REPORT

OF

PROF. JAMES K. PATTERSON, PH. D.

COMMISSIONER OF KENTUCKY TO THE

INTERNATIONAL CONGRESS OF GEOGRAPHICAL SCIENCES,

HELD AT

PARIS, FRANCE, AUGUST 1ST TO 13TH, 1875.

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IN HOUSE OF REPRESENTATIVES,

MONDAY, FEBRUARY 7th, 1876.

MR. PRESTON offered the following resolution, which was adopted, viz:

Resolved, That 1,000 copies of the report of Prof. James K. Patterson, who was appointed by Gov. Leslie to attend the International Congress of Geographical Sciences, at Paris, in the year 1875, be printed for the use of this House.

IN SENATE,

TUESDAY, FEBRUARY 8th, 1876.

MR. LINDSAY offered the following joint resolution, which was adopted, viz:

WHEREAS, The Governor of this Commonwealth appointed James K. Patterson, President of the Agricultural and Mechanical College of Kentucky University, Commissioner to represent this State in the International Congress of Geographical Sciences, held in the city of Paris: and whereas, the Governor has received a report from President Patterson abounding in matter of interest and value to the people of this Commonwealth; therefore, be it

Resolved by the General Assembly of the Commonwealth of Kentucky, That the Public Printer be directed to print and furnish each member and officer of the General Assembly fifty copies of said report.

Adopted by House of Representatives February 9th, and approved by the Governor February 12th, 1876.

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REPORT.

AGRICULTURAL AND MECHANICAL COLLEGE,
KENTUCKY UNIVERSITY,
LEXINGTON, KY., December 10, 1875.

To His Excellency JAMES B. MCCREARY, *Governor of Kentucky:*

DEAR SIR: I beg to submit to you, and through you to the Legislature, the following report:

About the last of May I received an appointment from your esteemed predecessor, Gov. P. H. Leslie, to represent the State of Kentucky in the International Congress of Geographical Sciences to be holden in Paris, France, about midsummer. In order to be present at its deliberations, as well as to attend the meeting of the "British Association for the Advancement of Science," to be holden at Bristol, England, I applied for leave of absence from my college duties till the middle of November. This obtained, I set out about the middle of June, and reached Paris in time for the opening session of the Congress.

The International Congress of Geographical Sciences met for the first time in 1874, at Antwerp, and was presided over by the distinguished Belgian, M. Charles d'Hane Steenhuyse. Its origin was due to MM. Charles Reulens, Elie de Beaumont, d'Avezac d'Halloy, and Francis Garnier, names representing the most advanced thought and scientific culture of Europe. Its object is to discuss all facts relating to Geography in its widest sense; to encourage discoverers, and promote discovery; to demonstrate by facts the great importance of scientific research; to encourage the nations to a generous emulation in promoting the diffusion of knowledge, by the dissemination of learning; by the development of their resources, and by the multiplication of such facilities for intercommunication as will bring distant people nearer and bind still more closely together those with whom we are already in most intimate relationship.

The Congress of Antwerp adjourned to hold its next meeting in the French Capital. At three o'clock on the first of August the first

sitting was opened by the President of the Congress of 1874, who, in a short speech, handed over the chair to Vice Admiral Baron de la Ronciere Le Noury, President of the Geographical Society of Paris. The great hall of the Tuileries, in which, during the empire, Napoleon III delivered the speech from the throne to the assembled Senate and Corps Legislatif, had been set apart by the government for the sittings of the Congress, together with as many government offices in the Tuileries as might be required for the sittings of the sections and for the exposition which formed an accompaniment of the Congress. Among the distinguished personages present were the President of the French Republic, the Grand Duchess Marie, of Russia, the Grand Duke Constantine, Sir Henry Rawlinson, President of the Royal Geographical Society of London, M. de Semenoff, of that of St Petersburg, M. de Beaumont, of that of Geneva, M. Correnti, who represented the Geographical Society of Rome, Hunfalvy of Pesth, and Weth of Amsterdam. Of the celebrated travelers whose names are more or less familiar to the general reader, there were present, MM. Rholfs, de Schlagintweit Sakünlunski, the Marquis de Compiegne, Pinart, and Doctors Nachtigal and Hamy. More than 400 of the most distinguished men of Europe were in attendance, many of whom were sent by the respective States whence they came. France contributed many of the more illustrious members of the Institute, easily discriminated from the foreigners present by the little red button worn on the left lappel of the coat, many members of the Assembly, and many representatives from scientific bodies in different parts of the nation. Next to France, Austria, Russia, and England were most largely represented, each of those nations sending, in a representative capacity, many of their most distinguished scientists. The Government of the United States was represented by Mr. Nourse, and the State of Virginia by Col. Stevenson.

