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OF WARD'S ESTABLISHMENT.

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By William T. Hornaday

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THE KING OF MUSEUM-BUILDERS. (*Henry A. Ward*)

THE KING of museum-builders is an American; and the greatest scientific emporium in the world is at beautiful Rochester, fairly in the shadow of her university. As patriotic Americans we have good reason to be proud of Professor Ward and his work, and there are some millions of us who should also think of him with feelings of gratitude. In my opinion he has done more toward the creation and expansion of the scientific museums of the world than any other twenty men I could name, and the value of his work as a scientific educator can never be estimated in dollars and cents.

I know him well; and having quarreled with him frequently in the ardent and aggressive days of my youth, I feel that I can now judge dispassionately both his character and his work, and write his story exactly as it is.

It is said by some that familiarity breeds contempt, and by others that no man is a hero to his valet. It may be so, especially when the

party of the second part is a fool; but, at all events, after seven years of service with him, after months of his society as a traveling companion, and twelve years more of personal correspondence, I still can say that Professor Henry A. Ward is the most remarkable scientific genius I ever knew. It is because that in his line he stands so preëminent, so wholly alone, and so completely clothed in his own originality that I consider it worth while to tell this story of him, and tell it now.

In this country, in England, Germany and France there are other men who make a business of gathering and distributing scientific specimens for museums; but this man towers above them all like a colossus standing on a plain. Where other men are able to supply the specimens for one small department of a new scientific museum, his vast establishment can fill the entire museum, from the lowest depths of geology up to man himself, with every department reasonably complete. The



A TYPICAL COLLECTION.

whole of the Lewis Brooks Museum, of the University of Virginia, except the building, was taken bodily and at once out of the Rochester establishment, and scarcely made a hole in it!

When Marshall Field, of Chicago, gave his check for \$100,000 in exchange for the entire Ward collection at the World's Fair, a whole museum was bought and "located" in one day.

Instead of being brought forth, as is customary, with great labor and travail, and working up in slow misery from nothing to something, as do most new public museums, the grand new Field Columbian Museum, like the Lewis Brooks Museum, was born of full stature, lusty and proud, christened and confirmed, all in one day. All this was made possible by one man—and I wonder how many Chicagoans there are who know all the facts, or remember his name.

In these days, the times require that every man shall have his special work, bounded, limited and confined. In science, no man now dares to attempt to know it all. He must specialize within the fence that bounds his particular bailiwick—the ethnologist on man, the mammalogist on mammals, the ornithologist on birds, the herpetologist on reptiles, and so forth and so on, *ad infinitum*, each after his own kind. Every professional naturalist is supposed to be either a teacher or an investigator, and to

know literally all there is to be known about his one poor little specialty.

Know that Professor Ward belongs to neither of those classes of naturalists. With a fine scientific education, the inborn habit of investigation, and a command of language—or I had better say languages—of which any teacher might well be proud, he elected to carve out for himself a special niche in the world and fill it all alone.

He deliberately chose as his sphere of usefulness the gathering and distributing of specimens and collections for the promotion of scientific study. The work of his life has been to place in the hands of every scientific student and investigator the objects that he cannot obtain for himself, and which dull men cannot obtain for him. His life work began in carrying an old trunk filled with fossils from the Paris Basin, across the English Channel, and selling its contents to the London museums for a good round sum. Now, however, it requires twenty-one freight cars, jammed to the roof, to transport such a collection as that which constituted the "Ward Exhibit" at the World's Fair of glorious memory.

In this hurrying, hustling age, nothing appeals to the mind of the busy reader more sharply than figures. We have almost reached the point when no description is quite complete, and no object is considered fully "sized up" without them. Adjectives are compara-

five, figures are absolute. From the cradle to the grave, the true American will have his nine digits, and at this point nothing else can serve my purpose quite so well.

I have before me a list, closely printed, exactly the length of my arm, of one hundred American museums, to each of which Professor Ward has supplied collections. It is a roll of honor well worthy of being carved, figures and all, on his monument. In reality, it is a complete list of all the scientific museums in the United States worthy of being mentioned anywhere. The cost of the natural history collections purchased of Ward's Natural Science Establishment by this group of museums alone foots up a grand total of \$730,223, an average of \$7,302 for each collection.

