THE ARROW

ART INDUSTRY SCIENCE

Publication of the United States Indian School, Carlisle, Pa.

Vol. II FRIDAY, MARCH 30, 1906. No 31

THE GRADUAL GRADUATE.

GRAMMAR SCHOOL.

He strides upon the brilliant stage,
Bows lightly to the loud applause,
And, with the wisdom of a sage,
Dec aims "The Cosmos and Its Cause."

HIGH SCHOOL.

Again the hero of a night,
His head is high, his voice is sure
He squarley looks across the light
And speaks "Our Country and Its Cure."

COLLEGE.

Now, with the right to sign "A. B.,"
But hardly with his spirit less,
He grasps his signed and sealed degree,
And reads "The Threshold of Success."

POST-GRADUATE.

Prepared with all the schools may teach
He figures at a public dinner,
And gives a careful little speech
Upon "The Chance of a Beginner."

LIFE.

The years roll by. He wins his way
Hard through the thick of modern strife
And haltingly puts down some day
"Thoughts on the A B C's of Life."

DEATH.

His honors crown his weary brow;
He lives life to the fullest scope;
Gently he makes his final bow,
And breathes his theme, "A Humble, Hope!"

—*Louisville Herald.*

HON. FRANCIS E. LEUPP.
COMMISSIONER OF INDIAN AFFAIRS

COMMENCEMENT.

FIFTEEN GIRLS AND FIFTEEN BOYS RECEIVE DIPLOMAS.

EIGHTY-ONE BOYS AND GIRLS RECEIVE INDUSTRIAL CERTIFICATES.

The commencement exercises of Class 1906 were held Wednesday and Thursday, March 21st and 22nd. The Class is one of the best in the school's history.

Wednesday afternoon from 1 to 3 o'clock was given over to the inspection of industries. At three o'clock in the gymnasium, the following program was given:

1. MILITARY DRILL - Troop "A"
2. FLAG DRILL
   by 32 Small Boys and 16 Small Girls
3. WAND DRILL - - by 90 Girls
4. BASKET BALL GAME
   between Senior and Sophomore Girls
5. CLUB DRILL by 42 Girls and 42 Boys
6. HEAVY GYMNASTICS - by Boys

In place of the usual "experience" meeting on Wednesday evening, the following gymnastic and musical program was given:

1. BASKET BALL GAME
   between First and Second Teams.
2. FLAG DRILL
3. WAND DRILL
4. MILITARY CALISTHENICS, BUTT'S MANUAL by selected Troop

MUSIC BY BAND

1. ORIENTAL ODDITY
   "The Star Of India" Bratton
2. PICCOLO SOLO "Through The Air" Damm. NICODEMUS BILLY.
3. SELECTION from "Faust" Gounod
4. SOUSAPHONE SOLO "The Morning Light is Breaking" Brooks. LOUIS F. BEAR.
5. SELECTION
   "The Pearl and the Pumpkin" Bratto
   "STAR SPANGLED BANNER"

The Academic Department was inspected Thursday morning. Thursday afternoon the graduating exercises were held in the gymnasium. Shortly after two o'clock the students marched in to the cadence of an inspiring march played by the band.

On the platform with Major Mercer were Hon. Francis E. Leupp, Commissioner of Indian Affairs; Bishop James H. Darlington of Harrisburg, Dr. Sheldon Jackson, Rev. H. G. Ganss, Judge W. F. Sadler, and Rev. G. M. Diffenderfer.

Major Mercer in a very brief address extended a most cordial welcome to all present. Rev. Diffenderfer followed with a fervent opening prayer. The following program was then given:

OVERTURE "PIQUE DAME"—Suppe BAND
FARMING - - WALLACE DENNY
DRESSMAKING - MARY E. RUNNELS
HARNESSMAKING WILBUR A. PEAWO
SCHOOL SONG
"HAIL TO THEE CARLISLE"
LAUNDRYING - - - BLANCHE F. LAY
PRINTING - DOCK G. YUKKATANACHE
HOUSEKEEPING - CHRISTINE CHILDS
CARPENTRY - - - ARCHIE DUNDAS
(INDUSTRIAL CERTIFICATE)
CORNET SOLO "LE SECRET"—HAZEL JOHN HARVEY
BLACKSMITHING ALBERT A. EXENDINE
ORATION "WHY I AM PROUD OF MY RACE" CHAUNCEY C. CHARLES
DECLAMATION "HIAWATHA" LOUIS F. PAUL
SONG "CANTE MA SICA" (My heart is sad) SIOUX INDIAN SONG
PRESENTATION OF DIPLOMAS
HON. FRANCIS E. LEUPP
Commissioner of Indian Affairs
SONG "AMERICA" AUDIENCE
BENEDICTION
REV. G. M. DIEFFENDERFER

The most noticable feature of the exercises was the practical nature of the essays as contrasted with the purely rhetorical of former years. Harness, leather, a printing press, type, an anvil, tools, etc. were on the stage, and were used by the different speakers in illustrating their subjects.

A new feature inauagurated this year is the awarding of Industrial Certificates to all students that have satisfactoinly completed an industrial course as taught at the school. This includes the trades and domestic sciences. The following students were graduated and were awarded

DIPLOMAS.

IGNATIUS IRONROAD	SIOUX, N. DAK.
J. EMMA LOGAN	WINNEBAGO, NEB.
BERTRAM M. BLUESKY	SENECA, N. Y.
WILBUR A. PEAWO	COMANCHE, OKLA.
MARY E. RUNNELS	SAN POIL, WASHINGTON
ALBERT A. EXENDINE	DELAWARE, OKLA.
CHARLES ROY	CHIPPEWA, MINN.
CHRISTINE CHILDS	CROW, MONT.
ROSABELL PATTERSON	SENECA, N. Y.
ABRAHAM M. HILL	ONEIDA, WIS.
ANNA E. MINTHORN	CAYUSE, OREGON
WILLIAM SCHOLDER	MISSION, CALIF.
ROSE E. MCFARLAND	KLAMATH, CALIF.
CHAUNCEY C. CHARLES	STOCKBRIDGE, WIS.
MARY L. GUYAMMA	WYANDOTTE, OKLA.
DOCK G. YUKKATANACHE	MOHAVE, ARIZONA
WALLACE DENNY	ONEIDA, WIS.
ELIAS J. CHARLES	ONEIDA, WIS.
MARION A. POWLAS	ONEIDA, WIS.
JULIETTE E. SMITH	ONEIDA, WIS.
BERTHA J DENNIS	SENECA, N. Y.
EUDOCIA M. SEDICK	ALASKAN
NICHOLAS C. BOWEN	SENECA, N. Y.
BLANCHE F. LAY	SENECA, N. Y
LOUIS F. PAUL	ALASKAN
ALDELINE E. KINGSLEY	WINNEBAGO, NEB.
CLARENCE L. FAULKNER	SHOSHONE, IDAHO
FRANK JUDE	CHIPPEWA, MINN.
KATHRYNE DYAKANFF	ALASKAN
EMMA BURROWS	YUMA, ARIZONA

The following pupils were awarded

INDUSTRIAL CERTIFICATES

CARPENTRY

Fritz Hendrick s,Caddo, Okla., James Schrimpscher, Wyandotte, I. T., Samuel Saunooke, Cherokee, N. C. Archie Dundas, Alaskan, Oscar Smith, Oneida, Wis.

COACHMAKING

Charles Mitchell, Assinaboine, Mont.

COACH TRIMMING

Jackson Saunooke, Cherokee, N. C.

HOUSE PAINTING

Charles Huber, Gros Ventre, N. D., Arthur Mandan, Mandan, N. D.

TINSMITHING

Henry Gordon, Onondaga, N. Y.

FARMING

Harry Archambault, Sioux, N. D., George Collins, Paiute, Nevada, James Compton, Shoshone, Idaho, Harry Cummings, Pawnee, Okla., John Feather, Menomonee, Wis., Daniel Hashorns, Sioux, S. D., Fritz Hendricks, Caddo, Okla., Wheeler Henry, Digger, Cal. Jonas Jackson, Cherokee, N. C., Alfred Jackson, Seneca, N. Y., William O. Jones, Cayuse, Ore., Jose Juan, Pima, Arizona., John D. Lajeunesse, Shoshone, Wyo., Joseph Miguel, Yuma, Arizona., Dana Mitchell, Penobscot, Me., William Moon, Stockbridge, Wis., George Ohmert, Delaware, Okla., Juan Osif, Pima, Arizona James M. Pabawena, Shoshone, Utah., Bird Partridge, Cherokee, N. C., Spencer Patterson, Seneca, N. Y., Eli Peazzone, Digger, Calif., Thomas Premo, Shoshone, Nev. Joseph Redfox, Sioux, N. D., Alexander Sage, Arickaree, N. D., Jackson Saunooke, Cherokee, N. C., Samuel Saunooke, Cherokee, N. C., Theodore Shelakoff, Alaskan., Herbert Sickles, Oneida, Wis., Thomas Smith, Cherokee, N. C., Harry Wheeler, Nez Perce, Idaho., Stephen Youngdeer, Cherokee, N. C.

