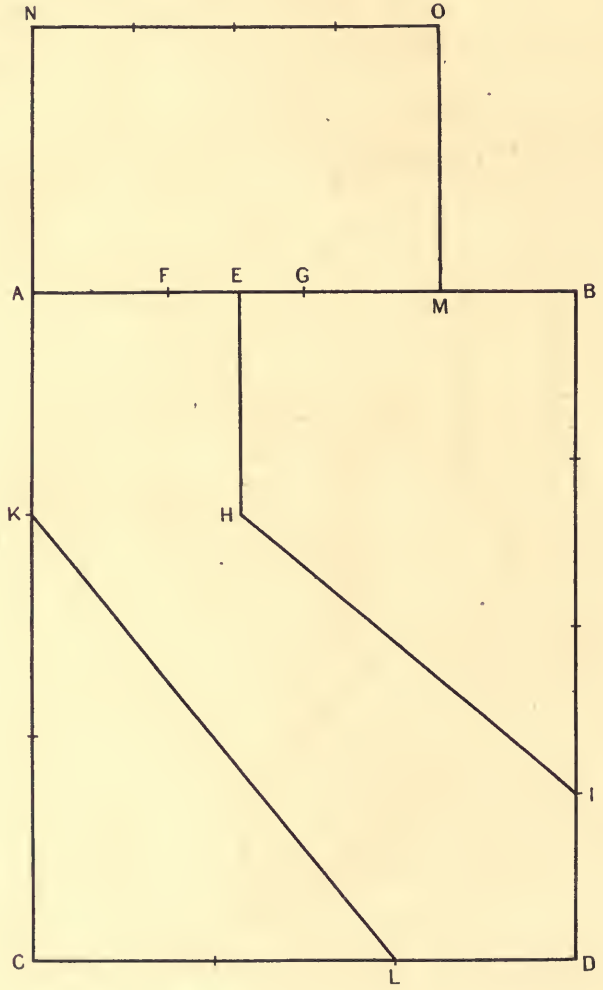
Construct a rectangle in the proportion of 3 to 2. Trisect CD, *and through* F *draw* FE *parallel to* BD *and bisect it, and from* G *draw* GH *parallel to* EB. *Divide* GH *and* AC, *each into four equal parts. Bisect* HD *and join* IH. *Trisect* AE *&* CF. *From* K *draw the vertical* KL *equal to* FM. *From* L *draw* LN *equal and parallel to* KM. *Join* NC, *and extend it. From* O *the middle of* RS *draw the horizontal line* OP, *meeting the extended line* NC.

Note. *The rectangle* EFDB *may be used separately for the two States.*



Drawn & Engraved by J. M. Atwood Philadelphia

FIGURE FOR CALIFORNIA, OREGON & NEVADA.



Construct a rectangle in the proportion of 4 to 5. Divide A B *and* B D *each into four equal parts; and trisect* A C *and* C D. *Bisect* F G *and draw* E H, *parallel and equal to* A K. *Join* K L *and* H I. *Extend* A C, *making* A N *equal to* A C. *Complete the rectangle* A N O M *and divide* N O *into four equal parts.*

Drawn & Engraved by J. M. Atwood. Philadelphia.

FIGURE FOR SOUTH AMERICA.

Construct a rectangle in the proportion of 3 to 4. Divide the three sides AC, AB, BD *into four equal parts. Trisect* CD. *Through* E *draw* EF *parallel to* AC *and bisect it. Join* GH *and bisect it. Join* HI *and trisect it.*

Drawn & Engraved by J.M. Atwood Philadelphia.

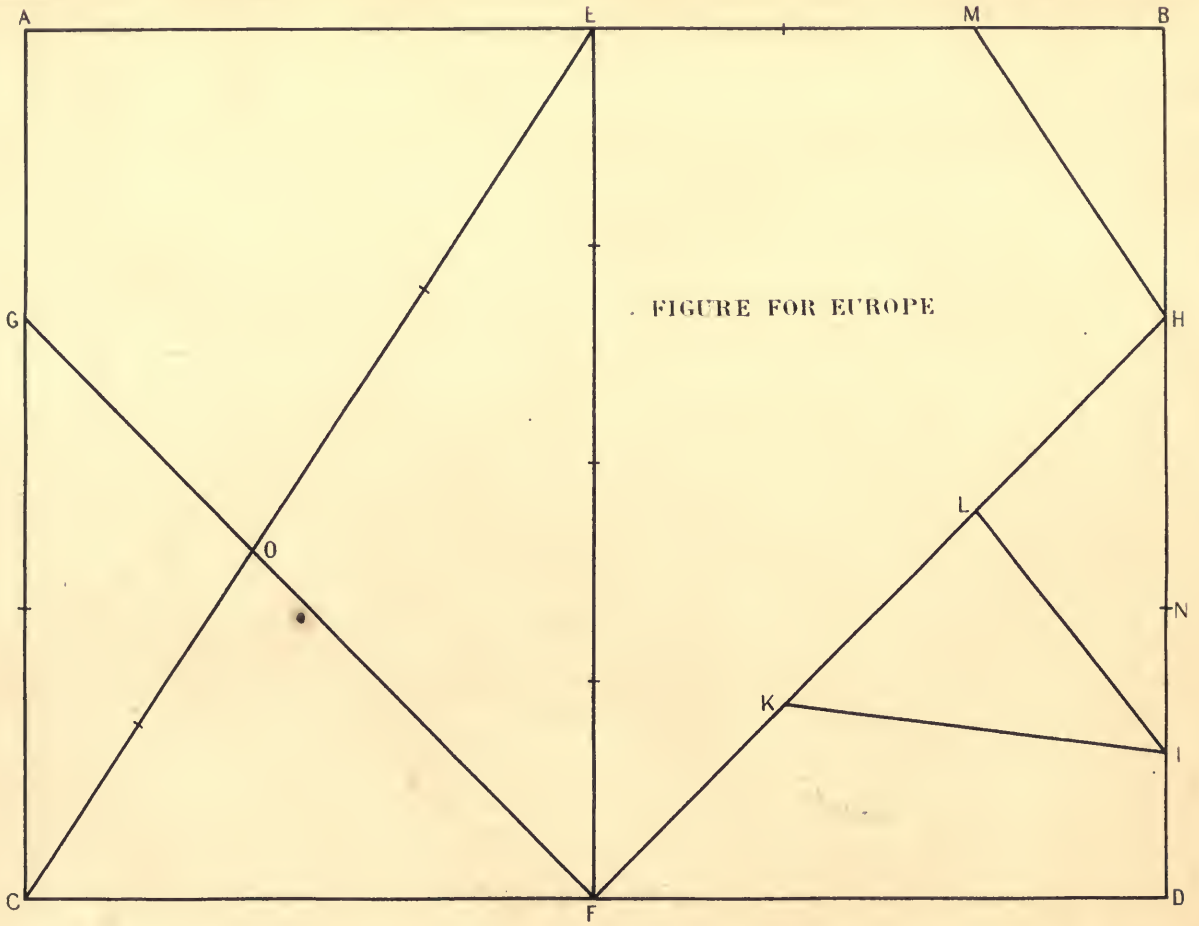


FIGURE FOR EUROPE

Construct a rectangle in the proportion of 4 to 3. Bisect AB *and* CD. *Trisect* AC *and* BD. *Join* EF *and divide it into four equal parts. Join* FG *and* FH *and trisect the latter. Bisect* DN *and join* IK *and* IL *Trisect* EB *and join* MH. *Join* EC *and bisect each of the sections* OE *and* OC.