Here are a few of the entries nearest the head of the list: Field Columbian Museum, \$100,000; Agassiz's Museum, at Harvard, \$70,560; University of Virginia, \$51,000; Princeton College, \$33,272; Coronado Beach

Museum, California, \$31,989; Central Park Museum, New York City, \$28,048; United States National Museum, Washington, \$20,837.

In the entire list only three museums have spent as little as \$1,000 each in Professor Ward's great emporium of science. Twenty-nine states and territories came in for a share, and it is therefore easier to name those not represented than those that are. Though far distant, even Texas, Utah and California, have called for their share of collections.

But all this represents what has been done for one country alone, ours, the greatest of them all. It is only a modest fact, devoid of all boastfulness, when I state that there are only a few civilized, educated countries on the globe to which the Ward establishment has not sent natural history collections. To several of the countries of Europe they have been large and important, and every one of the "effete monarchies" have received something. In 1879, when wandering through Tokio, Japan,

an utter stranger in a strange land, I visited the Educational Museum; and there, in a large collection "from Ward," I beheld with the joy of old acquaintance the "stuffed and mounted" figure of the very puma that I shot on the Essequibo River, South America, in 1876. We shook hands most joyously. It is hard to say which was most glad to see the other, but I am told the puma is smiling yet. But, I hear the travelers ask, from whence do all these mighty collections come, and how are they obtained? I wish it were really in my power to tell you; for behind many a stuffed animal there lurks a thrilling story of travel and adventure. But, for the sake of illustration, let us take the year 1877.

In February, Professor Ward shipped home from Egypt a large collection of assorted mummies and other antiquities ("quality guaranteed, prices f. o. b."). There were also several



PROF. HENRY A. WARD.

boxes of petrified wood (which mark a glorious picnic on camel back to the Libyan desert near Cairo), stuffed lizards with spines all over their tails, fossils from the Pyramids, and ibex heads bought of mild-mannered Bedouin cut-throats from Sinai. A little later he sent home more boxes full of queer marine things from Jedda, and Massowah, on the Red Sea; and three months later was with his son, Henry L. Ward, in South America, despoiling monkeys of their skins and working up manatees into "specimens." At that same time I was ravaging India in his interest, harvesting long-snouted crocodiles in Northern India, Indian bison, bear, tiger and monkeys galore in Southern India (twenty-six big cases all told), and fishes, corals, crocodiles and more monkeys in Ceylon.

A Dundee whaling captain who returned that year kindly collected, "for Ward," three narwhals and a magnificent polar bear. He had previously collected two or three whale skeletons, the longest measuring seventy-two feet, and also the skeleton of a grampus—the "bull dog of the seas," who, whenever he feels

hungry, takes a bite out of the side of a whale.

At the same time a German baron, who killed a valuable man in a duel, and was suddenly seized with an intense desire to travel, was collecting gorillas in West Africa, all of which subsequently found their way to Rochester. In New Zealand, in Australia, in Montana, in British Columbia, in Alaska, and scores of other places there were resident collectors and hunters who were in lively correspondence with Professor Ward, and collecting for him whatever their respective localities yielded which it was worth while for a first-class scientific museum to have.

A moose hunter in Maine, who shot far better than he spelled, killed certain very homely big animals contrary to law, got arrested, and afterward reported the whole matter thus:

"friend Ward, i got you too moose, one Bull and ful growne Cow. Tha had me up twict fur moose, but i noct them hier than a kyte boath times. Wil send hides soone."

At the establishment on College avenue there is a constant inpouring of boxes, barrels and



THE FIRST BUILDINGS OF THE WARD ESTABLISHMENT.



GROUP OF BUFFALOES FROM THE WARD ESTABLISHMENT.

crates from all parts of the world, usually filled with raw material—sometimes very raw, and smelling most abominably! To offset this, there is a constant outgoing of specimens of all sorts, all beautifully prepared and ship-shape, mounted on polished pedestals for display, fully and correctly labeled, each one fitted to perform its part in lessening the total sum of human ignorance.

In all this there is nothing that even suggests the curiosity shop or the dime museum. On double headed calves, monstrosities in general, and relics of all sorts, the law of the establishment has laid the grand taboo. There is enough to handle that is purely scientific and educational. The establishment consists of twelve separate and distinct scientific departments, housed in sixteen buildings, several of which are quite large. The working force usually consists of about twenty-five persons, the great majority of whom are trained experts. It requires nineteen printed catalogues, some of them half as large as this magazine, to adequately set forth to scientific students, educators and institutions the magnificent array of objects that are offered them for sale.