HOUSEKEEPING

Margaret Martin, Shawnee, Cal., Phoebe Doxtator, Oneida, Wis., Maggie Cadotte, Chippewa, Wis., Sara Jackson, Cherokee, N. C., Zoa Hardin Pottawatomi, Okla., Stacy Beck, Cherokee, N. C., Ella Beck, Cherokee, N. C., Marie McCloud, Alaska, Elizabeth Baird, Oneida, Wis., Olive Webster, Oneida, Wis., Josephine Good, Sioux, N. D., Ada Kicks-the-Iron, Sioux, N. D., Olive Wheelock, Oneida, Wis., Stella Ellis, Sac & Fox, Okla., Maggie Reed, Cherokee, N. C., Josephine Charles, Oneida, Wis., Elizabeth Walker, Alaskan, Elmira C. Jerome, Chippewa, N. D., Lucinda Leroy, Stockbridge, Wis., Electa Metoxen, Oneida, Wis., Mary Murdock, Kickapoo, Okla., Laura Bertrand, Shawnee, Oklahoma, Emma Strong, Towano, Ore., Emma Webster, Oneida, Wis., Lou French, Walla Walla, Ore., Melissa Cornelius, Oneida, Wis., Lulu Coates, Oneida, N. Y., Elizabeth LaRocque, Chippewa, N.D., Virginia Larocque, Chippewa, N. D., Julia Jarvis, Osinagan, Wash. Josie Mark, Chippewa, Mich., Myrtle Ingram, Wylack, Ore., Annie Coodlalook, Alaskan, Savannah Beck, Cherokee, N.C. Stella Bear, Arickaree, N. D., Teresa Brown, St. Regis. N. Y., Lapolio Cheago, Papago Ariz., Sarah Jacobs, Chippewa, Mich., Polly Plentyfox, Arickaree, N. D.

➡ The adress of the Honorable Commissioner was full of wholesome advice to the graduating class.

THE ARROW

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THE ARROW.
INDIAN SCHOOL, CARLISLE, PA.

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PROVERB.

A well instructed people, only, can be a free people.

Rev. Fr. Ganss gave an impressive address. Because of the lateness of the hour, and the fact that many had to leave to catch their train, it was necessary to forego the anticipated pleasure of addresses from several speakers of note who were present.

Among the large number who pronounced the Commencement Exercises of 1906 the best they had ever attended at Carlisle, were several well known educators.

COMMENCEMENT NOTES

➡Among the visitors from a distance were Hon. Francis E Leupp. Commissioner of Indian Affairs: Dr.Sheldon Jackson, Chief of the Bureau of Alaskan Education: Bishop Darlington and sons of Harrisburg; Superintendent Hart of the Oneida School, Wisconsin; and Mr.James Stuart, Idaho.

The following country outing patrons attended Commencement.

Mrs L. H. Hoollinshead(Moorestown.N.J.)
Mrs L. R. Hollinshead(Moorestown, N. J.)
Mrs. Margree Satterthwaite, (Masonville N. J.)
Mrs. Georgiana Buzby, (Masonville, N. J.)
Mrs. Mary A. Tomlinson, (Laurel Springs, N. J.
Mr. L. E. Anderson, (Ewing. N. J.)
Mr. M P. Hunt, (Harbourton, N. J.)
Miss Ruth Thompson, (Plainfield, N. J.)
Mr. W. F. Eckert, (Somerton, Pa.)
Mrs. Eckert, (Somerton, Pa.)
Mrs. Wm. Messer, (Abington, Pa.)
Miss Lucena Peck, (Tullytown, Pa.)
Mr. W. H. Simeon, (Mt. Airy, Phila. Pa.)
Mrs. Simeon, (Mt Airy, Phila. Pa.)
Mrs. E. Laurent, Glenolden, Pa.
Miss E. Laurent, Glenolden, Pa.
Mrs. Buttonklepper, Philadelphia, Pa.
Mrs. George Hennesey, Moore. Pa.
Mrs.I. Merrill and son, Moore, Pa.
Mr. J. H. Graft, Dillsburgh, Pa.
Mrs. J. H. Graft, Dillsburg, Pa.
Mr. and Mrs. W. A. Major Riverton, N. J.
Mr. and Mrs.Chas.Otto,Boiling Springs, Pa
Mr. and Mrs.John Souder,Churchtown, Pa.
Mr. and Mrs. T. B. Zimmerman, Churchtown, Pa.
Mr. and Mrs. Milton Bixler, Moredale, Pa.
Miss Elizabeth G rland, Carlisle, Pa.
Miss Garland, Carlisle. Pa,
Mr. Garland, Carlisle, Pa.
Major M. A. Embick, Boiling Springs, Pa.
Mr. and Mrs. F. A. Barrett, Wellsville, Pa.
Mr. and Mrs. John Ludt, Carlisle, Pa.
Miss Ludt, Carlisle, Pa.
Mr. and Mrs.S. L. Huston, Carlisle, Pa.
Mr. and Mrs. Robt. Galbraith, Moredale, Pa.
Mrs. Chas. Craighead, Craighead, Pa.

➡ The alumni re-union was held Thursday evening in the gymnasium which was elaborately decorated for the occasion. The Germania Orchestra furnished special music for the occasion. The re-union of 1906 was the most delightful yet held.

The following graduates were present:- Stacy Matlock, 1890; Miss Nellie Robertson 1890; Siceni J. Nori, 1894; Frank Hudson 1896; Cynthia Webster, 1896; Chauncey Archiquette, 1899; Annie Goyituey, 1901; Genus Baird, 1902; Wm. MtPleasant, 1902; Lilian St Cyr, 1902; Lottie Harris, 1902; Mrs Siceni J. Nori (Ida Griffin) 1903; Elizabeth Kundsen, 1903; Daniel Eagle, 1904; Arthur C. Sheldon, 1904; Antonio Lubo, 1904; Mrs Chas. Dillon (Rose La Forge), 1904; Victor Johnson, 1904; Alfred M. Venne, 1904; Minnie E. Nick,1904; Frank MtPleasant, 1904; Geo. Balenti, 1904; Wilson Charles, 1905; Antonio Rodriguez, 1905; and the class of 1906.

FARMING.

BY WALLACE DENNY.

While the Indian youth of to-day is striving after that which will enable him to earn a living and to make himself a useful American citizen, it is of great importance that he turn his attention to farming. While he may not at any time do actual work, he is a land-owner and has an interest in his property and he should know something of the working of it.

In all business, thoroughness is the prime factor of success so every successful farmer ought to make it a point to understand thoroughly all that pertains to his work. He should know something of botany, that he may understand the character of th various products of the soil, and be able to adapt his mode of cultivation, so as to get the best results with the least cost and labor. He ought to have some knowledge of chemistry, in order to understand the composition of the soils and he must know enough geology in order to under-stand the structure and formation of the earth and its soil. I do not mean to say the farmer must be skilled in all these sciences, but he should have at least a general idea, because they are so closely connected with his profession and are in fact the foundation upon the science of agriculture is based.

Wherever you find a county, or even a district following a system of farming, you always find it in the heart of the best civilization of the country, surrounded by the richest agriculture.

Nearly all Carlisle pupils spend four or five summers, and some two or three years with New Jersey and Pennsylvania farmers to learn their methods of farming. If it were necessary to farm at home, they could put into practice the valuable experiences they have received from those farmers. Some people might contend that these experiences will not help them in the western states, because there the farms are large the soil is immensely rich and the most improved and up to date machinery is used, but our boys are not going to farm three or four sections at a time. If they farm at all, it will be on their own allotments and not more than one hundred and sixty acres.

About nineteen years ago, there came to this school to serve their term of five years, about one hundred Apache young men and boys. They were of Geronimo's band, prisoners of war and as such had endured many hardships, which impaired their health. For this reason, it was thought best to send them into conntry homes in Pennsylvania and New Jersey to see what nourishing food and outdoor life could do for them. Most of their term was spent among these Eastern farmers, where they learned to work. Today the survivors of this band are living in Oklahoma, following very successfully, the occupation learned in Pennsylvania.

Every farmer should know whether his business pays or not. He must be able to tell what branch of his business pays and what does not, and which special line has been the most profitable, so farm records should be kept.

I have lived with Pennsylvania farmers for four summers, I have worked with them on their farms and have seen that no man has a right to expect a proffit from his farm unless he has cultivated it and made it fruitful and productive. I have also learned that different crops require elements in proportion and by planting the same crop year after year in the same field, the fertility will be removed. I have learned that the rotation of crops will strengthen the soil, if one of these be a clover crop. Clover is very useful to the farmer, because it supplies the soil with nitrogen, which is the most important kind of plant food. It will not be necessary, then, to buy so much expensive fertilizer, rotation will help to head off many kinds of insects and plant diseases. I have learned that the different crops require different modes of cultivation, so that the physical properties of the soil are improved by rotation. For instance, grass lands, in a few years, become hard and require to be loosened. This can be done by the cultivation of a crop of corn, followed by one of wheat and the resowing of clover.