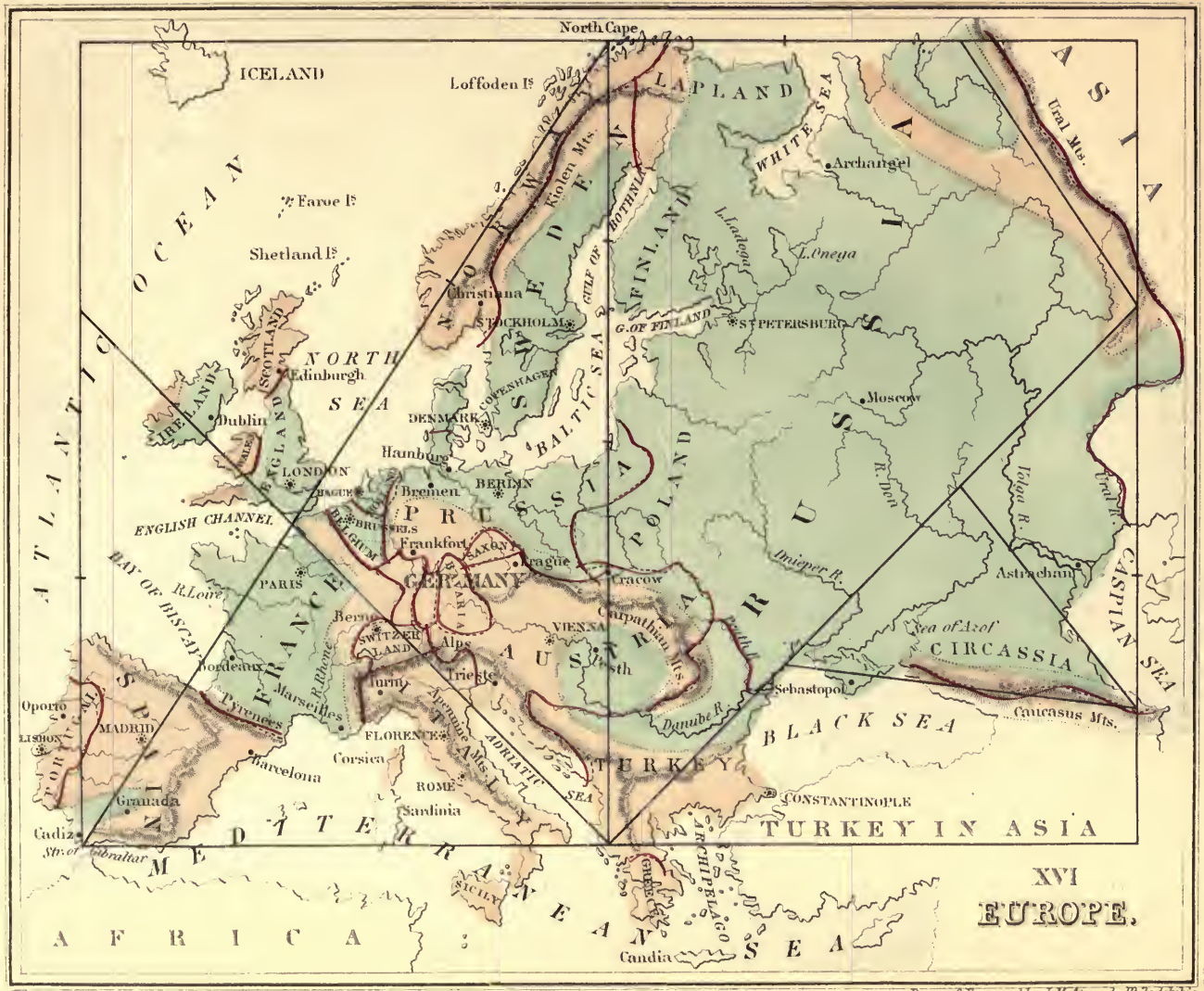
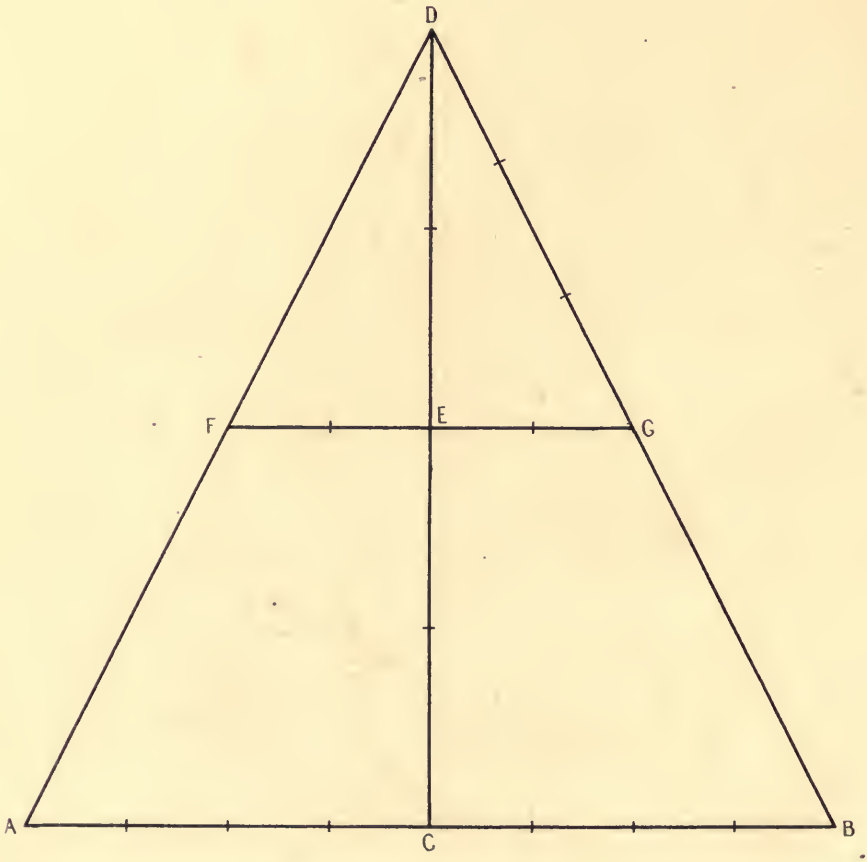