Admiral Le Noury, in opening the Congress, dwelt upon the importance of the geographical sciences, not so much from their theoretical as from their practical utility. He vindicated their claim to recognition upon their fruitfulness as elements of production. Out of scientific geography grow commercial geography, economic geography, and political geography, three sciences which modify, if they do not determine, the whole fabric of modern civilization. The pioneers of commerce, of civilization, and of Christianity are the hardy travelers who venture into regions hitherto unknown, in order to solve the problems which geogra-

phy presents. The known has been pressing back the unknown since the first awakening of the human intellect. Most of the surface of the earth has been traversed and mapped; but in addition to the unexplored tracks, there are fields, vast and varied, upon which our knowledge is still meagre. There are questions of the relation of geological formation to surface and soil and climate; questions relating to the distribution of animal and vegetable life; questions regarding the distribution of races and languages; questions bearing upon the activities and industries, the economics and commerce and statistics of nations, which have not been answered, and which it will require years of patient research to investigate and reduce to systematic knowledge. To discuss these and kindred subjects this Congress assembles.

The address of Admiral Le Noury was considered to furnish a good outline of the work to be done. A splendid banquet, which many of the officers of State and civil and military functionaries attended, closed the proceedings of the day.

I shall not attempt to present in chronological order the business of the Congress, but merely to indicate the general method of procedure, and the nature and scope of the questions discussed.

The Congress was divided into seven sections, each of which met daily at 10 A. M., and sat till 1 P. M. The members sat grouped around a large table, with writing material and papers. Papers previously prepared were read with the sanction of the section, and when finished, became subjects of discussion. A general sitting was held every afternoon in the great hall of the Tuileries, attended by all the sections, at which an abstract of the questions discussed, and the conclusions arrived at by the sections, were reported.

Section first was designated the Mathematical, and embraced Mathematics, Geography, Geodesy, and Topography. It discussed the following questions: The substitution of the centesimal division of the quarter of the circumference for the division called sexagesimal, and the consequences thereof relative to division of time in Astronomy; discussion of recent inventions for measuring time and registering observations; utilization of telegraphic communication for measuring differences of Longitude; measure of an arc of the meridian in Southern Hemisphere, particularly in the Argentine Republic; study of the variations of gravity, by aid of the pendulum; instruments the most simple, and methods the most rapid, for determining the magnetic variation.

Section second, designated the Group Hydrographic, considered such subjects as the following: Researches upon the depth to which the effects of agitation of the surface of the sea extends; study of tides; general laws; anomalies; choice of places the most appropriate for observation of these phenomena; study of oceanic currects and their causes; with the analogous phenomena in the great lakes; determination of sea temperatures at different depths. Causes of the high temperature of the Gulf Stream; deep sea soundings, with the physical and chemical observations inseparable therefrom.

The third section covered a wide area. It was denominated the Group Physical, and included Physical Geography, General Meteorology, General Geology, Botanical and Zoölogical Geography, and General Anthropology. Of the forty questions allotted to this section for discussion, my space requires that I should select only a few. Different theories relative to the origin of mountains; the relations which exist between the elevation of the surface and its geological constitution; to investigate the origin and general movement of atmospheric whirlwinds or cyclones, as well as their periods; to compare the meteorological condition, ancient and modern, of countries where forests have been destroyed, and to state the influence which the re-covering of mountain tracts with forest and herbage has had upon the quantity of rain-fall, and upon the outpour of waters upon the surface; the geographical distribution of plants and animals during the tertiary period, with the consequences which result therefrom relative to the climatology of the globe during that period, and relative to the distribution of land and water; geographical relations between the fauna and flora of the tertiary period and those of the present day; the influence of causes anterior to the present geological epoch upon the area occupied during our epoch by vegetable species; species, orders, and families of plants which are characteristic of great natural regions; to study the resemblances and differences which exist between the fauna of different islands of Polynesia. Do the fauna of North and South America belong to the same zoölogical centre? Geographical distribution of prehistoric races of mankind, and of those which are regarded as fossil, and the relations of these to those of the present epoch; the migration and transplantation of races, and the displacement of one race by another; the distribution of mankind in ancient and modern times in Oceanica; discussion of the classification of Wallace—Malays, Negritos. &c.; distribution of the black

African races—dolichocephalic and brachycephalic; of the American races—Red-skins and Esquimaux.