What are the departments? We cannot stop to name all, but the most important must be noticed. In the department of zoology there are several buildings full to overflowing with strange beasts and birds, and creeping and swimming things from every clime and country on the globe. No living creature is too small to be caught in the meshes of the great universal drag-net of Ward's Natural Science

Establishment, and neither the elephant nor the whale is strong enough to break through. "If you cannot kill elephants with any of the ordnance you have with you," wrote Professor Ward to me when I was hunting elephants for him in Southern India, "then get a howitzer. Anything to bring them down!"

One building you will find devoted to skeletons, and the osteologists who clean and mount them so beautifully. Another building is filled with the skins of animals, carefully arranged, and well poisoned against the festive moth and bacon beetle. The ground floor of the "large museum," where Jumbo was mounted, is occupied by a corps of taxidermists, toiling and moiling to make hard and shapeless skins take on once more the form, the pose, and the expression of life. They are mostly patient men, but when some fool collector has served one of them a particularly ill turn, take heed what ye hear, and tell it not in Gath. In the museum, which is merely a store-house for choice finished specimens, there is one great room filled with skeletons of a thousand kinds, and another devoted to stuffed animals. In two other large buildings is a superb collection of wonders from the sea—beautiful shells, corals, star-fishes and the like, while still another large hall is entirely filled with Professor Ward's wonderful collection of sponges. The latter is one of his pet collections, and is undoubtedly the finest in the world. It contains about 2,000 specimens, and is worth \$10,000. There is no time to mention the "shell house," crammed full of shells, and also containing the collec-

tions of birds' eggs—because they, too, are shells, I suppose.

The department of human anatomy has lately risen to high rank in this unique institution, and now occupies an entire building. The department of mineralogy is the oldest of all, and occupies a separate group of buildings as a tenant-in-common with the departments of geology (rocks and meteorites) and paleontology (fossils and restorations). Under the latter belong the wonderful series of casts of celebrated fossils, without which no scientific museum can be complete. A museum can exist without money; it can survive without a

man with a closely trimmed grey beard, rather scanty gray hair, keen, piercing gray eyes, old-fashioned gold spectacles, a big leather satchel, and a seat full of letters, pamphlets and books, it will surely be Henry A. Ward, A. M., F. G. S., etc.

His height is five feet eight, and at present his weight is 172 pounds. If one could examine him, analytically, it would be found that internally he is composed of raw-hide, whale-bone and asbestos; for surely no ordinary human materials could for forty-five years so successfully withstand the bad cooks, bad food and bad drinks that have necessarily been encoun-



GROUP OF ORANG-UTANS, FROM THE WARD ESTABLISHMENT.

good curator, and in spite of a bad one; but Ward's casts of fossils it must have. Shall the museums of Europe boast sole possession of the megatherium, the glyptodon, the dinosaur, or the Plesiosaurus Cramptoni? Thanks to the Rochester man-who makes museums, every American student may have all these in his own study if he chooses to do so, and his floor is strong enough.

Professor Ward's history and personality is as strange as his profession.

The next time you are traveling by rail—not in the smoking-car, however, for he never uses tobacco—and see a studious, preoccupied

tered by any one who has, so recklessly of self, traveled all over creation.

On March 9, 1834, Professor Ward was born on Bay street, in Rochester. His mother was a most exemplary woman, but rigid and even puritanical regarding religious observances, especially the observance of the Sabbath.

At ten years of age, master Henry failed to harmonize with his parental environment. Having provided himself with a little brass pistol, at a total cost of seventy-five cents, he ran away from home, boldly struck out for Chicago, and after long weeks of walking and riding, he actually reached his goal. It was

his plan to build for himself a wickiup on the edge of the prairie near the city, shoot prairie chickens, and sell them in the open market, for cash.

During his first day's experience on the Chicago prairie, he encountered a good Samaritan, who chanced to be the gentleman after whom Clark street was subsequently named. Mr. Clark kindly extracted the lad's story, took the embryo market hunter to his own home, "and grossly betrayed my confidence," said Professor Ward, "by writing to my Uncle Moses, who sent one of his clerks after me, who ignominiously took me back to Rochester. But at the Rochester depot I gave him the slip, went home without him, and he went back to Buffalo, where he spent two days watching for me to get on a boat bound for Chicago."