North Cape
ICELAND
Loffoden Is
LAPLAND
WHITE SEA
Archangel
Ural Mts.
ASIA
Kiolen Mts.
Faroe Is
Shetland Is
ATLANTIC OCEAN
SWEDEN
GULF OF BOTHNIA
FINLAND
Ladoga
L. Onega
Christiana
STOCKHOLM
G. OF FINLAND
ST PETERSBURG
RUSSIA
SCOTLAND
Edinburgh
NORTH SEA
COPENHAGEN
Moscow
IRELAND
Dublin
DENMARK
BALTIC SEA
Hamburg
LONDON
Bremen
BERLIN
POLAND
R. Don
Volga R.
Wolga R.
ENGLAND
WALES
HAGUE
PRUSSIA
ENGLISH CHANNEL
BRUSSELS
BELGIUM
Frankfort
SAXONY
Prague
Dnieper R.
Astrachan
PARIS
R. Loire
GERMANY
Cracow
CASPIAN SEA
BAY OF BISCAY
Berne
SWITZERLAND
Carpathian Mts.
Sea of Azof
CIRCASSIA
FRANCE
Alps
VIENNA
AUSTRIA
Bordeaux
R. Rhone
Marseilles
Turin
Trieste
Sebastopol
Oporto
Pyrenees
Caucasus Mts.
LISBON
MADRID
FLORENCE
Danube R.
BLACK SEA
Barcelona
Corsica
TURKEY
ADRIATIC SEA
Apennine Mts.
ROME
CONSTANTINOPLE
Granada
Sardinia
Cadiz
TURKEY IN ASIA
Str. of Gibraltar
MEDITERRANEAN SEA
ARCHIPELAGO
SICILY
Candia
AFRICA
XVI
EUROPE.
Drawn & Engraved by J.M.Atwood. Philadelphia

FIGURE FOR THE BRITISH ISLES.



Draw a horizontal line AB, *and bisect it. At* C *erect the perpendicular* CD *equal to* AB, *and join* AD *and* DB. *Divide* CD, AC *and* CB, *each into four equal parts. Through* E *draw* FG *parallel to* AB. *Bisect* FE *and* EG *and trisect* GD.

XVII
BRITISH ISLES.

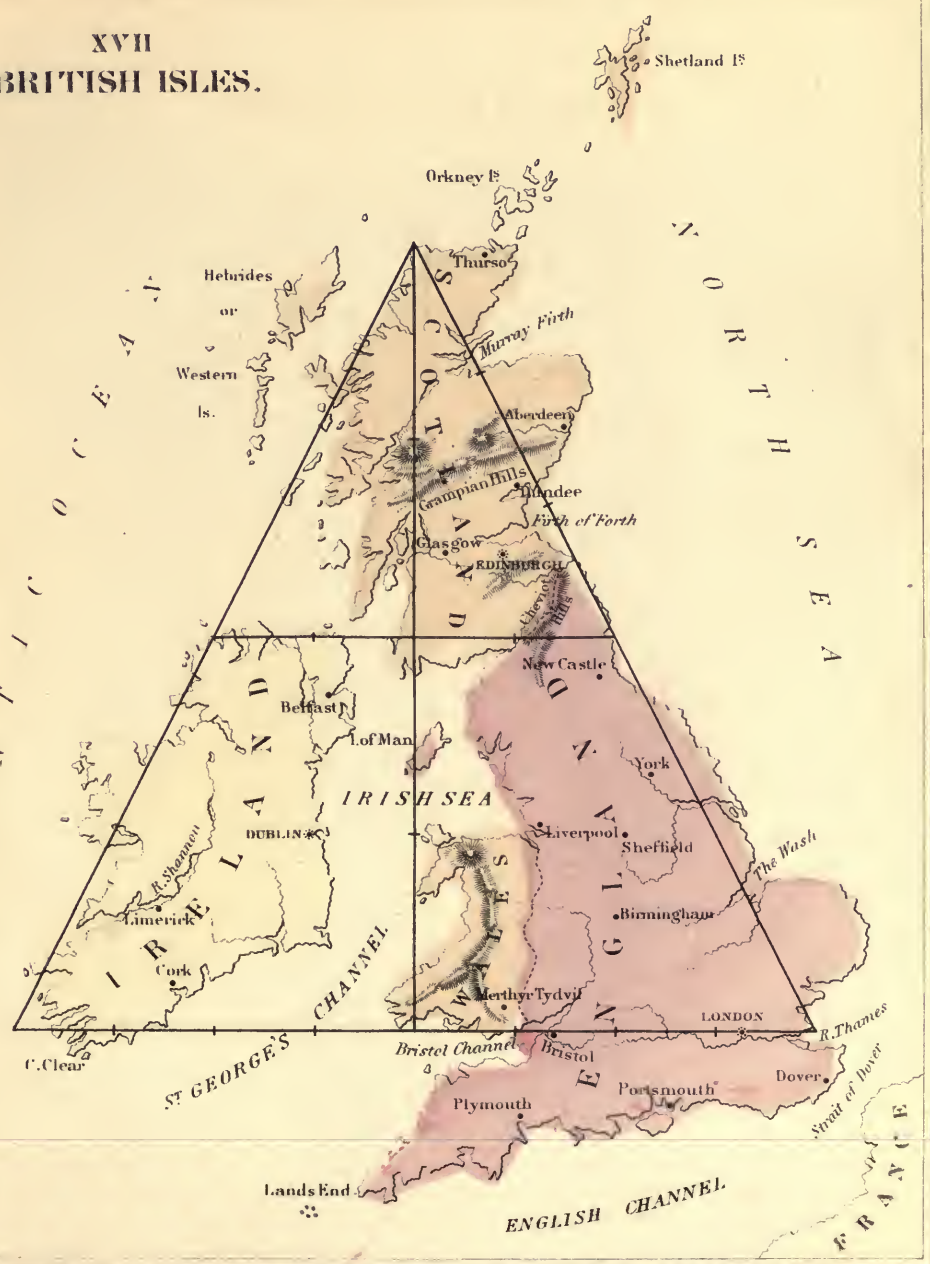


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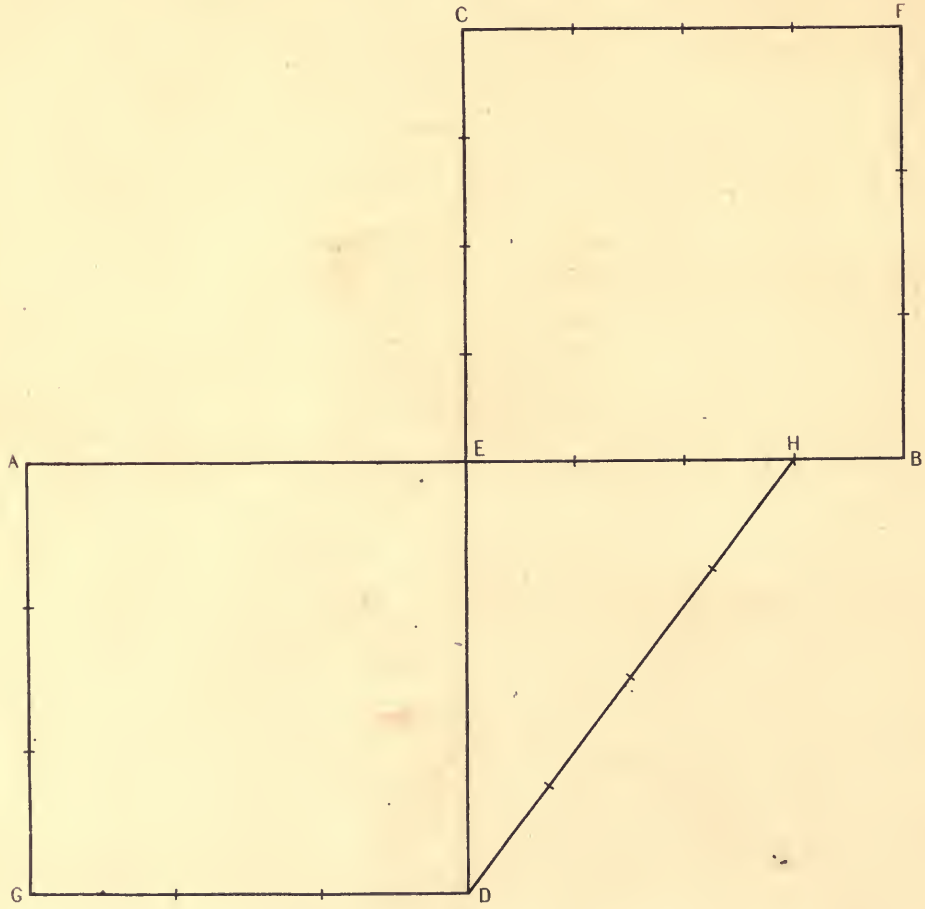
FIGURE FOR FRANCE SPAIN & PORTUGAL.