To section four, designated the Group Historic, were assigned such questions as the following: To establish upon the territory of Europe, in prehistoric times, the existence of populations differing in instincts, habits, and adaptitudes, according to the monuments which they have raised, and the works of art which they fabricated. Recent palæontological researches have revealed, upon different parts of the globe, particularly in Europe, traces of the presence of man at epochs anterior to the most ancient documents. What relation can be established between these new nations and the most ancient authentic historic documents? Among the greater number, if not in all the principal branches of the Indo-European family, there exists a duality of physical type perfectly well marked, the black type and the blonde, in connection with a unity of speech. This duality shows itself in the eastern branch between the Persians and the Hindoos, and has a parallel existence also among the Sclavs, among the ancient Greeks, and among the Celts. What has been done up to the present, or what can be done with the data before us to explain this ethnological phenomenon?

The fifth section, called the Group Economic, was of especial interest, and comprised Geography, economic, commercial, and statistic. Its importance can best be shown by a statement of some of the questions it discussed—such as the following: What are the general causes which induce populations to emigrate and States to found colonies? What are the systems of colonization which have given, hitherto, results the most advantageous to the mother county on the one hand, and to the colony on the other? In view of the progress of geography, and the development of commerce, what are the best means of associating commercial and scientific interests? In what degree are merchant ship-owners able to serve the interests of science in general, and of commercial geography in particular, in stimulating collections, obtaining documents, and all other sources of information? What are the points where commerce and industry can supply themselves to best advantage with fuel for generating motive power, whether in depots or in workable deposits, and what is the approximate estimate of the quantity of such fuel in different countries? What are the most available stations on different parts of the globe for fisheries, and the working of different marine products? What are the consequences of the clearing away or destruction of forests upon the commercial, industrial, and agricultural condition of a coun-

try? What are the natural laws which govern the origin, distribution, increase, and decline of cities?

Several of the questions discussed in the preceding Group are of even more importance to us than to the States of the Old World. Our resources in mineral, agricultural, and forest wealth are great, but little known abroad—little known as yet, indeed, to ourselves.

Section sixth, called the Group Didactic, gave its time to the following, among other questions: What are the practical means of making more popular the elementary study of Geography and Topography? What ought to be the character of the geographical studies in the different branches of instruction, primary, secondary, and superior? What place does instruction in Commercial Geography hold, and according to what method is this instruction given in institutions founded to further commercial education? What are the institutions founded to further the acquisition of Geographical knowledge? What are the best means for co-ordinating and developing the labors of Geographical societies, and reaping therefrom the largest scientific results?

The seventh and last section, styled the Group of Voyages and Travels, concerned itself with questions relating to exploration, voyages undertaken for purposes scientific, commercial, and artistic. In voyages of discovery what are the principal obstacles which travelers encounter, and how may these best be obviated? What are the best methods to recommend for the observation of latitude and longitude What comparative value ought to be given to the determination of heights by the barometer and by geodesic processes? What are the best methods for photographing observations?

All these questions, and many more, were discussed during the sitting of the sections, which continued for nearly two weeks. I attended principally the meetings of sections three and four, as being more in the line of my previous studies than the others. On one occassion I attended the sitting of the fifth Group, when the construction of a canal across the Isthmus of Panama was discussed under the presidency of Ferdinand de Lesseps, to whom the world owes the Suez Canal. The veteran engineer expressed himself quite sanguine of the practicability of the work, and at a less cost than many of the estimates previously made.

As illustrative of geographical science in its various subdivisions, an Exposition was opened in connection with the Congress. Abundant space was appropriated to every nation which chose to participate.