I have learned that it is best to depend on several sources of income on the farm, for should the grain crop fail, there is the truck, or the stock, or the poultry, or the orchard. The animal products such as meat, milk, butter, eggs and wool are valuable and it is important that the producers receive the best attention. The farmer who feeds his cows and horses well, gives them protection from the weather, who treats them gently, gets the best results from them. In building up a dairy farm, it is best to begin with a few cattle of good grade, Jersey, Guernsey and Holstien and then increase gradnally. The building for their protection need not be an expensive one at first. By care on the farmer's part, they will soon earn for themselves, a more substantial barn. The Agricultural Department has issued bulletins telling the farmers the relative value of animal food. These bulletins tell how to feed the dairy cow and how to fed to produce beef. They experimented and tables have been printed to show that for average dairy cows, about six times as much carbo-hydrates as protein should be fed for the best results: and for light horses, about seven times, and heavy horses, abovt ten times as much should be used.

It is the practice on most farms, to leave the care of the poultry to the women. Though they have made a success of this business. they should not let it interfere with their chief work, which is the making and the care of the home. The farmer, himself should carry on this important work. If I were to farm for a living, my three years training in the Carlisle carpenter shop, would be of great value to me. It would enable me to build an ordinary frame house and other farm buildings. It would also save many dollars, which would ohterwise have to be paid out for repairs about the farm.

I would not be satisfied with common crops; my aim would be to raise the best of everything and to raise it by the best methods. I would select my seed from the best plants in the field , as far as possible, then the products would be good. I would select good grades of stock and poultry. To raise products from poor material requires just as much work as to raise from good.

At my home and during my term at Carlisle, I have learned to handle all farm machinery, to care for crops of corn and of other grains, from the time it is put into the ground until it is taken to the mill or the manger. It would be difficult for me to tell how to strike out the land, but I have looked straight across many a field and have left a straight furrow behind me.

My experience with horses has taught me to know when a horse is perfectly fitted with a collar and that he must be fitted to prevent sore shoulders: also, that a horse, when very warm, may be ruined in a few hours, by standing unprotected in the cold, that a good currying and rubbing down is, to a horse, what a bath is to a man, that in barn keeping as well as house-keeping, "Cleanliness is next to Godliness."

A man's dress, whether neat or untidy, is a strong mark of his character, so is the condition of his farm and buildings. Neglected fields, weeds in the yards, broken-down fences and gates, dilapidated buildings, all speak of the lazy farmer just as loudly as the well kept fields, clean yards, strong fences and white-washed buildings speak of the thrifty up-to date farmer.

Early in the home making, shade and fruit trees should be planted. The home on the farm should be an ideal one, for the work of the farm keeps the family at home during the day, and most of the time, there is little to take them away in the evening. The home, therefore, should be made comfortable. The house need not be large, but a kitchen with a pantry, a living room and two or three bed-rooms make a comfortable home. As a means of relaxation, as well as for information and education, it is best to have the farm-home well stocked with newspapers, magazines and good books. This will enable the farmer to enjoy things outside of his own work, help to broaden his life and raise him to a higher plane of living.

Nowhere have we to keep in mind our school motto, "God helps those who help themselves" so much as in this industry. The farmer truly earns his living by the sweat of his brow, for it is only by working patiently and faithfully, day unto day, that his life is rewarded with success.

DRESSMAKING.

By Mary Runnels.

There are no more important industries than those which are connected with the making of clothes. While the use of clothing is to afford protection from heat and cold, they should be made and worn with the view to please the eye.

It is necessary, therefore, that they be carefully cut and neatly made and they should be kept clean and in good order. If for no other reason, than because so much time and skill are respresented in our clothing, we should take good care of them.

A knowledge of sewing is a means of support for many, skill in the art of using the needle is important to every woman and girl as an aid to domestic neatness and economy and a help to profitable occupation. Then how much greater the need for Indian girls to be useful and selfsupporting women, so that when they enter homes of their own as wives and mothers, they will be properly trained for the great responsibilities of womanhood and motherhood.

Our sewing school teaches the girls to be of service to themselves and saves them from lives of idleness and wastefulness, when they return home. Sewing is in great demand throughout the entire country and this is the place where the Indian girls can prepare themselves to enter homes or dressmaking establishments if they so desire. It is said of the Indians that they are not satisfied unless they wear brilliant colors, so we are taught to choose colors that are more becoming. Although a girl may be able to cut and make perfectly fitting clothing, yet if harmony of colors is disregarded, her work will not be as satisfactory.

Instructing is sewihg begins when the child enters school. Sewing is one of the simplest lessons is manual training that can be given; the tools are light and can be easily handled by the smallest child. The value of this work cannot be too strongly emphasized therefore it is has been placed in the schools to give each child the opportunity to use her hands in making useful articles,

The child is first taugh to hold the needle and use the thimble properly. Little Indian children, and sometimes older ones will not use the thimble, as their mothers before them did all of their needle work without the use of one. She is watched carefully and made to wear one in the beginning, as it is impossible to make neat little stitches without any protection to the finger. A small child's first lesson in sewing is to fold two raw edges, by basting these two edges together with the even basting stitch. Striped material is used to the child's eye to turn a perfectly straight fold, giving her some idea of correctness. After a child has learned to make a neat seam and handle the needle, she is then started in hemming towels.

Next, she is taught darning. A stocking should be darned on the right side, going over the rough edges and turning under stocking. First the stitch should run up and down of the stocking and then across, weaving very carefully over and under each thread. Knots should never be used, as the thread can very easily be made secure by taking a back stitch in the running stitch.

After the older ones have mastered all kinds of hemming and different stitches, they are taught to measure and cut towels, tablecloths, sheets and pillowcases. As soon as the girls show themselves competent in this work they are promoted to the mending room.

Here, they are taught to mend clothing of different kinds and are shown how to put on neat square patches. Where stripes, checks or figures are found in the material, they are shown how to match them, and to make the patch invisible as nearly as possible. When the weeks mending has been done, they are given plain sewing, such as nightgowns, nightshirts, petticoats and aprons, This gives them a start in the work of the next class.

The more difficult parts of plain sewing are next taught them. They make underwear, tennis shirts, and blouses. The Seamstress always impresses upon the girls, the need of the ability to make durable and comfortable garments. When they have learned to make each garment without aid, they are ready to go to the first dressmaking class.

The making of a simple gingham is dress first taught, then the more complicated ones. They are given a plain five-goar skirt, the seams are basted together, then stitched; bastings are pulled out and the skirt is pressed. Trim, if necessary. Get the required skirt length, baste a hem and stitch. There are many methods of finishing the placket or skirt opening, which should be only as long as is necessary to carry the skirt easily over the hips. The right side

of the opening is faced with a strip of material, about one inch wide. Take another strip for the under lap. Stitch the seam on the right side, turn the edge in and baste over the seam just stitched. Tack and over-cast the end. The band is of a straight strip of material. Get the required waist measure, take the center of the band, the center of the skirt and pin together. Baste from the center back, holding a little full over the hips. Gather the remaining fullness in the back. stitch and pull bastings. Turn the edge of the band over the seam and stitch. Sew hooke and eyes on neatly.

A bishop sleeve which has only a short slash at the cuff opening is finished by sewing a strip continously along both edges of the slashed opening. The other side is turned over and stitched to cover the seam first made. When the edge of the sleeve is gathered, this band is turned under at the upper over-lapping edge of the slashed opening, which extends on the under side to form an under-lap. Two pieces are cut for the cuffs, a seam is stitched along both ends and one side. Turn the cuff, baste around the seamed edge, sew the cuff portion to the edge of the sleeve, making the seam toward the out-side. Turn the edge of the outer cuff piece under and baste it to the sleeve and stitch, covering the seam just made.

In making a waist, measure a piece of material from the shoulder down below the waist line for the length of front. When making tucked or plaited skirt-waists, it will sometimes be found that the fronts, by reason of the number of tucks, cannot be cut from one width of cloth, in this case it will be necessary to piece the material, making the seam come where it will not show. Cut the front and back with the curved lines, baste together and fit. Though a shirt-waist needs careful fitting, not so much skill is required in the process. A waist should not be fitted on the wrong side because one shoulder is inclined to be a little higher than the other. When the waist is turned over, the lower side of the waist will come on the right side and will not give a perfect fit. When the pupil has taken every part of the garment, then she is left alone to construct the whole unaided. After she has learned to make the simple dresses, she is given better ones.

Cleaning and pressing clothing in use, should be taught in every school, as well as the home. When making new garments, never press a curved seam on a flat surface. If you have nothing better, turn a rocking chair upside down and use the rocker. See that the iron is well heated, not too hot. Do not stretch seams. If you are pressing heavy woolen material, the seam can be slightly moistened.