I doubt if any boy ever wrestled harder with circumstances to win an education than did young Ward during the two and a half years he spent at the Middlebury Academy at Wyoming, N. Y. By virtue of his official position (as janitor), he lived in the top of the academy building, and supported himself by doing more kinds of work than many a boy of to-day has ever seen done. As opportunity offered, he did carpentry, shoemaking, gardening, painting, and livery stable work. One of his specialties was cleaning out wells. In September, 1848, while the late well-known agricultural publisher, Orange Judd, tramped the road between Warsaw and LeRoy repairing clocks, Ward and his partner went over the same route, cleaning out wells on a very profitable basis.

After Warsaw Academy, he went to Williams College, at Williamstown, Mass., where he was a fellow student of Senator Ingalls, and Honorable Charles E. Fitch. There, also, he supported himself by hard work in hours filched from periods that should have been devoted to study and recreation. His best friend was Professor Emmons, the geologist, who showed him the path that afterwards led to geology and mineralogy, and started him therein.

In speaking of that period of his life, Professor Ward admits that he was a bad student in all his

studies except geology, mineralogy and the languages, in which he always stood high.

"How were you in mathematics?" I inquired.

"Oh, horrible! I couldn't do a thing, and cut the examinations entirely."

In 1853 Professor Louis Agassiz came to Pittsfield, Mass., twenty-eight miles from Williamstown, to deliver a lecture. The college boys hired a band wagon and drove over. The fare was seventy-five cents, and being without money, young Ward walked the twenty-eight miles to the lecture. Arriving late and weary, he watched his opportunity when the great naturalist paused to draw a figure, and asked an old gentleman who sat beside him for pointers as to what had gone before.

"Did you not hear what the Professor said?"

"No, I had to walk from Williamstown, and it made me a little late."

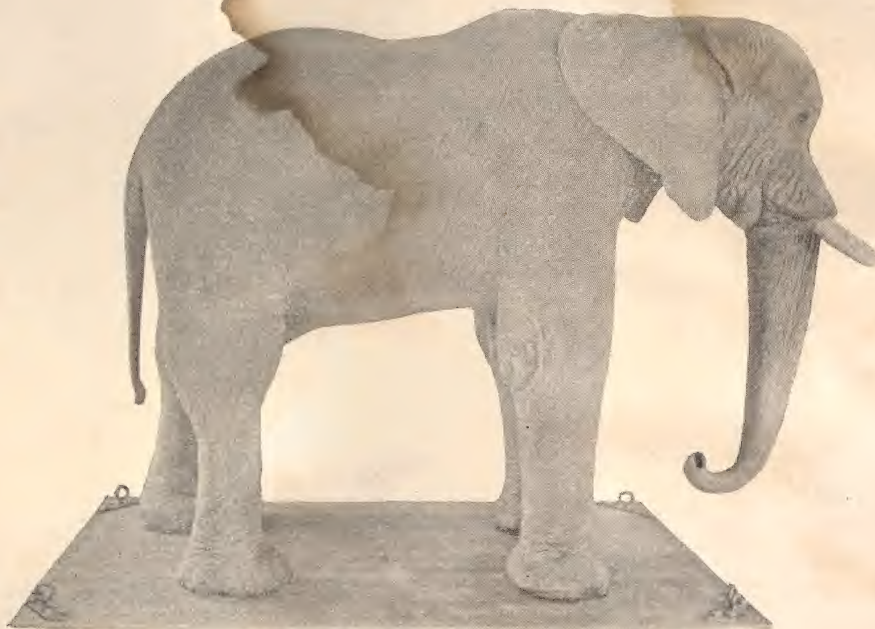
"What? you walked from Williamstown to this lecture?"

"Yes."

"Well, well, well! The Professor must



THE LEWIS BROOKS HALL OF SCIENCE, UNIVERSITY OF VIRGINIA.



JUMBO, MOUNTED AT WARD'S.

know it; and you must meet him when the lecture is over."

After the lecture Ward was introduced to Professor Agassiz, and invited to visit him at his hotel. The direct result of the fifty-six mile walk to hear one lecture was that the walker went at once to Cambridge, and became a pupil of the great Swiss naturalist—the teacher who would not allow his pupils to use books, compelled them to learn by observation, and taught them to use the simplest words in their scientific work, instead of polysyllables.

