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**The Philippine Craftsman**

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# The Philippine Craftsman

VOL. II

MANILA, DECEMBER, 1913

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Embroidery is not merely "a mass of pretty spots," nor "something nice to trim a dress." It is the history of the human soul—its eternal expression. It carries the message we receive from bygone ages, and is the receptacle of thoughts and emotions of millions of human beings gone out of sight—messages more lasting than human life. Its origin is older than the most ancient books of our book shrines, and is lost in prehistoric times.

—A. L. Pogosky.

# The Philippine Craftsman

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## LACE AND LACE MAKING.

By Miss ESTELLA M. MURDOCH, Supervising Teacher, Assisted by Mrs. W. W. WESTON.

**N**O apology for anything in the shape of art needlework is necessary, as decorative stitchery ranks first among the minor arts. We cannot claim that the olden days in which our grandmothers sat for hours and hours patiently and laboriously toiling at their embroidery frames are again with us, but we assert unhesitatingly that during the past few years there has been a great revival in the art of needlework and that the interest which is shown in the production of any new form of such work and the avidity with which it is taken up, conclusively prove this statement.

The lace industry was first introduced into the Philippines through the medium of church schools. The ideas worked out and the results obtained in the public schools have to some extent been made possible by work they did. In the past few years a knowledge of the art has been widely extended among younger girls through the efforts of the Bureau of Education by means of instruction given to pupils of the primary and intermediate grades of the public schools. By this means the daily income of the ordinary family can unquestionably be materially increased through the art needlework of the women and older girls. In Switzerland, where home industries have been developed upon a larger scale than in most other countries, the itemized statement of the exports during the year 1910 shows that embroidery and laces alone lacked but \$436,000 of amounting to as much as the entire exports of the Philippine Islands during the same year.

Lace is the name applied to any ornamental openwork of threads of flax, cotton, silk, gold, silver, or other fiber. Such threads may be looped or plaited or twisted together in one of three ways: (1) With a needle, making what is distinctively known as "needle-point" lace; (2) with bobbins, pins, and a pillow or cushion, making "bobbin lace" (commonly called "pillow lace"); and (3) by machinery, making imitations of both needle-point and bobbin-lace patterns.

The study of needle-point laces covers five distinct varieties: (1) Reticelle lace; (2) the punto in aria; (3) the padded or Venice point style; (4) the light quality of net laces; (5) the appliqué styles.

Reticelle was the earliest of needle-point laces. It was a development of cutwork and drawnwork. The fabric in the beginning had a design cut out and the edge was then buttonholed. "Brides" or meshes and picots were introduced at intervals and the simplest geometrical outlines were followed. Greater variety was shown later on; circles were introduced and finally the foundation, or cutwork, was abandoned and the work depended entirely upon the needlework for results.

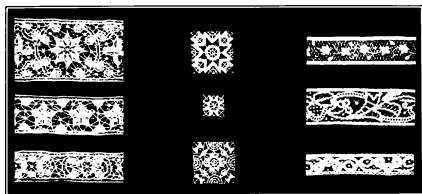
"Punto in aria" was directly developed from ancient forms of drawn and cut work. Once fairly established, they quickly grew in beauty and variety of pattern, complexity of stitch, and delicacy of execution, until Venetian lace, or "punto in aria," attained an artistic grace and perfection which baffles all description. "Point," as used in needlework, is the French word for a stitch of any description, so the name "point lace" signifies lace made in stitches, Point de Venice, Point de Bruxelles, etc. The term "point lace" frequently indicates fineness in the quality of lace. "Needle-point" lace has the technical peculiarity that a needle and thread alone are used in its manufacture; but the word "point" is used by connoisseurs and experts for both needle and bobbin kinds, to designate laces of superior design and workmanship. Thus it is that Point de Valenciennes, Point de Malines, and other bobbin laces are so described when they are especially good and fine.