The Vienna Tailoring System is used in the Indian School, as it is considered one of the best.

Method of taking measurements for drafting.

Bust: Stand behind the lady, taking the measure over the most prominent point of the bust: let the measure be easy so that the line will be smooth; put this measure down one inch more than the tape measure calls for.

Waist: Take this measure around the smallest part of the waist tight.

Front: From collarbone to waist line in front, add one inch to this measure.

Back: From joint in neck to waist line.

Under Arm: Take this measure up under the arm and down to the waist line, put this measure down one half inch less than the tape calls for.

Shoulder: Place the end of the tape line against the neck snug where the collar joins the dress and measure to the point of the shoulder.

Neck: Around the bare neck, let the measure be easy

Arm's Eye: Around the arm very snug just below the point of the shoulder.

Arm Measure: 1st. From of shoulder to point of elbow, the hand resting on the chest.

2nd. From the elbow to the Joint on the wrist.

3rd. Around the largest part of the arm below the shoulder, with arm bent. Take this measure smooth not tight.

4th. Around the largest part of the arm below the elbow.

5th. Around the hand tight.

Shirt: From waist line to the length desired.

Hips: Around the hips easy, six inches below the waist line,

The requirement for graduating from this class is to be able to draft, cut, fit and make any garment that will be needed by women and children. Many of our girls have done well as seamstresses and assistant seamstresses in the Indian School Service. Lillian Waterman, Class '02, is working in a family in Cleveland, Ohio., and is receiving extra wages, because she is an efficient seamstress. Elizabeth Knudsen, Class '03, is also a competent dressmaker, who has been doing very acceptable work for the employes during the last year. Minnie Nick, Class '04, who lives in Carlisle, also has proven herself to be a skillful dressmaker. Her customers are among the best people of Carlisle. Others have done well among the white people and at their home.

HARNESS MAKING.

By Wilbur Peawo

One of the important things that all farmers should know is the mending of harness. The farmer will realize this when his harness gets out of shape and no shop near his place.

In the harness trade, a person has to start from the very beginning as in learning other things. The first thing that a beginner learns is the making of a wax-end, which should be well twisted but not too tight nor too loose. The number of cords in a wax-end varies according to the thickness of the parts to be stitched, in order to give a fine appearance to the harness. After he has learned to make a wax-end. several pieces of leather tacked together are given to him and the instructor shows him how to use the awl and to make the stitches. This is kept up until the student can make uniform stitches, then different parts of the harness are given to him to be stitched. Two-thirds of the work on a set of harness is stitching.

After the student has learned to stitch well, he is put at the blacking table where he handles all parts of the harness. When the parts are given to him, he puts them into the water until they are well socked, then he blackens the edges with ink and lets them he until they are two thirds dry. he then wipes them dry when they are ready for creasing. He creases the straps with the creaser that is required for the width of the straps, they are then taken to the fitting table.

The student who is at the blacking table takes the traces as they come from the stitchers, rubs and smoothes the stitches down on both sides of the traces, with a tool called a slicker. He then trims the edges of the traces with a knife and scrapes them with glass until they are smooth. Next the traces are punched. The four edges are taken off with a tool called the edge tool. The traces are then dampened in water., the edges are then blackened and laid aside untill two-thirds dry, and then wiped until the edges are smooth and dry. The student then takes a sponge and gives the trace a thorough coating with gum tragacanth, then rubs them with his hands until dry; then burnishes the edges with a burnishing stick and the traces are then ready to be buckled to the harness. All the other parts of the harness are treated in the same way. The parts that have loops are set up on the loop stick and creased. The billets are punched with the punch required for the size of the buckle tongue. He then gives all parts a thorough coating of gum tragacanth and rubs them dry with his hands until a gloss forms from the friction, when they are ready to be buckled together.

After the student has required a thorough knowledge of the work that is performed at the blacking table, he is transferred to the skiving table, where he is taught how to skive straps of different kinds used in the harness such as pointing billets, skiving laps, and to punch holes in their proper places. He is also taught how to skive the leather down with the splitting machine where their irregular thicknesses in the strap occur. It is necessary to use judgment to skive off the strap so as not to weaken it.

After he has acquired a thorough knowledge of this, he is taken to the fitting table where he is taught how to fit the different parts of the harness together, by means of tacking them temporarily in position for sewing. He is also taught how to select his loops for difierent sized billets and how to place them in position on the harness. He also learns how to put different kind of buckles in their proper places.

After a thorough knowledge of the work performed at the fitting table has been acquired, he is taken to the cutting table. There he is shown how to cut the different parts of the harness, both mechanically and economically. He is taught how to select his leather from the side which is best adapted for the different parts of the harness for durability and service. He is shown how to straighten the side and square the butt, preparing to make his first cut on the side which would be several trace cuts, than he cuts about four lines from the longest part, then finishes cutting the balance of the traces. If there are any parts of the harness which are to be made round such as reins, winkerstays, and cruppers, these are taken out of the shoulder of the side where the leather is more pliable and yet firm. The breaching layer, breast straps, billets, and crown pieces are taken out from the butt of the side where the leather is solid and best adapted for that part. After these parts are taken out from the side, the hame straps, choke strap, belly band layer and turn back are taken out, there is nothing left but the belly where the folds and the blinds are cut.

The names of the different parts of the harness required in making a complete set of Concord harness are: the bridle, the lines the choke strap, the turn back, the back band, the belly band billets, the belly band, the traces, the hame tugs, the breeching straps, the hip straps, the breeching, the collar.

Hand made harness is superior to machine made. The work may take longer. but it will wear longer owing to the fact that the hand sewing is superior to machine sewing. Many people complain that their harness does not wear as long as it ought the leather being poor. This is very often due to their own negligence. A harness must have oil occasionally to preserve the wearing qualities of the leather and some people are very careless with their harnesses and never oil them. They use them every day, rain or shine, and never clean off the dust and dirt. In a case like this, a harness maker may have furnished first class leather but owing to this kind of treatment, he does not get any credit for the quaility of the goods.

A man who is going to make a good harness should be very carefull in selecting his leather; he must get a good oak-tanned leather that has plump shoulders. clear of cuts and scars with a nice fine fiber and a smooth grain.

The collar is a very important thing, too. It is necessary to have the collar fit the animal as it is for a shoe to fit the foot. If the collar is too big it will rub and chafe the horse, and if it is too small, it will choke him when he pulls. It is necessary to have a little space at the throat, just large enough to put in a person's open hand, this will give room for the wind pipe. If the top of a horse's neck gets sore, a sole leather pad, lined with felt would be needed for him. This will keep the straps on the collar cleaned from the acummulation of perspiration and dust, immediately after his return to the stable, while it is moist and easy to remove. Uncleanliness with collars is usually one cause of sore shoulders.

A proper command over the horse is of the greatest importance, and the main factor in obtaining this control is the bit. One of the most common expressions among horsemen is that a horse's mouth is hard or soft. The general belief is that a soft mouth is due to a greater or less pressure of a piece of hard iron. The fact is however, that this causes a hard mouth. There are many kinds of bits, and those most commonly used are the jointed half-cheek snaffle, the jointed ring snaffle, and the half-cheek stiff snaffle. A half-cheek, straight, flexible spring, covered with leather is the mildest bit known for a tender mouth. The curb bit is used for riding purposes. The Wilson bit is used to control hard mouthed and vicious horses. By reversing the snaffle more power can be gained as this acts directly on the upper jaw and the nose. The J. I. Case bit is a very severe one and is used if the horse or mule is hard in the mouth and liable to run off at every opportunity. It acts directly on the lower jaw.

Another important thing to consider is the size of the mouth piece, which ranges from 4¼ to 5¼ inches. It is very necessary to have the curb bit well fitted for the horse's comfort and that he may give the best service. The bit must be buckled up into the mouth, not too tight, and the curb chain must be adjusted to suit the horse. wearing the bridle. The bit must not press too hard on the tongue nor must it be too loose. This can be adjusted in the curb chain by taking or dropping a link. Either a chain or a leather curb can be used but the disadvantage in the leather curb is that if it is wet too often it will harden and break. It is better to have a wide linked chain curb to keep it from cutting the jaw.

LAUNDRYING

By Blanche Lay

Laundry work, being a part of woman's household duties is very important.

Clean clothes indicate a person's character.

The first step in the general family wash, is to collect and sort the clothes, putting the underwear, bed clothing, towels, handkerchiefs, shirts, shirtwaists or other white clothes in one pile and the table-linen in a pile by themselves. While you have been doing this, the water has been heating. Put the clothes into the tubs to soak, first seeing that all stains are removed. Put in washing powder of some kind or dissolved soap and have the water cover the clothes. By soaking the clothes over night you will find they are not so hard to get clean. The next morning change the water, using it as warm as you can stand for rubbing. If the water is very hard, borax-sal-soda can be used to soften it.