Draw two lines AB *and* CB *bisecting each other at right angles in the point* E. *Complete the squares* CEBF *and* AGDE. *Divide* CE, CF *and* EB, *each into four equal parts. Trisect* AG, GD *and* FB. *Join* DH *and divide it into four equal parts.*

XVIII
FRANCE, SPAIN AND PORTUGAL.

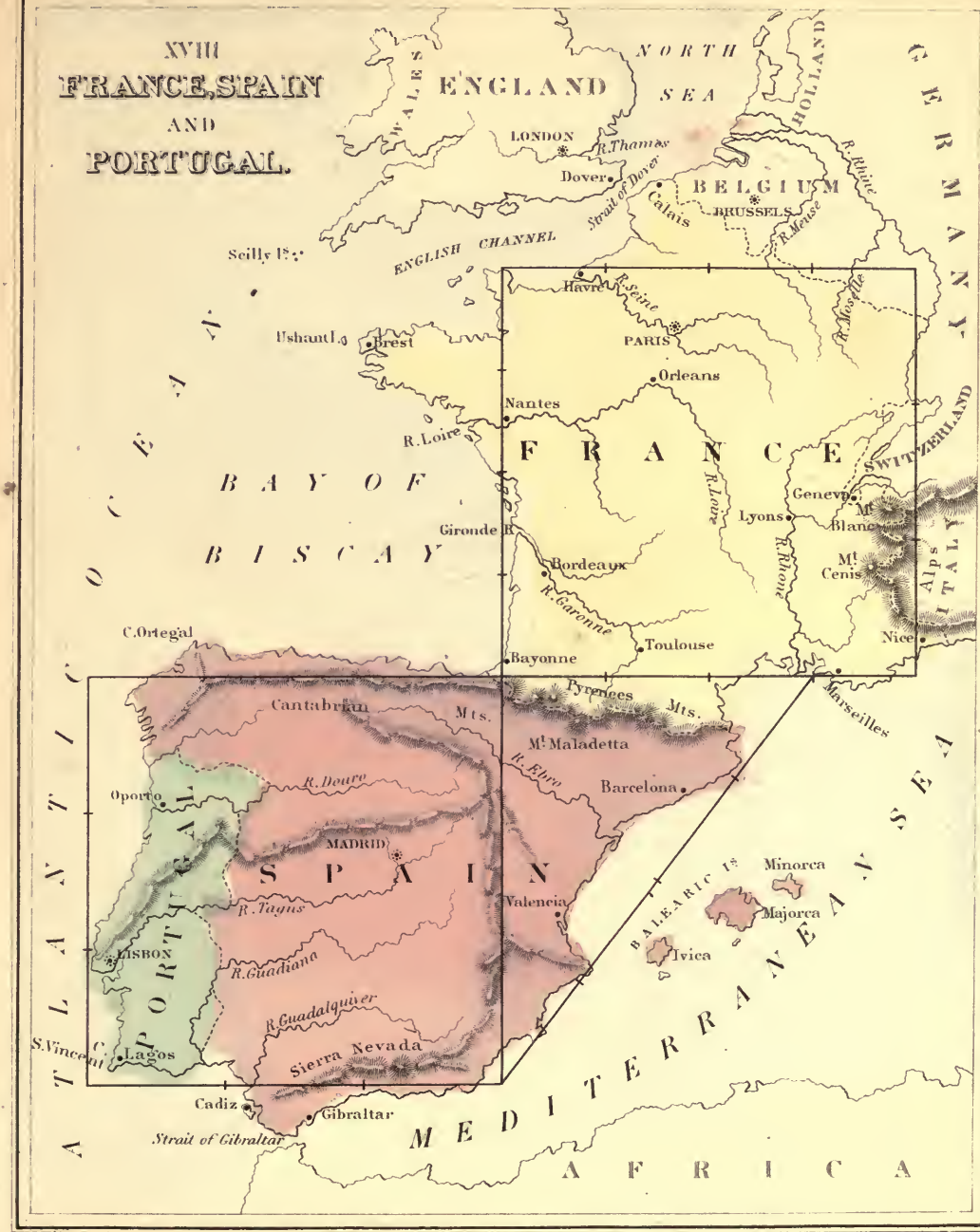


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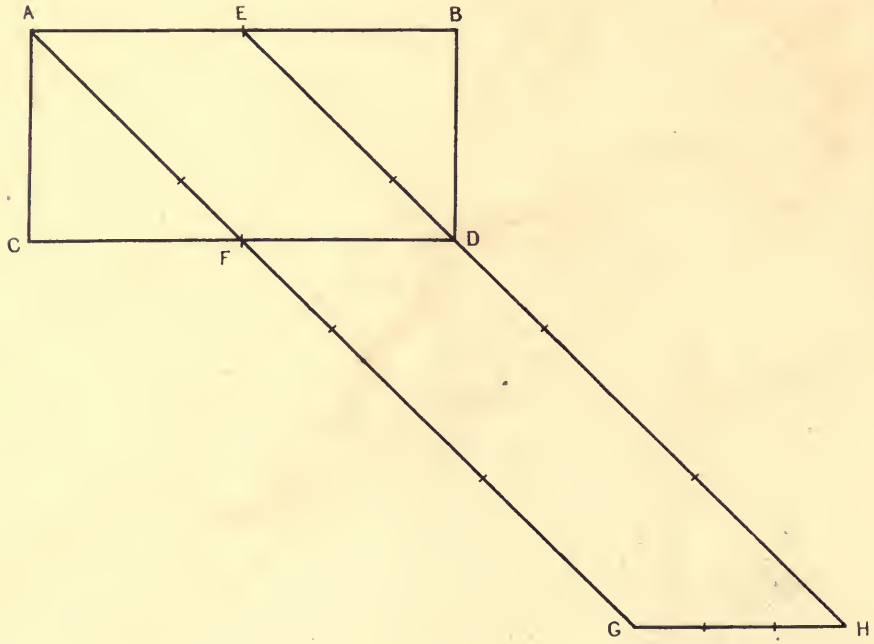
FIGURE FOR ITALY.



