the Chinese war junks of the past, will be again brought into service. I chatted the other day with Capt. Impey of the Monocacy, of the American navy, about these. He describes them as the most horrible weapon known to man. The smell from them is so suffocating that no one can withstand them, and when they explode they often set the ships on fire and tear the skin from the bodies of the men on board. It is not probable that they would be of great value in the present prospective war, but those people who have used them in the past would not hesitate to adopt anything that might be invented of the same nature in the future.

Frank G. Carpenter

THE AGRICULTURAL COLEGE.

Agriculture as an art is as old as the human race. Agriculture as a science is of only recent development, if it is not still in the process of evolution. Sagacious American statesmen saw long ago that the tilling of the soil, the foundation of all industries, the industry without which there never has been, and never can be any civilization, the industry which, if carried on successfully, recognizes more natural laws, employs more natural forces, demands greater intelligence, skill and patience, but promises more certain returns, and affords more satisfaction than any other calling, should be specially fostered, and should have placed at its disposal special facilities for its scientific development; they wisely provided therefore for its encouragement and support. Nearly half a century ago, Michigan established an industrial school under the auspices of the State Agricultural society. A quarter of a century ago, other states began to establish such schools. Gradually various other departments have been added, until at length many have become universities, like Cornell, Champaign, Columbus and Purdue. Now every state and territory has its school of this character, either as an independent institution, or a department of its state university.

Our institution is four years old. One of the youngest of the agricultural colleges, it yields to none in its enterprise and determination to become a first-class institution whose object shall be the intelligent investigation and application of subjects relating to agriculture, and the mechanic and domestic arts. But beyond the education of young men and young women into higher methods, and better processes in their chosen industries, this education undertakes to guide them into a more cultured and practical manhood and womanhood. There is nothing original in its idea. It has had the good fortune to be able to select the best ideas and best methods established in a score or more of older schools of the same sort, from Maine to California. Men and women trained in these older schools for their special lines of work, have been placed in its faculty. Subjects whose value for their purpose, has been proved beyond question, have been placed in its curriculum. Its organization, equipment, means of illustration, methods of instruction, as well as its fundamental purpose, have been approved in the institutions from which they have been transplanted. If it achieves its purpose, like its predecessors, it will not only dignify the character of labor, but it will illumine with a new light the path of the farmer, the mechanician, the housewife; a new interest and new pleasure will urge them forward to further improvement. It will bring the intellect to the aid of the hand, and awaken an appreciation of the full dignity of their chosen pursuits. While still in its "pioneer" stage, still subject to chills and fevers, mostly chills, it is rapidly getting out of the sage brush; and while so far, pulling brush and picking up rocks, grading lawns and digging ditches, have afforded no remarkable opportunity for the application of science, the farm, and garden, and orchard, and herds, the library, laboratories and shops that have been meantime developing, already offer means and material for careful investigation. We stand today well equipped for work, and able to meet all just and reasonable demands. Four short years amply demonstrate the ability of the college to do a great work, and render the citizens of this Territory estimable service. More than seven hundred students have already taken advantage of its facilities. Twenty men and women, mature enough to have arrived at independent reasoned conclusions on their subjects, but young enough to be full of zeal and enthusiasm in their work, now comprise the faculty of instruction.

But citizens want to know more fully the details as to our plant, our personnel, our purpose. Thinking men are not satisfied with these general statements. The location is beautiful. The Cache Valley is one of the most charming in the Territory, situated on a bench just east of the city of Logan. The college over looks the entire valley, with its rich fields and thriving villages. The cluster of college buildings situated on the brow of the hill, and having its background of mountain scenery, is an imposing sight from the city. The clean, well-lighted, well-furnished class and lecture room, the broad corridors, the well equipped library and laboratories, give the inside of the building as much attractivness as the situation and surroundings give to the outside. But buildings and apparatus and libraries do not make a college. The old collegium was a collection of men; men to teach, men to learn. This is still the essential thing. The college has the following departments, the professors in which with their assistants do work in most of the different courses. Agriculture, botany and horticulture, chemistry, physics, matbematics, veterinary science, biology, English literature, modern languages, elocution, mechanical engineering, civil and irrigation engineering, domestic economy, sewing, music, book-keeping and business law, military science, mental and moral science, and political economy.

A notion sometimes prevails, that because these schools are called agricultural colleges, nothing can be learned in them but planting corn, digging potatoes, milking cows, breaking bronchos, and hoeing turnips. How false this is, may be easily shown. Extended instruction is given in farming, from the scientific side—the exposition and application of the laws of agricultural chemistry, physics, physiology, the relations of soils to vegetation, and of fertilizers and moisture to both, cultivation, rotation, and marketing of crops, together with the care of farm buildings and implements, and the breeding and management of stock. Theoretical instruction is supplemented, illustrated and enforced by actual practice on a farm of one hundred acres, with modern buildings, implements, and the best breeds of animals. This farm is supposed to be managed according to the best methods, so that the students who rightly use their opportunities may gain the most essential knowledge and skill in most of the details—the fundamentals of farming.

The departments of botany, horticulture, chemistry, physics, biology, animal industry, veterinary science, are directly contributory to the science of agriculture. Each has its fine laboratory and its valuable apparatus for illustrating. The horticultural department has its experimental gardens and forcing house to illustrate class-room instruction. The animal industry department has its farms with flocks and herds, and its dairy house with all the facilities for making butter and cheese. The veterinary department has its collection of anatomical and physiological specimens, its museum, dissecting room and operating room. The chemical and physical departments have their laboratories where gases, liquids, solids, minerals, soils, foods, anything compound, may be trusrworthily analyzed into its ultimate elements and other proportions. Here students may not only see the instructor illustrate the principles in the lecture, but they themselves may repeat, vary, and verify his work. This is also true of the work and the equipment in the other natural science departments. It will be seen that hoeing corn and sprouting potatoes do not constitute all the instruction *in farming*.

But there are several other courses of study besides the agricultural course. The grant of land from the United States contemplated the endowment, support, and maintenance of at least one college whose leading object shall be, without excluding other classical and scientific studies, and inciuding military tactics, to teach such branches as are allied to agriculture and the mechanic arts. Instruction in the mechanic arts is, under the terms of the grant, as imperative as in agriculture. The promoters of the land grant were in advance of the general public sentiment. Its leading spirits saw that in the near future, industrial training in all its phases would be a potent factor in our system of education; and that as the mechanical industries grew, instruction in the mechanic arts would become a commodity of lively demand. It has been so for nearly a decade. In colleges all over the country, some of the brightest minds have been devoting themselves to this new line of work. Continental Europe, much our senior in these industries, long ago saw the necessity for this kind of education, and for a half a century has been giving special attention to technological schools, and forwarding the sciences underlying all the industries. The result has been astonishing. England, once as imperial a mistress of the industrial world as of the commercial world, became alarmed at the competition of nations that for decades had been her greatest purchasers. Investigation showed that ability to compete with her in manufactures, was attributable to the schools of technology;