A housekeeper must choose the soap best adapted to the water she will have to use. Our water here is limestone water and we find an oleine soap serves our purpose best. We can not use a soap that contains much resin. As you rub them out, put them into a clean tub without any water. Then after all the white clothes have been rubbed out put hot water on them to scald or put them into a boiler on the stove. Rinse them in warm water until all soap is removed and then rinse in bluing water.

While you are scalding your clothes, make the starch so it can cool while you rinse your clothes. Then as you put them through bluing water, seperate the pieces you want starched from the rest. Starch your clothes but before going out to hang them, put the colored pieces to soak in the tub, and the flannels in a separate tub of warmwater. Never wash the flannels in hot water or allow them to soak very long as this makes them shrink.

In hanging the clothes, I have learned not to put three or four pieces together, but spread them out singly, so the sun will bleach them and they will dry sooner. If handkerchiefs or other white pieces are yellow, put them on the grass in the sun. It is a good thing to do this often. When the white clothes are all hung out, wash out the flannels first, then other colored pieces and stockings last, and always be sure to turn the stockings and wash on both sides. In washing colored clothes, we have to be careful with those that fade. You can prevent fading, by washing them in salt lukewarm water, and hanging them in the shade to dry.

In sprinkling the clothes, one should be careful to give them the right amount of moisture. Some clothes need to be sprinkled quite damp such as the starched clothes, table-linen and towels. Sprinkle and let them stand over night, fold the large pieces separately and great care should be taken in folding up table-clothes, shake them well and fold evenly, just as you fold when ironing them, roll up as smoothly as possible and wrap in a towel. Sheets need not be sprinkled very damp, unless they are real linen, simply fold up and use a good hot iron on them. If the irons are too hot when you are ready, use them on the sprinkled clothes to cool them off. In this way you get your irons down to the right temperature, cleaned and waxed just right for the finer pieces. In ironing the table-linen and towels, iron them until dry and smooth. This takes a hot iron. Flannels do not need very hot irons as they scorch easily, unless you put a damp cloth over them, as done in pressing flannel dresses, men's suits etc. Embroidery, laces and monograms are ironed on the wrong side, to make the designs stand out. For this purpose use a piece of flannel of three or four thicknesses and put over this smooth white cloth. then iron the embroidery on the wrong side.

The making of starch is a simple process. First dissolve the starch in cold water, pour boiling water into this, stirring constantly, until it thickens and becomes clear. Sometimes, we put parafine, coal oil, or a little lard to prevent the starch from sticking, which you know is provoking when ironing. All clothes are not starched the same. Men's bosom shirts, cuffs and collors need heavy starch, and you will have to rub in the starch.

To remove stains from clothes, there are some very simple methods. Almost any kind of fruit stains can be removed by pouring boiling hot water on the soiled place Be sure the water is boiling and pour it slowly, until all stain is removed. Sometimes tea or coffee stains will not come out by this method. Another simple remedy is to dampen the soiled place and rub with yellow soap, then quickly rub in dry starch and put out in the sun, keeping it wet until the stain is removed. Mildew can also be removed in this way For grass stains, rub in molasses and wash out well with warm water and soap, Paint is easily removed from clothes by rubbing in lard, then wash out thoroughly with soap and warm water. To take out ink spots, soak in milk and let it stand until the stain has been entirely removed. It sometimes takes four or five days for the ink to come out and of course the milk sours, but that doesn't matter, for its the acid in the milk that does the work.

Those of you who visited the industrial departments, went into the laundry and saw that the washing, with the exception of the flannels, is done by machinery, but most of the ironing is done by hand. The sheets, pillow cases, towels and table-cloths are ironed on the mangle by the small boys, and the cuffs, collars, and bosoms of white shirts are ironed on a machine by the girls. Although most of our washing here is done by machinery, the girls learn to

wash by hand for there are set tubs in the back part of the laundry which the girls use very often in washing their own extra clothing. When living with families during the summer, they aslo learn washing as one of the duties of a housekeeper in a small family. I learned a great deal from my experience in the country.

The reports from our laundry show an average of ten thonsand pieces sent each week and in three months they have turned out one hundred thirty-five thousand pieces. Eighteen girls from each division are detailed to work in the laundry for a week to do the ironing. Besides these, there are four other girls who help the head laundress for six weeks and learn every branch of the work.

As the clothes are brought in from different quarters, these four girls assist in the sorting, counting, starching and sprinkling. One in each detail assists with the washing. On Monday mornings many bundles of clothes are brought down to the laundry. After being sorted and counted, they are put into the washers, while some are put into boxes out of the way. As soon as the clothes are clean, they are then put into the wringers and the washers refilled. The clothes are dried in the driers and on the lines outside. It is necessary to have system and foresight in our laundry, to keep the clothes from each quarters seperate and deliver them on time.

Ironing is done every day, mixing the light with the heavy pieces, starched clothes with the plain pieces, and nearly everything is finished by Saturday when time is taken to clean the laundry to be ready for the work of the next week.

PRINTING.

By Dock Yukkatanache.

THERE ARE two essential factors in the make-up of the youth who would become a printer. These are intelligence and perseverance, to which must be added the quality of energy, if some day, he would become an employing printer. These are not the only qualities necessary to the make-up of a practical printer but they are the essential ones. Before going to the case the beginner must have become especially well acquainted with reading, writing, spelling, and grammer, as with these subjects he will have to do as long as he follows printing. No printer can be too well educated. Before one can become a job printer he must thoroughly master the principals of plain composition, that is, newspaper and book composition; for the former is but the artistic development of the latter

When the apprentice goes to the case for the first time, he must learn the name of each case and become familiar with the different types, figures etc., found in a set of news of American type cases and the location of each letter. A set of new cases usually consists of two, which are placed one above the other. The upper case contains large and small caps; the lower case, the small letters. The type are not arranged in alphabetical order but are so placed that the letters most used are the most convenient to reach. He must also become familiar with the relative values of quads and spaces. Having become familiar with the location of the different letters, marks, and other characters necessary in printing, he is taught how to stand at the case, and how to sight, pick, and stick the type properly.

After the apprentice has acquired a reasonable knowledge of the cases, and is capable of assuming the position of a printer, he takes his copy and places it on the upper case over the small cap boxes, calls on the foreman to adjust his composing-stick to the measure required, and after procuring a handful of leads and a composing rule, he places the latter upright in the stick and proceeds to set his first line of type against it. He takes the first three or four words in his mind and remembers them while picking their components types. He of course, begins with a paragraph, the indention of which is usually one em, sometimes two. When he has set up in his stick as many whole words, or devisable parts thereof, as will go into the first line, he will doubtless find a greater or less space at the end. This space must be divided equally among all other spaces in the line. Care must be taken in doing this that the spaces between the words are the same, or very nearly the same. The first line thus justified, put in one lead against it, if it is to be leaded, and lift out the composing rule from behind, place it in front of the line and commence with the second line without indenting. The next consideration is to see that the second line is neither wider nor more closely spaced, and not tighter nor looser than the preceeding line. When a stickful has been set, it is emptied into a tray called a galley.

When the job has been set up or the galley filled, a proof is pulled. This is called the office proof, which is carefully read and compared with the original by the proof reader and marked for correction. The compositor makes the corrections when another proof is pulled. This second one is called a "revised" proof. When a correct proof is obtained the matter set up is then placed on the imposing-stone where it is prepared for the press.

An iron frame called a chase is then placed about the form and the space between them is filled with leads or wooden blocks called furniture. The form is loosely locked in the chase and planed when it is tightened in the chase and is ready for the press. The form thus made ready is taken to and locked on the bed of the press. An impression is made on the tympan or paper on the platen of the press,

Gauge pins are then placed in the tympan to hold the sheets of paper that are to be printed. The grippers are carefully adjusted and thin pieces of papers are placed on the tympan or under the type if necessary that a clear satisfactory imprint be obtained. When placed on the tympan they are called "overlays". When placed under the form they are called "underlays". The job having been printed the chase is removed and placed on the imposing-stone.

The form is cleaned with benzine or some other type-wash; when it is removed and the type distributed, that is, the type are returned to their proper boxes. Distributing is, in itself, an art. After the matter is unlocked and the surrounding furniture removed, it should be wet with clean water from a sponge. Place a composing rule behind as much of the matter at the end of the job as can be safely lifted and place it, not too tightly, in the left hand, face about and upside down. Take then as many letters as can be freely held between the thumb and the first two fingers, and proceed to drop lightly each letter into its respective box.

I have tried to explain in a few words the most important steps through which an apprentice must pass to get a working knowledge of the trade. The Printing trade covers much more ground than I have indicated. In fact it is almost impossible for one man to become proficient in all its branches.

It may interest you to know that from the time of the invention of typography until the middle of the 16th century, printers made their own type. Books printed from them can be easily indentified from the modern print. After 1550 the casting of type became a distinct business. In America, type casting was attempted as early as 1768. Until the middle of the 19th century all the type was cast by hand.