Construct a rectangle in the proportion of 2 to 1. Bisect AB *and* CD. *Join* AF *and extend it, making* AG *equal to twice the length of* AB. *Through* D *draw* EH *equal to* AG. *Join* GH *and trisect it. Divide* AG *and* EH *each into four equal parts.*

XIX

ITALY

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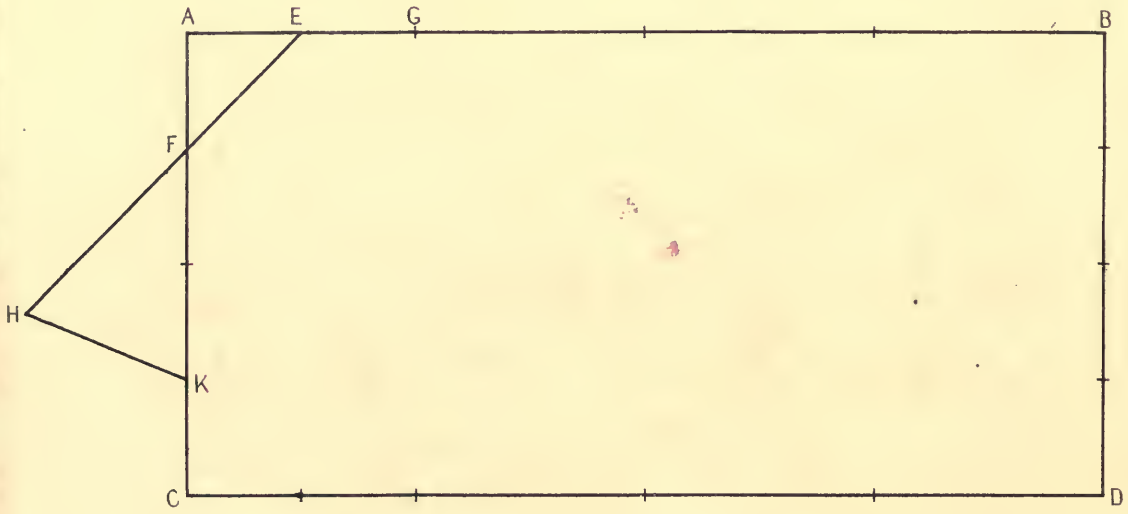
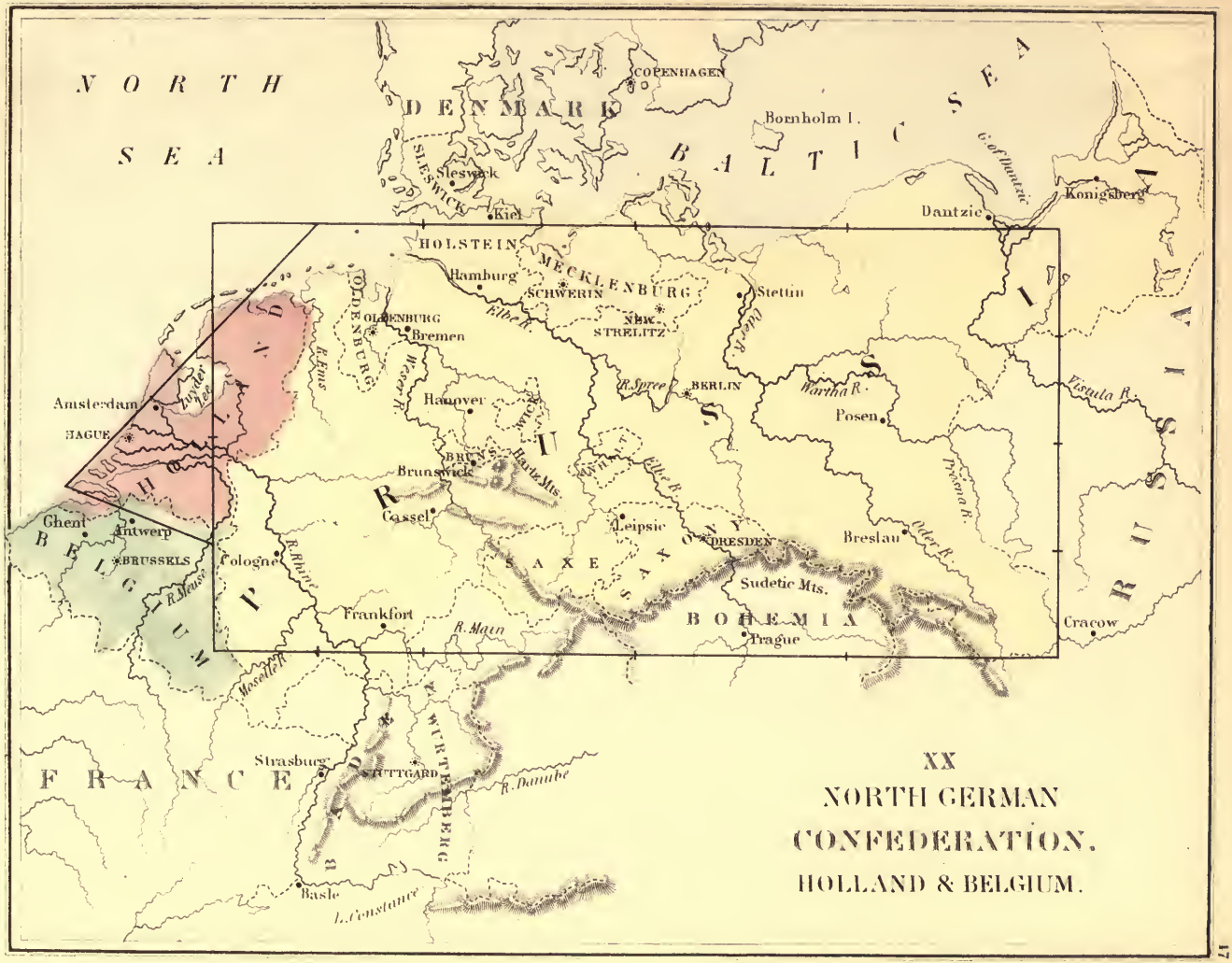
FIGURE FOR NORTH GERMAN CONFEDERATION, HOLLAND & BELGIUM.



Construct a rectangle in the proportion of 2 to 1. Divide each side into four equal parts. Bisect A G *and through* F *draw* E F H, *making* F H *equal to* F K *and join* H K.

Note. *Belgium as well as Holland may be drawn in connection with this map.*



XX

NORTH GERMAN CONFEDERATION.

HOLLAND & BELGIUM.