At Cambridge young Ward and "Charlie Wadsworth" became such fast friends that ultimately General Wadsworth took the two boys to Paris with him, gave Ward a year's course of special instruction in the School of Mines, and to crown all, afterward gave the lucky boys a glorious trip to Egypt, up the Nile to the third cataract, winding up with Suez, the Holy Land and Asia Minor. Thus began the long series of delightful journeys over the face of the earth so dear to the heart of Henry A. Ward, from which he will never rest permanently so long as he can climb the steps of a car, or cross a gang plank without falling off.

After the close of the great Egyptian picnic, young Ward resumed his studies in Paris. The only regular feature about his course was running out of money. He would study in the

School of Mines and the museums until almost penniless, when he would drop his books, and hasten to the gypsum and chalk quarries of Montmartre and Meudon. There he would gather a load of good minerals and fossils, pack them in his trunk, cross the channel to London, and sell them to the British Museum, the School of Mines, or wherever else a buyer could be found.

He was not long finding out that British fossils and minerals were also salable in Paris, and forthwith he tapped the mining regions of Cornwall and Cumberland. Often he returned to Paris with quite a large sum of money in his pocket, sometimes amounting, he slyly says, to as much as \$40! Having completed a second series of sales, the scientific commercial traveler would again settle down to his eclectic course of study in the School of Mines, Garden of Plants, College de France and Sorbonne, and study until his depleted treasury obliged him to start out, collect more specimens, and again take the road.

At Epernay, sixty miles east of Paris, good Madame Cliquot had a large vineyard which produced the very fine brand of champagne, bearing her name. Certain strata of the Paris Basin, of the older Eocene age, cropped out with very fine sections on the estate of Madame Cliquot, and brought to light certain fossils

that were then little known, and valuable. If Professor Ward ever sets up a new coat of arms for his posterity, surely it should contain somewhere the figure of a long, trumpet-shaped shell of the genus *Cerithium* (*C. giganteum*), on a carpet-bag, couchant.

Thanks to the conciliating diplomacy that every collector must possess to be successful, and to the generous good nature of Madame and her manager, the young American who spoke such excellent French was given a cinch on the fossils underlying a portion of that

Ward had extended his field of commercial activity over the whole of it. "I never traveled third class when I could go fourth," said the man of many trips, "but I went all over Europe, selling specimens to museums, and collecting to sell elsewhere. I went to Brussels, Hamburg, Copenhagen, Berlin and Vienna repeatedly, and finally covered Sweden, Russia and Spain. To me the stupidity of those European museum men about gathering specimens from other countries than their own, seemed really curious, and I soon found not



PROF. WARD'S HOME ON COLLEGE AVENUE.

estate, and told to work his will. He hired workmen at forty cents per day, and for several summers he mined and counter-mined his concession so successfully that many score of those curious fossils (the *Cerithium*) now repose in British and continental museums, each having yielded a benefit to the purveyor of from \$5 to \$10. Nature kindly made them just small enough to pack successfully in a trunk, and also light enough to carry in a satchel when necessary.

Notwithstanding the noise it makes, Europe is a small country; and in a very short time

only pleasure but profit in supplying their wants. There is a certain spice of excitement and exhilaration in finding a specimen that a certain man desires very much, and in taking it to him."

Thus was developed the germ of Ward's natural science establishment. The history of that strange and unique institution really dates back to the Paris basin, and the *Cerithium* quarry in the vineyard of Madame Cliquot. The making of the great Ward cabinet of minerals, and its purchase for \$20,000 by means of a popular subscription for the University of

Rochester, is merely an important incident in the development of the idea. A still more moving cause was the appointment of young Mr. Ward, after five years' study and work abroad, to the professorship of mineralogy, geology and zoology in the University of Rochester. It was during his work there as a teacher that he found how seriously every American teacher of science was hampered and handicapped by the lack of tangible representatives of the beasts, birds and reptiles that abounded in geologic times, and are now extinct. Therefore, for several years in succession, he spent his vacations in the royal museums of Europe, making plaster-of-paris moulds of their rarer and more striking fossils, from which he was afterward enabled to make perfect plaster copies of the originals for his beloved cabinet in the University of Rochester.

The outcome might easily have been foreseen by a blind man. No sooner were those wonderful casts brought forward than other institutions of learning sought copies from the same moulds, and "Ward's Casts of Celebrated Fossils" was the final result. American teachers and students, to whom the originals were inaccessible, were delighted with them.