France was best represented. Russia, Austria, Prussia, England, and Italy followed in the order named. Switzerland, Belgium, and the other minor States of Europe were well up. The States of the Western Continent contributed little to the Exposition, the space allotted to them being out of all proportion to their contributions. Even Japan made a better figure, and contributed more than some of those whose facilities were greater. Much to my mortification, the United States was about the lowest in the list. Either the General Government should have taken no part in the Exposition, or such part as would have been creditable. The best map of any American State or Territory which I saw there was executed abroad, and was found outside the American part of the Exposition. Globes, maps, charts, instruments of every conceivable size, scale, projection, and construction, were to be found there in the greatest profusion. Models of towns, harbors, public buildings, and reduced fac similes of mountain ranges in relief, were numerous in the most of the collections, particularly that of France. Topographical maps in relief, showing the relative altitudes and depressions of every part of France, and on a very large scale, attracted the attention and elicited the admiration of every one present. Large collections of prehistoric implements, illustrative of the neolithic and palæolithic ages of mankind, as well as implements illustrative of savage, barbarous, and half civilized life, were also on exhibition, chronologically and topographically arranged. Not only the actual condition of geography, but the progress of it, was brought before the mind. Original maps, hundreds of years old, showing the first rude efforts of our scientific predecessors to realize their conceptions of surface and portray them to others, stood as first in a series of which the elaborate maps described above were the last. These, with the intervening projections, showed in panoramic view the rapid advance made from age to age—from the rude mapping of Ptolemy and mediæval geographers to the present day.

Two more features, which ought to have been added, would have aided much. Each country should have been represented in its products and in its minerals. In neither was this the case, whether from oversight or from a conviction that the scope of the exposition would have been too much enlarged, I did not learn.

On the last day of the Congress a distribution of prizes, under the presidency of M. Wallon, Minister of Public Instruction, took place.

These were awarded by an international jury, which adjudged the merits of the respective exhibitors.

I beg to submit to your Excellency, and through you to the Legislature of Kentucky, the following considerations, suggested by my attendance upon the Congress:

There are three things of which this Commonwealth greatly stands in need; capital to develop her great mineral and agricultural resources, increase of population, and such provision for liberal and scientific education as shall enable her properly to utilize and direct these. It is unnecessary to dwell at any great length upon the extent and richness of the mineral deposits of Kentucky. The reports made, from time to time, through the public press, by Prof. Shaler, Director of the Geological Survey, certify their existence in the greatest abundance. There are thousands of square miles of rich coal lands, with iron of the best quality in immediate neighborhood thereto. These coal lands exist in the eastern part of the State, in the west, and in the south-middle counties. Neither does it need to be insisted upon that those countries and those commonwealths which possess coal and iron in the greatest abundance are, and are likely to be, the great natural leaders in manufactures, in commerce, in civilization, and in all that makes up the world's progress in these days. To her coal and iron Great Britian, at present, owes a great part of her industrial and commercial supremacy—a supremacy which she never could have attained without them—a supremacy whose continuance will be measured only by the duration of her mineral treasures.

The single county of Lancaster has to-day a population twice as great as Kentucky, with actual wealth ten-fold as great. This population is sustained, and this wealth has accumulated in great part, from the development of her enormous treasure of coal and iron. From Manchester to Liverpool, and from each of these vast centres of wealth and manufactures and commere, to Wigan and Bolton and Preston and Crewe and Rochdale and Stockport, one is never out of sight of dozens of tall chimneys, carrying their volumes of smoke athwart the sky. For a distance of twenty miles from Glasgow the whole country seems ablaze with blast furnances extending on either hand as far as the eye can reach. Throughout Yorkshire, throughout the "Black Country" of which Birmingham is the centre, and throughout a large part of Wales, the same dense populations are met, the same evidences of ceaseless activity are seen. In the Clyde, the Mersey,

and the Tyne, from iron smelted and rolled and wrought in their respective localities, are built the great iron fleets of merchantmen which cover every sea and every ocean, and reap the harvest of the commerce of the world. If it was no idle boast of Sir Robert Peel, forty years ago, that four hundred of his constituents could pay the national debt, one may imagine how immensely greater is that wealth to-day, after forty years of commercial prosperity such as Great Britain never knew before, and which is almost wholly due to the development of her coal and iron.

Such resources Kentucky possesses. The labor and the capital only are wanting to make many of our counties like Yorkshire and Lancashire, Lanark and Wales. Were our resources known abroad as they ought to be, both capital and labor would immigrate hither. Then we should see the hills of Eastern Kentucky and the coal fields of the west covered with tall chimneys and blast furnaces; manufactures would spring up; cities would grow and wealth accumulate; and Kentucky would take the rank among the great States of the Mississippi Valley, to which by her resources and her geographical position she is entitled. How is this to be accomplished?