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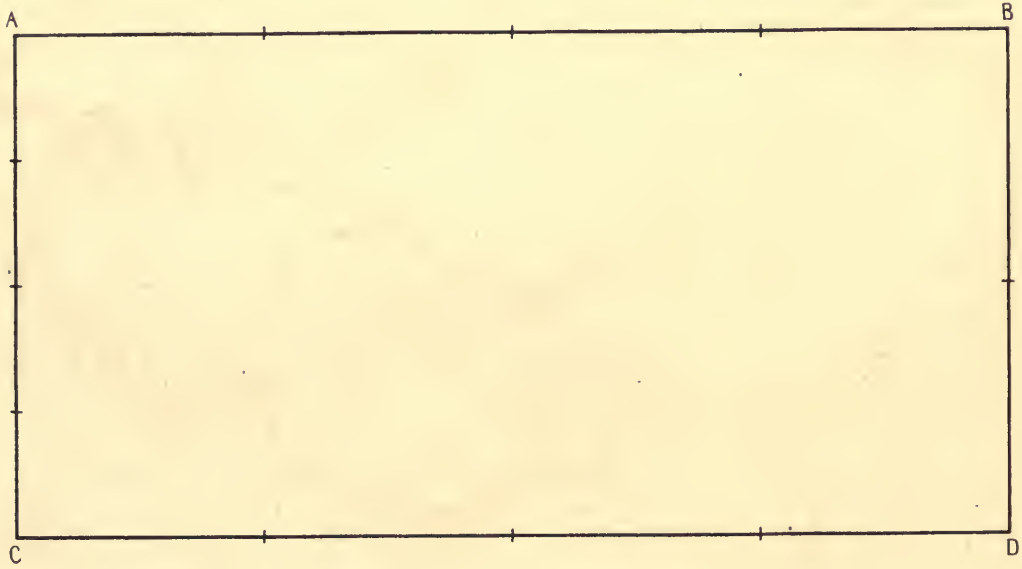
FIGURE FOR AUSTRIA, S. GERMANY & SWITZERLAND.



Construct a rectangle in the proportion of 2 to 1. Bisect BD, *and divide each of the other sides into four equal parts.*

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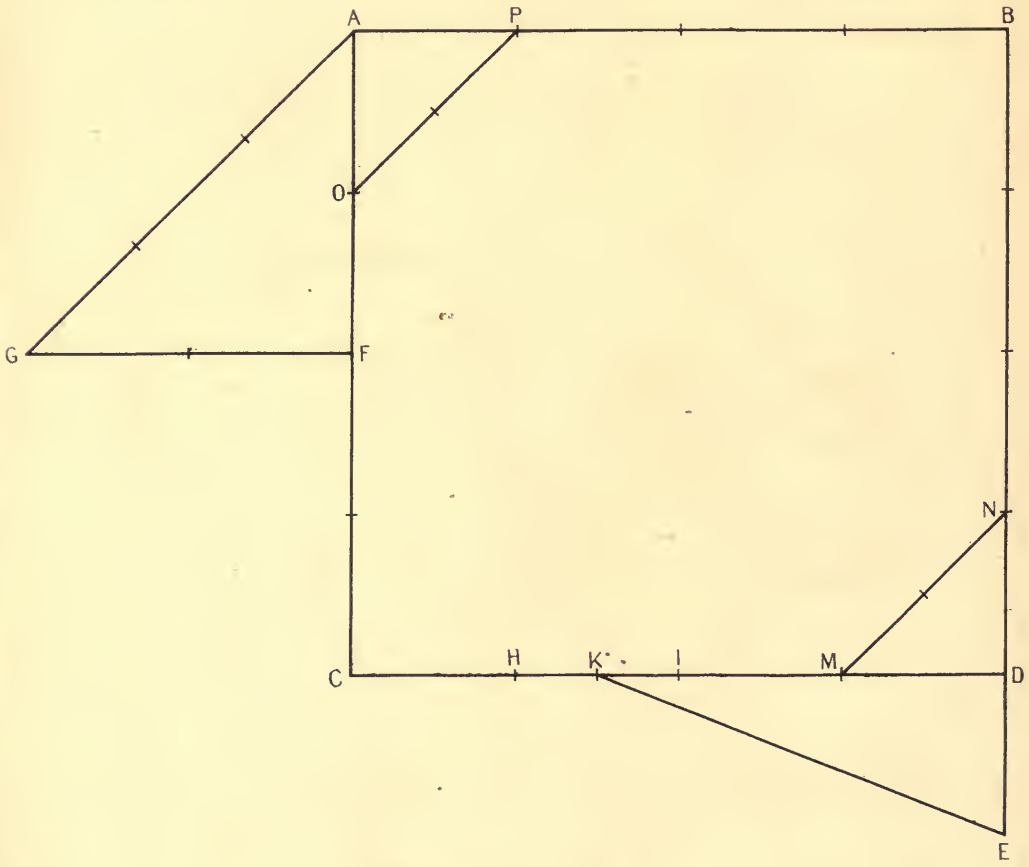
FIGURE FOR RUSSIA, SCANDINAVIA & DENMARK.



Construct a square A B C D *and divide each side into four equal parts. Extend* B D *and make* D E *equal to* D N. *Bisect* H I *and join* K E. *Through* F *draw* F G *equal to the half of* A C, *and bisect it. Join* A G *and trisect it. Join* O P *and* M N *and bisect each of them.*

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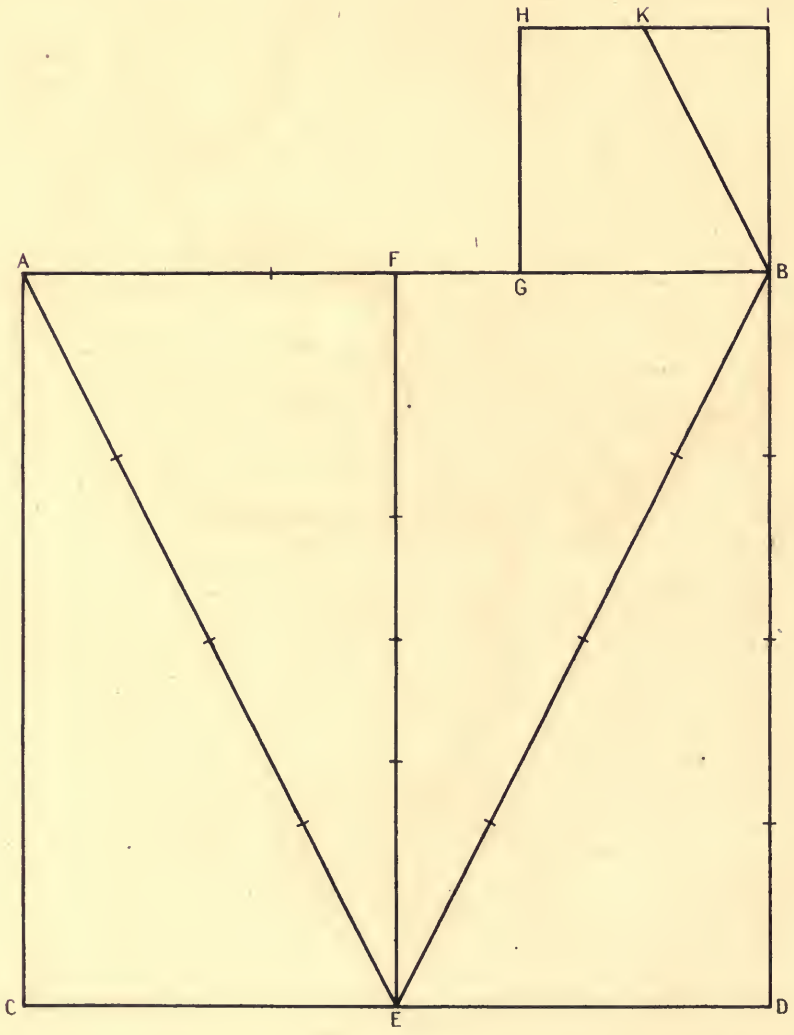
FIGURE FOR TURKEY & GREECE.