Until recent years there has existe. not only a great difference between the sizes of type of the same name cast by different foundries, but also a variation between sizes made at different times in the same foundry. To overcome these discrepancies the point system was adopted. The point is one 12th of the depth of the standard adopted. The standard in the United States is pica which is the unite of the system, and the point is therefore about one 72nd of an inch.

The sizes most used in books and pamphlets are 12-point or pica, 11-point or small pica, 10-point or long primer, 8-point or brevier.

Type as it appears in printed matter has what is called the standard width. As the letters progressively decrease in width, they are called lean condensed or extra condensed and like people as they increase in width, they are known as either fat, broadfaced, expanded or extended.

The different styles of type are mainly combination or variations derived from the following: Roman, Italic,, Script, Antique, Title-type Claredon, Gothic, Doric, Runic, Bold-faced, Thin-faced, and Black letter which includes Old English and German Text.

Type metal is an alloy of melted lead, tin, and antimony, sometimes hardened by an addition of copper and nickle. Some type are made from close grained wood, as box, maple, and pear.

The amount of matter set up is estimated by ems, or the square of the body of the font of type used, to which the latter (m) comes nearest in size of all the lower case letters. All the miscellaneous work of a printing office, beyond book and a newspaper work, is included in the general term, job work. It comprises placard, posters. hand bills, pamphlets, blank-forms, bills, checks, letter heads, printed envelops, etc. In job printing regard should be to the style of type and paper suitable for the subject. Harmony should be observed also between the type and paper. At first paper was made entirely by hand. In America, the first paper mill was started at Pittsburg in 1816. Paper may be divided into four general classes: printing paper including book and news paper, writing paper, wraping paper, and special paper. Among printing papers are: machine finish, wove, laid, calendered, coated, enemeled, plate-paper. Among writing papers are: bond, linen, and ledger, Among special paper may be mentioned blotting, manifold, copying, parchment, tracing paper. At the present day paper is made of almost any size to suit the needs or the taste of publisher or author. During the past twenty years much progress has been made in the art of printing. The improvement in printing presses has been made very great but the most noticable has been that of setting type by machinery. Several machines for this purpose have been invented: the most prominent being the Mergenthaler or Linotype with which one man can do as much setting as six or eight compositors can do by hand,

A little advice to our apprentices in printing may not be amiss in closing.

A printing office should be kept in the cleanest and neatest manner possible. A dirty, dingy workroom is an ambomination to every printer who has any respect for his profession. There is no necessity for broken material and "pi" to be lying about the stones, upon window sills, or on the floor. Have a place for everything and see that every implement, tool, and appliance, as well as all material, is in its place when not in use. Keep the imposing-stone clean when forms are not being made up. Keep cases of all kinds free from dust. When not in use the proper place for mallet, planer, and quoins is in the drawer beneath the imposing-stone. Be particular to keep all kinds of machinery clean and bright, and never fail to have the working parts properly oiled. Never use poor oil. Keep the composing and the press rooms neat and clean, and do not forget the windows. Be progressive. The printing industry is becoming greater and more advanced every day. The day of old foggy ideas has passed. Follow the modern and keep up with the times. There is room at the top for all intelligent competent and deserving followers of "the art preservative"; but incompetent printers are not wanted. Do good work, be faithful, steady, and sober and you certainly will attain success.

HOUSEKEEPING.

By Christine Childs

A large part of the advancement of the Indian boys and girls at Carlisle, is due to the outing system. This plan was begun at this school in 1880, one year after its establishment. The first principle of this system was to educate and civilize the Indians, who came here without knowing a word of Engish. The first summer there were about eighteen pupils sent out under the outing system, more than half of whom came back failures. For several years past, during each vacation there have been about six or seven hundred boys and girls out earning good wages and most of all getting experience. By this outing system pupils have the chance of living with the best and most industrious families in the country and during the winter can attend the public schools in their section. No branch of the educational work is of so much benefit as that of the outing. The school itself is too large to allow home training on a small scale as the Indian should learn it in order to care for a small home. The pupils learn to appreciate the value of the outing system.

In a majority of country homes to which pupils go, they are made members of the family and are as carefully trained as sons and daughters. Through my own experience of this outing, I have learned more in two years how to take care of a home than I did from the training of five years at my home school. This has proved to me, that it is only through experience that we can become masters of work.

The main object of the girls, who go out under the outing system, is to become one of the family and to take up the work of the house-wife. In many instances they become well trained in the art of cooking. There is no line of work more important than that of being a good cook. My first experience in taking care of a home was during the fall of 1899, when I went out to live with a family in Rancocas N.J. and there I had the best opportunities to learn the art of cooking. Before this I had never had the chance to cook or to know the value of it.

The process of cooking is not the same with all people, for instance in the making of bread, I have learned to make bread with compressed yeast while in many of the homes the old method of making potato yeast is used. But every girl should know the different methods so as to adapt herself to her home conditions. In setting bread for a small family it takes about one quart of milk and one pint of water and flour enough to make it up. The process is to put the mixture of luke warm milk, water, yeast cake, a teaspoonful of salt, and a tablespoon full of lard together. The sponge is made and set to rise. The second process is to knead it and if desired set to rise the second time after which it is ready to make up. To have success in making dough requires a warm temperature and when baking, the oven should be at a temperature of 375 degrees.

Most of the girls who have experience in making bread have found out that it takes practice and patience to be a first class cook whether in a small family or that of a large establishment. It takes thought and care to be a good cook and furthermore to be clean and economical in what one makes. There are also many other things which need just as much attention as that of bread-making.

In many of the homes, the care of milk is taught and also the several uses of it. In all cases the girls who live in private homes cannot help learning the different branches of the household duties: such as cooking, setting the table, washing, sweeping, and keeping account of what is used and many other things toward keeping a house clean and in order. How can any one be unhappy when living in a well regulated home which can be secured only by giving time for everything and keeping everything in its place.

We must also consider the value and prices of meats. To be a good judge of meats is essential to safe and successful marketing. The main object is to be able to know the different cuts of beef. The best cuts of beef known for steaks are the sirloin, porter-house, the tenderloin, and the round steaks, and for roasts, the rib, pin bone, and the rump are the best. There are many ways in which meat might be cooked, either to retain the nourishment and flavor or to extract it for broths. When boiling meat for the table the main object is to retain the nourishment so it is best to boil it in hot water and cook slowly. In making broths, any kind of meat may be used and bones are also good for soups. These pieces of meat and bones should be put on to cook in cold water and boiled for several hours to get out all the nourishment.

When vegetables are in season they should be used plentifully for the table as their substance is required in building up the tissues of the body. Most of the girls have been foutunate enough to live where they can learn to plant and raise vegetables and sow seeds so that they will have crops of lettuce, redishes and other vegetabls coming on for use, after the first crops have

been exhausted. I learned to cook vegetable in various ways and also to can and preserve them for winter use.

Most of the girls understand that in keeping vegetables or any kind of food in good condition they must consider the proper care of food boxes or refrigrators, and know something of sinks and drains and how to keep them clean. It is especially important that they should know how to keep accounts and to gain the ability to live within their income.

The table is a very important part of the establishment of a home and happy is the woman who has tact, thrift, and good sense enough to understand and to do well all that is found in this important work of having a table of well cooked food.

The aim of the different industries here is to teach us to be intelligent workers, to know everytning about the articles used and skill will come with practice. Some of the best workers here in any line of domestic science are those who have spent the most time in country homes.

Both boys and girls out in the country receive wages according to their ability and they appreciate the value of it more than to obtain money without effort. They are required to keep a record of their deposits, withdrawals, and expenditures and this teaches them the knowledge of accounts and the practice of economy and thrift.

The keynote of Indian education is self-support, and this outing system is the best way to lay the foundation. Many of the girls after having lived under the outing system a few years will have accumulated a comfortable sum which will be of assistance in providing a home, but most of all the experience she has received in any line of work will mrke her self-reliant and able to take up the duties in a home of her own.

CARPENTRY.

BY ARCHIE DUNDAS.

I TOOK UP the trade of carpenter when I entered Carlisle in Oct. 27, 1903 and have worked at it almost all the time, since, working three hours during school days and seven hours during vacation.

At the beginning the work of an apprentice embraces a variety of bench work, which brings into use all the tools commonly used in the trade. He first learns to plane and saw to a line, to properly square a piece of timber, and step by step advances to more difficult work.

He must learn not only how to use his tools in a work-man-like manner, but also how to take proper care of them. He is taught, also, how to sharpen all the tools given to him.

Continuing, the student is taught how to make window and door frames, window sash, panel and sash doors, how to lay floors, erect studs, lay out and cut rafters, and how to make tables and other articles of furniture.

The great amount of construction and repairs necessary at a large school like ours gives opportunity for much valuable practice.

It is my pleasure today to explain to you the composition and making of a five-panel-door.