Illustrated descriptive catalogues were issued, the largest of which we used in my *alma mater* as a text book! The casts became exceedingly popular, and were an important factor in the final upbuilding of what is now the Ward establishment. In arranging to furnish educators generally with duplicate series of his casts of fossils, Professor Ward became deeply impressed by the needs of American teachers and museums of science for more illustrative material of all kinds for object teaching. He also became acquainted with so great a number of scientific men, and his interest in supplying their wants finally became so keen that in 1869 he gave up his professorship in the University of Rochester.

Embowered in the stately elms and spreading maples that overarch College avenue, almost in the shadow of the main building of the University, there now stands a group of sixteen buildings of about twelve different sizes, each with a gilded totem at its peak to show the place in nature of its contents. Over

the wide gateway to the court yard where boxes are delivered and shipped, the lower jaws of an immense right whale form a gothic arch. As you enter, a conspicuous placard informs you, in the most business-like way in the world—



AN ORANG-UTAN.

THIS IS NOT A MUSEUM,
BUT A WORKING ESTABLISHMENT,
Where all Are Very Busy.

If you doubt it, glance in at the open doors as you pass along, and note how busily the different groups of workers are wrestling with half stuffed orang-utans, half-mounted buffalo skeletons, with shells and corals, minerals,

rocks and fossils.

Adjoining all these buildings on the north is a spacious and well-lighted square house, in the upper right hand corner of which is "the study,"—dear to the memory of I cannot tell you how many naturalists, both young and old. In the front right-hand corner of the big study, which is walled with books, barricaded with maps and eternally littered with scientific papers and pamphlets and photographs and drawings and small specimens, there sits the presiding genius of this unique world. No man is more busy than he, yet Abraham Lincoln himself was not more approachable, nor more kind toward everyone desiring to see him.

Twenty-one years ago, when I was an ignorant, unattractive and bumptious college student, no sooner did I hear of this strange man than I fired a letter at him, modestly stating that I would like to have him teach me everything I most desired to know. When Professor Bessey read his kind, and even fatherly reply, he remarked with vigor, "Well, that man is no churl, that's plain." And truly he was not, as many an American naturalist can testify. It was here that G. K. Gilbert, now chief geologist of the United States geological survey, made his start in the field in which he is now distinguished; and so did the late Prof. James Orton, of Vassar college; and Frederic A. Lucas, curator of comparative anatomy at the National museum; and Prof. Walter B. Barrows, now of the Michigan Agricultural college; Prof. F. W. Stebbins, of the Massachusetts State Normal school; Mr. Edwin E.

Howell, now in Washington with an establishment of his own; Mr. Arthur B. Baker, of the National Zoological park; Mr. Charles H. Townsend, naturalist of the United States Fish Commission steamer *Albatross*, and Mr. J. W. Schollick, osteologist at the National museum. Professor Ward's two grown sons, Charles H. and Henry L. Ward, are still like a part of himself, but each fills a responsible position in the establishment as an expert, the former

as the head of what is now the department of human anatomy, of which the establishment is justly proud, the latter as paleontologist.

Scores of other men have been trained here in various branches of scientific work, and have gone forth to fill positions of responsibility. The Society of American Taxidermists, which in five years' time wrought a complete revolution in taxidermic work in America, was founded here in 1880 by Professor Ward's tax-



A GROUP OF PROF. WARD'S WORKMEN.

idermists, and in all its work always received from him hearty sympathy, as well as active support and coöperation. It is my firm conviction that no man living has done as much toward the promotion of the art of taxidermy as has been done by Henry A. Ward and the influences created by him. He is no taxidermist himself, and never was; but he knew how to promote the production of fine work, and he believed in quality rather than quantity.

Of all the travelers I have ever known, aye, or ever heard of, Professor Ward is the most persistent, and I may still say, unsatisfied. It is true, the needs of the establishment require that some one should be very much "on the road," not only in keeping up the supply of good, salable collections, but also in keeping in touch with the museum men of the world, and selling them collections. I, too, love to travel; but it makes me feel both tired and homesick to think of all the trips abroad he has taken. There is hardly a nook or corner in the United States that he has not been to or through, and the same is true of Europe. Egypt, Nubia, Arabia and Somaliland are merely nice winter playgrounds for him, and Zanzibar, Abyssinia, Mozambique, Zululand, Natal, Cape Colony and Griqualand, 800 miles in the interior of South Africa, have all been ransacked by him for specimens. So also with Japan, Australia, Patagonia and Brazil.