Reports made to the Legislature, embodying the results of surveys and agricultural returns, seldom find their way abroad—seldom come under the eye of the foreign capitalist. Foreigners have fared so ill with investments in America that they look with suspicion upon all the prospectuses of new schemes for constructing railroads, opening coal mines, and building iron works. Erie stocks, and stocks of bankrupt States, which have repudiated their obligations, are a stench in the nostrils of foreign capitalists. How may this state of things be corrected? I would suggest that Kentucky make such provision as shall enable a properly qualified commissioner or commissioners to attend such International Congresses as that held in Paris; that he shall be furnished with maps of the State, and maps of counties, certified copies of its Geological Surveys; that these maps shall set forth carefully, and with scrupulous accuracy, the geological formation of every county where mineral wealth exists, its extent, approximate quantity and quality, and that these be accompanied with actual specimens of said minerals, with the actual analysis of each, as determined by the chemist of the survey.

I would further add, that a comprehensive statement, which should serve as a descriptive letter-press accompaniment to said maps, be

prepared by a committee of competent men, and that copies of this in English, French, Italian, Russian, and German, be placed at his or their disposal for distribution among the members of the Congress. All these documents should bear the official seal of the Commonwealth as emanating from its Executive, under the authority and by direction of the Legislature. This assurance would satisfy the foreigner that all the representations made were in good faith, and not the catchpenny advertisements of fraudulent corporations. Were this done for a succession of years, I am satisfied that foreign capital would soon follow in the wake of prospecting parties sent by foreign capitalists eager to find a profitable investment for the surplus millions now lying in their coffers, or yielding a maximum dividend of two and three per cent. Foreigners will accord a consideration to official parchments signed by Governors and Legislatures of Western States which they will be slow to give to unauthenticated paper.

The State should also make similar provisions for exhibiting its agricultural products, their kind, their quality, the yield per acre, with the price of farming land and the price of labor. This would show the condition of the owner of the soil and the condition of the cultivator. Thousands abroad would be glad of such certified information as would enable them to make an intelligent choice of a home in a Western State. They would learn therefrom the data which they often seek for and never attain. In the second place, such legislation as would directly encourage immigration should be enacted. A Bureau of Immigration, such as exists in New Zealand, would attract to our Commonwealth thousands of hardy men and women, who go instead to the States North and Northwest to make their own fortunes, and add to the material and moral strength of their adopted homes.

Of equal importance is the provision for liberal, scientific, and technical Education. I shall say nothing here of the common school or the academy. The State needs, and needs greatly, a first-class university, adequately endowed, where all her youth may obtain as good an education as can be had anywhere in America or out of it. She requires a university where not only classics are taught, but modern languages in their widest extent, Mining, Engineering, History, Political Economy, Mental and Moral Science, Chemistry, Physics, Geology, Mineralogy, Botany, Zoölogy—in short, the whole circle of knowledge and the whole circle of science. Education has made Germany, naturally poor, the first country in moral and material power in continental

Europe. Technical and scientific education, notwithstanding her enormous natural disadvantages, is making her citizens and mechanics formidable competitors with English producers.

Great Britain, under the sagacious forethought of her statesmen, sees the necessity for an education broader, higher, and deeper than that for which she has hitherto made provision, if she will retain her manufacturing and commercial supremacy. She remodels her old universities, founds new ones, endows them, makes education virtually compulsory, and makes such provision for technical and scientific training as shall enable her to keep the vantage ground already won.

To come nearer home, New England, with a poor soil and little mineral wealth, has, by her system of Education, moulded the thought and shaped the destinies of this Republic to an extent out of all proportion to her population. And here I beg to submit this important consideration: There are two types of civilization in this Republic. One is represented by New England; the other is, or rather *was*, represented by Virginia. New England gave her impress largely to the two great Middle States; still more largely to the States north and northwest of us. The Virginia type prevailed over the States south and southwest. It is needless to argue which of these is the better. There are some elements in the one confessedly good which do not exist in the other. As a whole, we prefer the Virginia type. But it is equally needless to say that the great civil war gave it a rude shock—a shock from which it may never recover—a shock, certainly, under which it staggers to-day. Some of its institutions have been swept away. Burdened with debt, crippled in trade, deranged in their social organization, paralyzed in their industries, the States of the south and southwest are not likely to recover for years. Virginia has lost her leadership in the South, and the civilization of which Virginia was the representative i to-day in danger of being supplanted by one of a more aggressive type. We ourselves have been unconsciously contributing to this result. Our sons are sent to institutions to be educated where the dominant civilization and the dominant influences are those of New England. We contribute of our means to build up institutions beyond our own borders, and to supplant ideas and traditions by which our early habits of thought were moulded. There are elements doubtless good in the one and in the other. In the conflict of opinion in the future, let us hope that what is good in both will survive and co-ordinate themselves to the ordering of a civilization and a polity which shall reflect all that is worth preserv-