This is an ordinary panel-door, the most common type of door in use. The frame is made up of stiles, muntins and rails, which are fastened together by mortise and tenon joints. The width of stiles, rails and muntins will vary with the design and size of door. The corners of the inner edges of the frame may be either chamfered or beaded.

The space within the frame is filled by panels. The arrangement and number of panels may be varied indefinitely at the option of the designer. It is desirable however to design it so that the lock will come opposite a panel and thus avoid weakening the door by cutting the tenon.

Panels are usually solid, but if the two sides are required to show different kinds of wood they should be built up in three ply. This is unusual, but the difference in treatment of two rooms may sometimes require it.

The panels are either plain or raised, in which the material is thick, the sides are cut down to fit the groove made in the frame for their reception.

The door that I am to make is a five-panel door, seven feet long, two feet ten inches wide , and two inches thick.

The first thing I do is to cut out the two stiles, four rails and two muntins from a two inch plank. Cutting the stiles seven feet four inches long. The rails three feet long. The stiles, top and two lock rails and two muntins are uniformally four and one-half inches wide. The bottom rail is eleven inches wide. After these are ripped out they are faced on both sides and then edged. This being done I take them to my work bench and mark out lines for mortise and tenon. The mortise and tenon are half an inch wide. The first mortise is so marked out as to bring the lower part of the first lock rail two feet from the bottom, the second is marked in the same way to bring the second lock rail three feet from the bottom. The lines for mortise for top and bottom rail are marked so that when the door is clamped together, the distance from bottom and top of rails will be seven feet.

The stiles extending two inches beyond the top and bottom rails. This extension or "horn" as it is called, is for the purpose of re-enforcing the ends of mortise during fitting—a recourse which must be had when the mortise in the finished work closely approaches the ends of materials. The mortise being cut the inside edges of the stiles, top and bottom rails, both edges of the lock rails and muntins are grooved through the center. The groove is five-eighths of an inch deep and half an inch wide. This groove is done by the circular saw or with a plow. When through the tenons are fitted in the mortise.

After the frame work is done, the next is making the panels. The panels are cut so as to fit snugly in the groove. And they must be sand papered before putting them in. The next work after all the parts are made is to put the door together. This is done by the use of a door clamp. Before it is put together the cut side of mortises are enlarged to receive the wedges.

When the joints are all drawn up tightly, the wedge is dipped in the glue and driven in the tenon.

This being done the door is then smoothed by a smooth-plane and then sand papered. The door is then finished.

BLACKSMITHING

BY ALBERT EXENDINE.

The mention of the name "Blacksmith" naturally turns our thoughts to iron and its uses. It is not definitely known just when iron was first discovered, but no blacksmith need lose any sleep because he does not know the history of iron and what it is. A blacksmith must know, however, the proper kind of iron to use for the many kinds of work he is called upon to do.

Our course of blacksmithing here is to be the subject of my talk. In entering our blacksmith shop a beginner is taken to a forge and shown how to make a good fire and to manage it. After the fire is made, it is concentrated and kept from spreading by sprinkling water over the coal and packing it down firmly. The coal that we use is the bituminous which does not contain much sulphur. The less the amount of sulphur in the coal, the better for the iron and for the man.

The beginner having made his fire is required to learn the name and uses of the different tools. A few of the tools are the common blacksmith's hammer, set, rivet, and sledge hammers, chisels, hardy, swedges fullers, head-tools, tongs and flatter.

After the pupil has learned how to tend his fire and has learned the names and uses of the tools, he is taken to a forge to learn the first principle of blacksmithing, and this is in striking or properly using his hammer. The anvil should be about five feet in front of the forge so that when the smith has heated his iron, he simply faces about, grasps his hammer and strikes away. Again the anvil should be of such a height that when the user stands upright, his knuckles will rest upon its top. This will permit the full, free, long swing.

When a person has learned how to use his hammer properly, he has mastered an important part of blacksmithing. A beginner usually holds the handle close to the hammer and strikes with a short jerky stroke, at the same time hitting the heated iron with the edge of the hammer and causing dents which can never be hammered to a smooth surface again. The instructor teaches the beginner to stand about two feet from the anvil, to hold the hammer in the hand like this, to bring the hammer to a full stretch and then squarely down on the iron. Thus, he has to acquire a free-arm swing from the body, and make the stroke long and deliberate, instead of short and jerky. In teaching the beginner to strike or to use his hammer properly, he is to draw a square iron to a point, to flat, to bevel and to round; and again drawing a square iron to an octagon and from an octagon to the round. By the time the pupil is able to draw properly a square iron into so many shapes, he will have a pretty good control of his hammer and is ready to do some welding.

By heating iron, the molecules expand. When the heated iron has turned to a whitish color, or begins to melt, it has reached 3300 degrees which is the welding point. Placing the two irons together and striking the same with the hammer, the expanded molecules become so closely connected that the iron becomes one solid metal. A beginner is not likely to make a perfect weld at first, and in that case the bar of iron is again put into the fire and heated. The second heating has more of a tendency to burn the iron than the first. In case iron is likely to burn, sand is thrown on the heated iron. The sand immediately melts and forms a glass covering over the iron. The surface of the iron then will not heat and fall apart any more until the interior has been heated. In welding steel, borax is used.

From welding the pupil is put on work which is very simple, but as skill and workman-like use of the tools is acquired, he is advanced to work that is more difficult and complicated. When he comes to ironing a wagon or carriage he must be exact, and there can be no guess work about his being able to weld and shape a piece of iron to fit a certain part of a wagon. He must also be able to make all tools needed.

The irons that all blacksmiths use more or less are the Swedish, Norway, and merchant bar. The Swedish is the best iron, and is used for horse-shoe nails, rivets etc. Norway, the next best is used for carriages and parts of wagons requiring great wear. Merchant bar the next grade is used for all purposes, as there is some very good and some very poor iron of that grade made. There are ever so many grades of steel, one of the best being the Mercer self tempering steel, used for tools. Following the Mercer is the black diamond, also used for tools but it requires tempering. Blacksmith tools are generally made of cast steel. The Bessemer steel is the grade of which wagon tires and axles are made.

These ordinary tools can be tempered in hot water, by heating them to a cherry red, and dipping into the water as deep as desired for the tool to be tempered. If the tool is to be used on wood, draw it from the water and let the heat come down. When the end that has been cooled is of a sky blue, then the tool is of the right temper, immediately dip the whole tool into the water again, and cool it off. If the tool is to be used on iron, let the heat down on it until it is brought to a dark straw color. If the tool is to be used on stone or granite, tallow is preferable to water; this will harden and toughen the steel at the same time. All good and safe tempering is done by oil, especially in tempering springs.

One important part of blacksmith's work is horse-shoeing. The proper bearing surface of the hoof is the wall, outer sole and the frog. That the sole is not intended to bear as much weight as the wall, is shown by the fact that the hoof is concave. The frog is of a rubber-like texture and if allowed to come to the ground it does much to relieve the heels from concussion which is the cause of corns. The wall of the foot is about a quarter of an inch thick, so in shoeing a horse take a drawing knife and trim off the rotted and worn parts of the hoof. Then taking more pains, trim the hoof to its proper shape. Many smiths delight to do some fancy cutting on the sole and frog, but the cutting here should be done very sparingly. Some horses have never been shod and still their soles are concave. A good foot that has been properly prepared generally measures from the coronary band to the sole of the foot at the toe, from four to five and a half inches, depending upon the size of the animal. The foot is then measured, a shoe is made to fit the foot instead of tacking on a shoe and filing down the hoof to fit the shoe.

The shoe having been made is filed and before it is tacked on, the hoof must fit on the shoe in all parts. Then always drive the two toe nails in first. After driving all the nails, drive some lightly without the clinch block; then using the clinch block drive the shoe down solid, clinch the nails, file off the rough edges and the work is completed. (The speaker then explained the use of several special styles of shoes which he exhibited.)

Society Notes

THE annual inter-society debate between the Invincibles and Standards was held in the auditorium Monday evening. The Orchestra played before and after the debate. The debate was won by the Standards. The question was:

RESOLVED—That the unqualified right to vote conferred upon the Negro race as implied in the 15th Amendment to the Constitution should not have granted.

The debators for the Invincible Society were; Abraham M. Hill; Bertram M. Bluesky; Jonas Jackson. The debators for the Standard Society were; Louis F. Paul; William S. Jackson; William Scholder.

The Invincibles defended the affirmative side of the question, the Standards the negative. The judges were: Hon. J. W. Wetzel; Prof. Mervin G. Filler; Dr E. Shullenberger. Mr. Thompson was Chairman of the Evening.

Academic Notes

➔ The seniors are enjoying the study of Rhetoric very much.

➔ The juniors find Physical Geography a very interesting study.

➔ The new freshmen are making preparations for organizing their class.

➔ Pheobe Leonard has returned from her country home to join the junior class.