Construct a square ABCD. *Bisect* CD *and through* E *draw* EF *parallel to* AC. *Trisect* AB *and* EF, *also bisect the middle section of* EF. *Divide* DB. EB *and* EA, *each into four equal parts. On* GB *construct a square. Bisect* HI *and join* KB.

XXIII

TURKEY & GREECE.

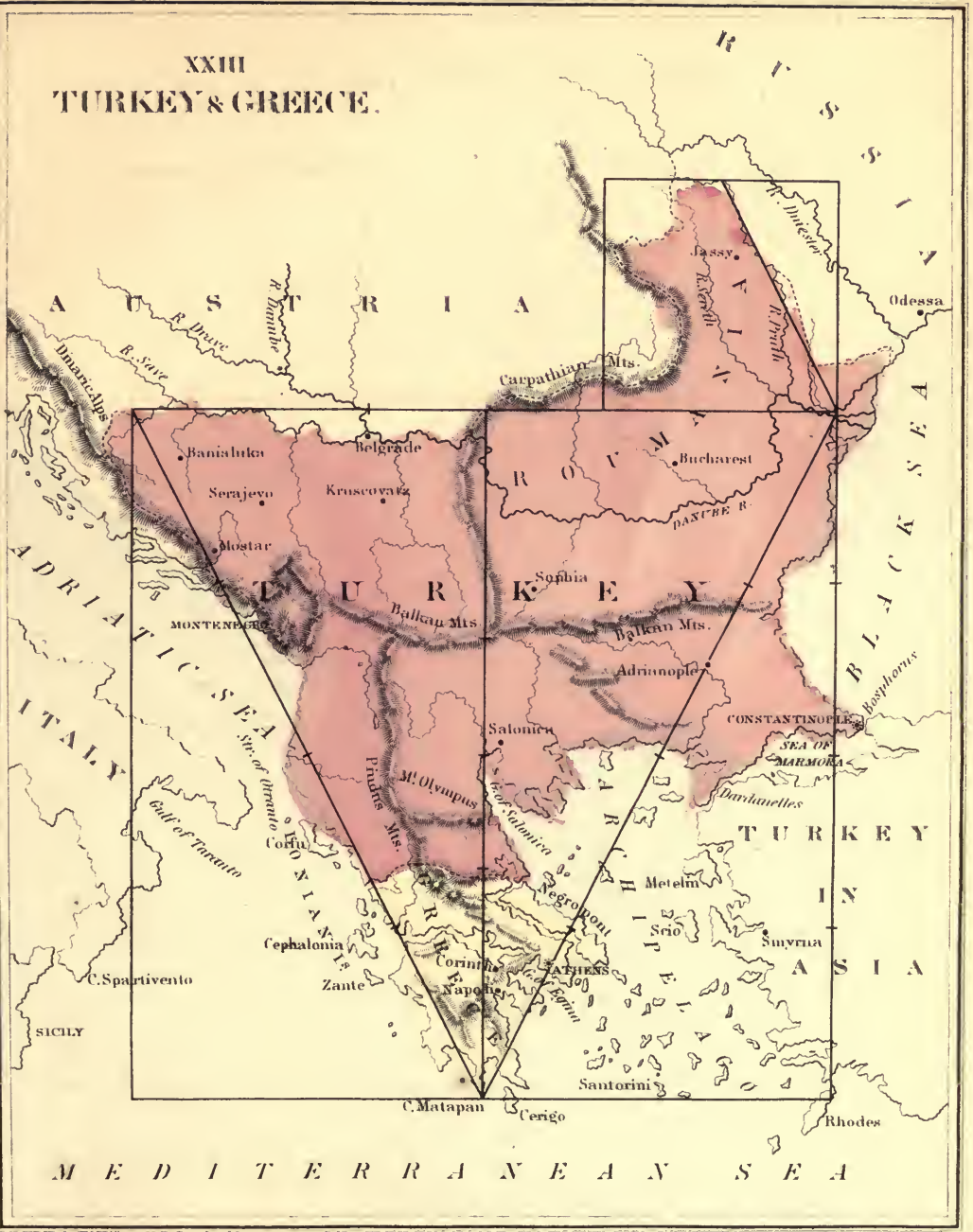


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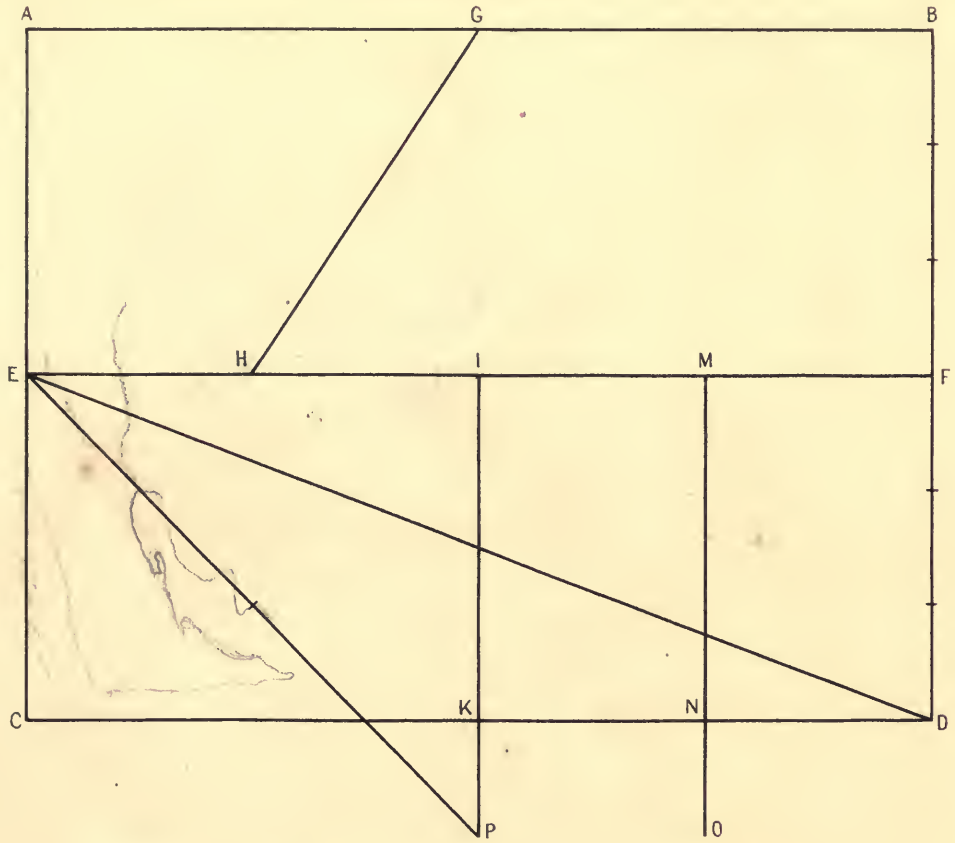
FIGURE FOR ASIA