ing in each. But the plea I make, and which I urge, is, that the mould in which our early ideas were cast, and the framework in which our habits of thought and action were set, are in danger of being obliterated. It is a struggle for existence in which we ought not to abdicate our normal functions of co-ordinate thought and activity.

Now, the idea upon which I insist, and which I wish to impress with all the energy I can upon your Excellency and the Legislature of Kentucky is, that Kentucky is, and of right ought to be, to-day best fitted by her origin, her traditions, her history, her geographical position, and, above all, by her mineral and agricultural resources, to take the leadership, and be the representative of the civilization which I have denominated the Virginia type. But in order to do this it is necessary that she should provide for the higher education within her own borders. She needs a great University, which shall be to her what Oxford is to England, what the Institute of France is to the French people, and what Harvard and Yale have been to New England. And just as her two great universities have contributed to differentiate English thought and English speculation just as Harvard and Yale have largely moulded the thought and character of the Eastern States, so will a university of such proportions and such equipments as the Legislature ought to found and endow, shape the destinies of this Commonwealth, and exert a large influence upon those of the affiliated States with which she stands in most intimate relationship. Wherever the intelligence of a nation lies, there is its head, and wherever the head be, there is its capital. Rome, for ten centuries after the fall of the Empire, ruled Christendom—not by legions, but by brains. Aristotle for sixteen centuries reigned over the world of thought, and held a sceptre such as no prince, temporal or spiritual, ever wielded. Expunge to-day from the libraries of the world Aristotelian thought and Aristotelian influence, and the rents and chasms would be fearful to contemplate. What Aristotle was to ancient and mediæval thought, Bacon has been to modern. The *novum organum* was the dawn of a new era, and has proved the prolific germ of all the organic growth of modern science, from Bacon to Faraday and Tyndall. These are but examples of the more than imperial sway, not for a lifetime only, but for ages, of the giants of thought—

> "The great of old,
> The dead but sceptred sovereigns who still rule
> Our spirits from their urn."

What we need is not so much elementary training as the discipline and culture and power which makes "leaders of men." We want men

so educated and disciplined that they can become exponents of ideas which are our heritage, and impress them upon others.

It is a very common, and a very pernicious error, that the Legislature of a State has done its duty in the matter of education when it has made ample provision for common schools. I would not be understood as disparaging the common school. It has a work to do, and that, too, one which can scarcely be estimated too highly; but in the common school the work of education is only begun. Its subjects are all elementary; its discipline all preparatory; the faculties of the mind which it brings into play are all subsidiary. It is only initiative, tentative, incomplete. At an age when the higher faculties begin to develop, and the youth is prepared to go forward with a bound, the common school can carry him no farther. The planting has been done, and the rudimentary stage is passed. As with the life of a plant, so with that of a human being. Its first energy is expended in enlarging its dimensions, with texture feeble and pulpy. Then follows a stage when the same power achieves firmness and consistency; when the fibres toughen and harden, and the prophetic blossoms finds its fullfillment in the fruit. If the first stage be important, the last is not less so. So for as education is concerned, it is the crisis in the life of a man. All his higher faculties begin to wake up. Lines of investigation open out on every hand. The world of mind and the world of matter begin to reveal themselves in new forms and in new relations, returning question for question, and putting the inquirer to his mettle at every step. During this period of sifting and testing, of adjusting and displacing, of building up and tearing down, all that can aid in giving vigor and courage and resolution and honesty; all that can stimulate manfulness and devotion to truth; all that can enkindle, and all that can guide an ambition at once honorable and generous, is urgently demanded. This is the sphere and this is the office of university training—a work as far beyond the common school as the training and fruiting of the vine is beyond the planting of the slip in the green-house pot. University training presided over the development, and determined its character, in David Hume and Adam Smith and Sir William Hamilton. Scotland would have been amply repaid for all the money expended on her universities for the last three hundred years had they yielded no other outcome than these three men. This is the critical period in education;

this the time when the hand of a master is required; this the time when, if we properly appreciate the magnitude of the interest at stake, we can intrust it to no men but tried men, and to no institutions beyond our own borders. To make ample provision for the common school is well; to foster and endow the academy and the college makes provision for carrying on the work, for building on the foundation laid; to provide by a properly equipped and adequately endowed university for the furnishing and finishing and adornment of the structure, is to complete the work—to send forth great men and true men to guide the destinies and determine the character of generations.