➔ Robert Friday has come in from his country home to begin work with the new juniors.

➔ Vera Wagner a member of the junior class has entered the normal room as a pupil teacher.

➔ Zoa Hardin who has been out in the country for some time has returned to join the senior class.

➔ The sophomores regret the departure of George Collins a member of the class. He is going to the country.

➔ The sophomores expect to make a good showing in the class contest this Spring, because it has splendid material.

➔ The seniors are entering upon their new studies with a zeal which we hope will not abate throughout the coming year.

➔ Catherine Dyakanoff and Emma Burrows returned to their respective normal schools after a ten days sojourn here with us.

➔ The juniors seem to have taken a keen interest in their new studies. It is hoped that they will continue in the same spirit with which they began.

➔ William C. Jones a member of the sophomore class left for his home Monday evening, and his classmates wish that he may ever be guided " Onward".

➔ Eudocia Sedick and Rose McFarland pupil teachers and graduates, taught several days this week in no. 4 school. We were very glad to have their assistance.

➔ The seniors had their first lesson in Physics Monday, They now realize from the shock they received from the battery that chemical action produces electricity.

➔ While promotions were taking place a party of graduates led by Albert Exendine visited the different classes and cheered them up, which was enough to encourage all those who succeeded as well as those who failed.

➔ Miss Kanp is our new teacher in no. 2 school room. Miss Kanp is not a stranger to all of us, nor to the service, having served twelve years in western schools. We extend a cordial welcome to her.

➔ Four hundred thirty one pupils were promoted last Monday. The new classes have gone to work with a vim which is very encouraging. We are planing to have a month of steady earnest work before the warm weather comes. There is a chance of promotion every month for the pupil who works ahead of his class.

INDUSTRIAL NOTES.

➔ The carpenters are installing new bookcases in the library.

➔ Mr. Charles Dillon is in temporary charge of the blacksmith shop.

➔ Clarence Faulkner has gone to Philadelphia to take a clerical position.

➔ Adeline Kingsley and Mary Runnels will be missed from the sewing-room.

➔ Joseph Miguel has gone to the Baldwin Locomotive works in Philadelphia to learn the trade of machinist.

➔ The tinners have had a slippery job cleaning snow off some of the roofs, and ice from a few of the gutters.

➔ A fine set of double driving harness has been made by the harnessmakers for Agent Blackman of the Kiowa Agency.

➔ The painters have just finished a fine Concord buggy which will be shipped with the harness to Agent Blackman today.

➔ The painters have just finished a fine f ull platform wagon for Agent Michilet of White Earth, Minn. The wagon will be shipped to-day.

➔ The girls in the dress making class have been very busy in making new working dresses for the first party of girls who are soon to leave for the country.

➔ Mr. Weber and his force of boys cast a large counter-weight weighing several hundred pounds which will be used on the large drop-curtain in the auditorium.

➔ Chauncey Charles and Dock Yukkanatache members of class '06, have gone to Philadelphia where they are employed at their trade. Elias Charles will leave in a few days to take up electro-typing. Louis Paul will go to Philadelphia in a day or two to work at his trade.

Miscellaneous Items.

➔ William Jones has gone to his home in Minnesota.

➔ Miss Gedney's mother was her guest during Commencement.

➔ The Sunday evening prayer meeting was held in the Auditorium.

➔ The printers turned out a fine pictorial souvenir booklet for Commencement.

➔ The first party of boys leave Saturday moring for their country homes.

➔ Blaine M. Hill came in from the country to hear the debate Monday evening.

➔ Jacob Taylor writes that he is enjoying himself in the country and likes his place.

➔ There are two supplements to this week's Arrow—Class 1906 and Major Mercer.

➔ Louis Bear, our sousaphone player, is going home. We will miss Louis in the band.

➔ The Sioux Song, "My Heart is Sad" had to be sung a second time so persistent was the applause.

➔ This is one of the large number of native songs recorded by Harold A. Loring, Supervison of Native Indian Music. The band arrangement is by Mr. Stauffer.

➔ There are many boys and girls going to the country we hope to see them return with good reports.

➔The school song "Hail to thee Carlisle" made quite a hit. The words and music are by Mr Stauffer.

➔ Daniel Eagle has left after a few days visit, to attend the Business College at Trenton, New Jersey.

➔ The Sunday evening prayer meeting was held in the Auditorium. Many of the graduates participated.

➔ Little Sarah Tallchief went home with her parents last Saturday night, the little girls were sorry to see her leave.

➔ The girls of company "A" were sorry to part with their Captain, Miss Marion Powlas, who is a great favorite among them.

➔ In spite of all the snow and wintry weather, old robin red-breast has begun to show himself. We are glad to see him again.

➔ Fred Doxtator has just returned from Northampton County, Pa. where he stayed for a year and a half, enjoying his life as a farmer.

➔ In a letter to a friend Fred C. Waterman says that he is well, and is working in the hospital of the Good Shepherd in Syracuse, New York.

➔ Miss Lottie Hilton of Melrose Park, Pa. was a visitor here during our Commencement, and all her friends were glad to see her looking so well.

➔ Miss Anna Sweetcorn who went to her home on account of ill-health, writes that she has greatly improved,, and wishes to be remembered to her friends and class-mates, Anna was a member of class 1907.

➔ In a le'ter to a friend, we learn that Bertha Hawk, who is at Rising Sun, Md, is getting along very nicely. She sends her best regards to her Carlisle friends.

➔ The first praty of the boys leave Saturday morning for their country homes. The outing office has been busy for some time getting the first party arranged for.

➔ We learn through a letter to a friend, that Maggie Goleach is getting along very nicely at her country home in Kennett Square, Pa. She wishes to be remembered to all her friends.

➔ Several beautiful pictures of great composers have been hung in the band room. The boys who are working in the wood shop and the carpenter shop made the frames for the pictures.

➔ Dr. Sheldon Jackson gave the Alaskan pupils a word of advice while here during commencement week. The Alaskans are always glad to see him. He gave each a new testament and hymn book combined.

ATHLETICS

➔ The most promising of the new candidates are Crow, Sundown, Mitchell, Amos, Thomas, Jackson and Island.

➔ Mr. Venne has promised the boys that the annual cross-country run will take place, as soon as the weather permits.

➔ Losing Jude at pole vaulting will cripple us considerable for this event but some of the new candidates are already showing very good form. These are Freemont, Doxtator, Island and Jackson.

➔ The basket-ball games held in the gymnasium during commencement was to decide the championship of the academic department. Both the girls and boys team of class '08 won. They have had their pictures taken together.

➔ At the call for track candidates last Monday forty responded. Prospects for a first class track team this year are excellent. Captain Mt. Pleasant is in fine condition and can be relied upon for his usual fifteen points in every meet. This year he is going after the world's record in the broad jump and on the 440 yards dash there will not be many in the colleges of this country who will feel sure to run with him. He expects to hold his own in the 100 yard dash also.

Twohearts, who at present holds the school record in the half-mile is going to be stronger this year. With Snow on the mile and Schrimpscher in the two mile runs we can feel sure on the long distances.

Libby and Charles will take care of the hurdle races. Thomas, Exendine and Charles make three good applicants for the high jump. Charles with also get second place in the broad jump when necessary as he jumps over 21 feet.

In Exendine, Freemont, Billy, Thomas and Simpson we have a set of heavy weight men that will be hard to beat. Billy and Simpson have been throwing the hammer the whole year round so that now they are in perfect form.

➔ The Masquerade party given in the gymnasium last Friday night by the juniors in honor of the seniors was a great success. The seniors imitated elderly characters, the juniors, juveniles. Much orginality was displayed in the make-up of many individuals. Refreshments were served.

➔ Master Joseph Byron Kling, a musical protege of Rev. Fr. Ganss, gave a piano recital in the Auditorium before the students and employees last Tuesday evening. The program consisted of eleven numbers from such composers as Beethoven, Bach, Moskowski, Schuberth, Chapin, Strauss, and Liszt.

Master Kling is but fourteen years old, and his wonderful rendition of these great composers places him high among the musical wonders of the age.

➔ Miss Bourassa, clsss 1890, was married last week in Washington to Mr. Francis La Flesche who for many years has been a valued employee of the Indian office. For many years Miss Bourassa has held positions of responsibility in the Indian service, having been for several years a teacher at Carlisle. The many friends of the bride and groom extend their heartiest congratulations.

➔ Perry Tsamauwa one of Carlisle's most progressive representative, died March 19th th at Albuquerque, New Mexico. "The remains of Perry Tsamauwa, a Laguna Indian, age 26, employed at the Indian school for the past five years, who died last night at 10 o'clock, from pneumonia, will be shipped to Cubero, N. M. tonight, on No. 1 1, interment taking place in Casa Blanca. Deceased was an exceedingly intelligent Indian, having been a student at Carlisle. His employment at the local Indian school made many friends, who will regret to hear of his untimely death."—*Albuquerque Evening Citizen.*