When still a beardless young man he went up the river Niger in time to tell David Livingstone all about that country in Sir Roderick Murchison's London drawing room. On the African island of Fernando Po he was put down on the sand to die comfortably of African fever, but was rescued and nursed back to life by a negro woman. But for Mrs. Showers, a washerwoman for ships, and a missionary to the heathen, there would have been no Henry A. Ward these last forty years, and no natural science establishment in Rochester.

But why do I try to enumerate the countries and places that have been visited by this traveler, when I can more easily name those he has not visited? There are certain portions of the interior of South America, and of China, Japan, Siberia and Thibet that he knows not by sight. He has never been to the Arctic regions, for he finds cold weather very disagreeable, nor to Kerguelen Island. Excepting the above localities, the world is his. "One of the greatest pleasures

I find in looking back over the growth of the establishment," said he in a recent conversation, "is in thinking of the acquaintances I have made in so many parts of the world, the linking of so many kinds of men to myself, as it were. It seems as if I had actual lines out to all those countries; and in the humanitarian spirit which recognizes all mankind as one blood, it is delightful to me to recognize 'my brothers' in the people I have met all over the world, savages and all. At Berberah last winter I felt like saying to those Somali Arabs, 'How do you do? I have felt for years as if I knew you, and now I have come to see you.' One result of my roaming is that it has given me a feeling of kinship for all mankind; and to me it illuminates the world!"

Thousands of people there are, also, who know Professor Ward only by correspondence, all written by his own hand, and the cords of letters he has written since I first knew him remind me of his handwriting. It is peculiar, and once seen is never forgotten. It is so heavy, so run together, and so peculiar that it caused one of his western correspondents to protest as follows: "If you should ever try to get up a writing school in this vicinity, I will do all I can against you. Why will you persist in writing with a sharp stick, when pens are so cheap?" But there is balm in Gilead, and now that Professor Ward's charming daughter Alice has attained to womanhood, she is not only the head of his small household, but still further lightens the cares of her father by acting as his secretary, and writing many of his letters on a machine.

Naturally one is curious to know the religious belief of this strange cosmopolitan, who has hobnobbed with American puritans, French infidels, Mohammedan Arabs, Chinese, Buddhists, and goodness only knows what else. While going down the Red Sea with him, bound for the great hot-bed of Mohammedan fanaticism, Jedda, I put the question.

"I am an agnostic," was the answer; "but I would like to be called a Christian agnostic. I would like to be spoken of as one possessing the high hopes and ideals of Christianity, except that mine are based on data entirely distinct from those on which Christians base theirs. In short, I say of many of the highest claims and promises of the Christian religion that I accept them as possibilities, the only difference being that while a Christian says, 'I know it to be so,' I say, 'It may be so.' I look upon the dogmas of Christianity as eminently

well characterized in the Scotch verdict, "Not proven," and on that account the word agnostic expresses my exact standing in religious matters."

I have often wondered how Professor Ward will start on his last journey; whether it will be by accident, or sudden and violent illness in some foreign hotel or steamer; or will the point be reached when the insatiable traveler is physically unable to travel abroad, and old age compels him to end his days peacefully at home. One thing only about this causes him great concern. He is really haunted by a fear that he may chance to die so far from Buffalo that he cannot be seen in any and aesthetically cremated, and will be compelled to undergo the ignominy of interment and slow decomposition in mother earth!

At present he is looking forward to ending his years in quiet study. The establishment has recently been transformed into a stock company, with a capital of \$125,000, fully paid up. Of the ten stockholders he of course is one, and also is president.

All of the stockholders live in Rochester, and the most of them put each capital into the establishment because they held that its existence there was an honor and a benefit to the Flower City. It would be base ingratitude to fail to speak gratefully of the generous and enthusiastic financial support accorded Professor Ward's unique enterprise by his uncle, Levi A. Ward, during his life-time.