These treasures of coal and iron will be wrought; these fields will be cultivated; and the millions gathered therefrom will enrich thousands in the future. Whether these treasures will be wrought for us and our posterity or for others; whether these harvests will be gathered for us or for others; whether these millions will enrich our Commonwealth or go hence, leaving us as impoverished as the gold-bearing regions of the earth whose precious metals are mined and carried away by foreigners, will depend upon whether we rear an educated posterity to direct and control these results to their own enrichment instead of alien ends. Beyond all that is the political and social and moral character of our people. This also will be determined by the kind and extent of the higher education which we give them. Whether liberty shall co-exist with authority, and the rational end of all government thereby be attained, or whether liberty shall run into riot, and the fabric of civil government, unable to endure its vices or their remedies, work out its own dissolution, will depend on the moral and social and political education of our young men. It is not the common school training of the child, but the university training of the man, which fashions the intellect and moulds the intelligence of Commonwealths and peoples.

It is not the masses of the people, however good their common education may be, who give a nation character abroad. In the end they may contribute to perpetuate its reputation; but the great men of a people determine it. Greece lives to-day, and will live through all time, in Homer and Thucydides, in Plato and Aristotle, in Demosthenes and Alexander. Cæsar and Cicero, Horace and Virgil, form by far the largest part of our conception of Roman majesty and grandeur.

England, wide as is her sway and great as is her power, is known abroad chiefly through Shakspeare and Milton, Pitt and Wellington. When abroad, I saw few who knew anything of Kentucky; but I

met few who had not heard of Clay and Crittenden and Breckinridge.

When the traveler approaches another land he first becomes conscious of its nearness by its bold promontories and its mountain summits. These, like light-houses and beacons, reveal their presence from afar. Their crests glisten in the sunlight, and their shadows fall far out from their base. So it is with the great men of a nation. They reveal its existence and give us our first impression of it. They are the stars of first magnitude in its firmament, and by the light they radiate or reflect render it luminous. By them we measure the mass of their fellow countrymen. America, in the infancy of the Republic, was chiefly known and best known abroad by her Washington and Franklin—by the man "who was first in war, first in peace, and first in the hearts of his countrymen," and by the man who "snatched the lightning from heaven and the sceptre from tyrants."

This, moreover, is a work which ought to be done by the State. If the Commonwealth should make provision for the common school *a fortiori*, should it provide for university training. Denominational colleges are well enough for special training, but they do not in these times rise to the realization of the university idea. The time is past in the growth of Kentucky when the highest education needs the fostering care of the church. Educational establishments in this country and abroad are successful in proportion as they cut themselves loose from all ecclesiastical trammels, and depend upon other means than ecclesiastical endowments for their support.

The great foundations of Oxford and Cambridge in England, and the great universities of Germany, are, year by year, partly by internal development, partly by State legislation, emancipating themselves from clerical control, and rendering themselves amenable to the State. All the endowments set apart by churches for college and university education in the State would, if consolidated, furnish little more than adequate support for a university such as Kentucky ought to have.

Let our sons, then be home-bred and home-educated first, then let them go abroad, if they will, to add to their already ample stores—to get their proper level by comparison with others, and to become less provincial and more cosmopolitan. Such a system of higher education as will develop, invigorate, expand, and liberalize, the State can give, and the State must give, if she discharge her duty to her sons.

I do not now suggest the means by which this should be done. But what I saw at the universities of Glasgow and Edinburgh, of Oxford and Cambridge, and elsewhere abroad, convince me that it can be done and ought to be done. This, however, is not the occasion to obtrude any scheme upon your Excellency or the Legislature. All I now urge as legitmately growing out of my mission, is the necessity for such provision, and the conviction that, from even the lowest point of view, no investment which the State could make would pay half so well.

I have the honor to be,

Your obedient servant,

JAMES K. PATTERSON.