Construct a rectangle in the proportion of 4 to 3. Bisect each side, and join E F *and divide it into four equal parts. Join* G H, *and* E D. *Through* K *draw the line* I P *and make it equal to* I F. *From* M *draw* M O, *equal and parallel to* I P. *Join* E P *and bisect it.*

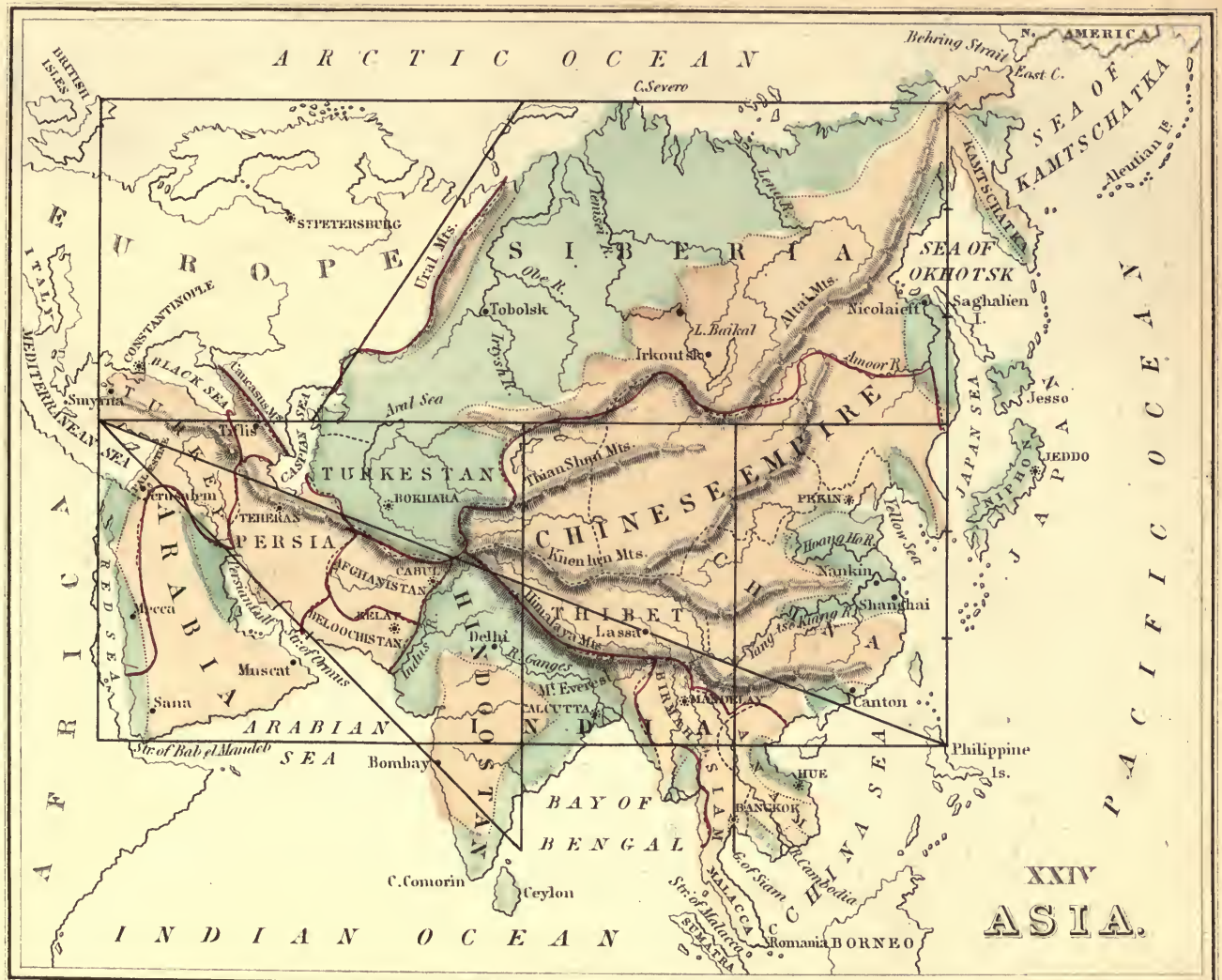


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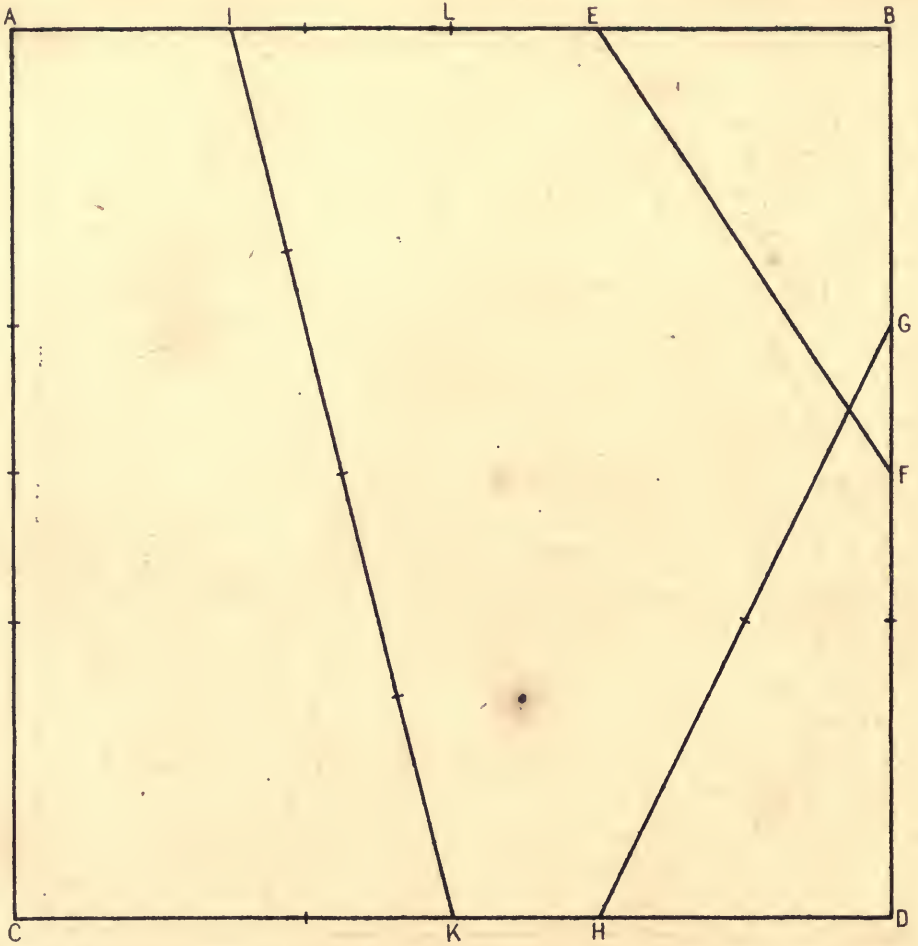
FIGURE FOR AFRICA



Construct a square ABCD. *Trisect each side, and bisect the middle third of each line. Bisect* AL. *Join* EF, GH, *and* IK. *Bisect* GH, *and divide* IK *into four equal parts.*

XXV

AFRICA.

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