In spite of the enormous sales that Professor Ward has made, and continues to make, there is comparatively little clear profit in the business. The expenses absolutely necessary to its existence are, in the aggregate, very heavy, and somehow manage to absorb what should be handsome profits. The secret of this may perhaps best be explained by quoting from one of the late yearly reports of the National Museum at Washington. In speaking of the advance made by American institutions in natural science equipments, Dr. Goode says:

"In this connection should be mentioned the very important influence of Professor Henry A. Ward, who in the conduct of his Natural History Establishment at Rochester, was al-



BUFFALO SHOT BY GRAND DUKE ALEXIS.

ways evidently actuated quite as much by a love for natural history and the ambition to supply good material to museums, as by the hope of profit, which was always by him subordinated to higher ideals in a manner not very usual in commercial establishments."

Personally, Professor Ward is by no means a rich man, save in education, observation and acquaintance with man and nature all over the habitable globe. Of riches which cannot be stolen or lost, he is indeed "well seized;" and are they not full compensation for the lack of millions of unresponsive dollars that some millionaires possess without the intelligence or the heart to make them yield the highest joy? I think so.

WILLIAM T. HORNADAY.

[Original Contribution.]

THE TULIP MANIA IN HOLLAND.*

REGARDING ribbons, Charles Dickens sagely remarks in the *Christmas Carol* that they are so cheap you can make a brave show with them for sixpence. The same thing may be said nowadays of tulips. So easily may they be procured, and with such little difficulty cultivated in our gardens that one can hardly understand how the bulbs from which these gorgeous flowers spring could ever have commanded the price of precious stones. Yet such was the case in the land of the Dutch in the first third of the seventeenth century.

Could Conrad Gesner have been able to forecast the future and get a prophetic glimpse of the evils his praises of the flower he saw for the first time in the garden of Counsellor Herwart were fated to bring upon his countrymen, he would no doubt have kept his discovery to himself.

Counsellor Herwart lived in Augsburg, and was famous for his collection of rare exotics. Among them were some brilliant flowers grown from bulbs sent him by a friend in Constantinople, where their beauties had long been appreciated.

Gesner on his return home spread abroad the praises of this plant so effectually that in the course of the next few years tulips were much sought after by the wealthy, especially in Germany and Holland. Rich folk at Amsterdam did not begrudge sending direct to Constantinople for bulbs, and were quite willing to pay big prices for them.

As years went by the tulip continued to increase in reputation until it was as incumbent upon persons of fortune to have a collection of them as to keep a carriage.

Nor was the interest in them confined to the wealthy. The rage for their possession soon spread to the middle classes of society, and merchants and shop-keepers, even of moderate means, began to vie with each other in the size or strangeness of their collections, and in the preposterous prices paid for bulbs. A trader at Harlaem was known to pay one-half of his fortune for a single root, not with the design of selling it again at a profit, but sim-

ply to cultivate it in his own conservatory for the admiration of his friends.

In explanation of this extraordinary interest in a single variety of plant, the following lines of Cowley may be quoted:

"The Tulip next appeared, all over gay,
But wanton, full of pride, and full of play;
The world can't show a dye but here has place.
Nay, by new mixtures, she can change her face;
Purple and gold are both beneath her care,
The richest needlework she loves to wear;
Her only study is to please the eye,
And to outshine the rest in finery."

But, poetic as this portrait is, the prose of Beckmann probably gets nearer the mark. "There are few plants," he says, "which acquire through accident, weakness or disease, so many variegations as the tulip. When uncultivated, and in its natural state, it is almost of one color, has large leaves, and an extraordinarily long stem. When it has been weakened by cultivation it becomes more agreeable to the eyes of the florist. The petals are then paler, smaller, and more diversified in hue; and the leaves acquire a softer green color. Thus this masterpiece of culture, the more beautiful it turns, grows so much the weaker, so that with the greatest skill and most careful attention it can scarcely be transplanted, or even kept alive."

Any one familiar with the modern mania for orchid-growing and collecting must at once see the secret of the old-time craze for tulips, although it is not easy to understand a whole people being infected with it at once.

Yet, true it is that in 1614 the craze among the Dutch for the possession of rare varieties was so great that the ordinary industries of the country fell into neglect, and the population, down to the lowest ranks, embarked in the tulip trade.

Charles Mackay, to whom I am indebted for much of my information, states that prices rose rapidly until in the year 1635 persons were known to invest a fortune of 100,000 florins in the purchase of forty roots! It became necessary to appraise the bulbs by their weight in *perits*, a *perit* being less than a grain, just as

*This essay will form a chapter of "The Romance of Commerce," a charming book by Mr. Oxley, to be published soon by Thomas Y. Crowell & Co., New York.—The Editor.