In "punto in aria" the pattern is first drawn or stamped on parchment or tracing cloth and stitched to a bit of stout linen. Upon the leading lines of the pattern, threads are laid, which are here and there fastened through to the parchment and linen by means of stitches. When the skeleton thread pattern is completed, a complete covering of thread in buttonhole stitches is cast upon it. Between the leading lines of the patterns may be inserted "ties," "links," or "meshes" so that the pattern is held together. When all is finished, a knife is passed between the parchment and stout linen, cutting the stitches which have passed through them, thus releasing the lace itself from its parchment pattern.

In filling in the spaces, discrimination and taste are both requisite, the former to insure that the stitches are selected with an eye to their suitability for the space, both as regards their

pattern and strength; taste is necessary to produce the dainty lace effects which are characteristic of this work, and for this reason the stitches must be chosen with a view to their suitability to the form and position of the space to be filled. It is impossible to give any exact rule as to when to use any certain stitch; this must be left entirely to the preference of the worker, as it is quite possible for two pieces of work having the same design to have the stitches so arranged in the spaces that the finished pieces are entirely different in effect and appearance, and yet both may be equally charming and original.

The richest and most complicated of all point laces is the raised Venice point (*Gros Point de Venice*) which differs from the ordinary needle-point lace in that its outlines are in relief

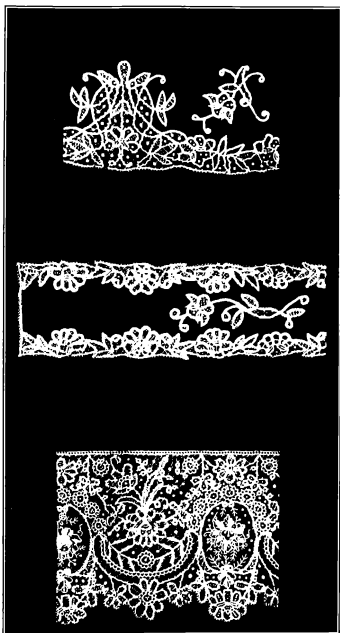


Venetian, Renaissance, and net laces.

The three lower pieces of lace are imitation Venetian lace; the three center ones, real Venetian lace; while the ones at the top are Renaissance and Princess appliqué.

by means of threads of padding. Sometimes there is double and triple relief. Italy has always led in the art of making point lace. Its beauty both in workmanship and in artistic design was greatest in the sixteenth and seventeenth centuries. The old designs and stitches are now being revived in all their beauty and loveliness at Venice, but the exquisitely fine Antwerp threads once used can no longer be procured.

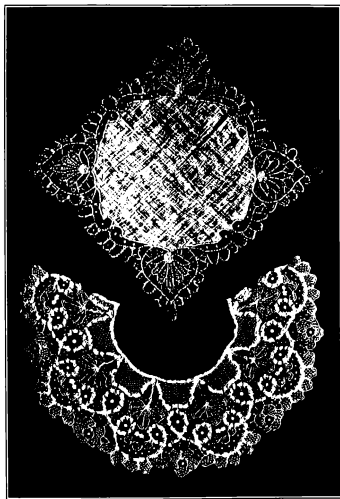
We hear so much of *filet* nowadays, read of it as the chief embellishment in fashionable trousseaux, see it ornamenting the newest sofa cushions, and bordering costly household linen belonging to women of taste, that a few words of explanation as to its origin and uses may be helpful. It is seldom that a single type of needlework can be used in such a variety of ways; its scores of uses and designs vary from those which are fine



Renaissance and net laces.

The lower piece is Renaissance lace with Venetian inserts. The upper two are Princess appliqué.

as cobwebs suitable for the yokes of baby gowns, to the coarser qualities intended for the decoration of household linens. Like all really good needlework, its origin must be sought for in the realms of antiquity. It is in fact one of the earliest types of openwork ornamentation mentioned in the Bible. Filet or darned



Renaissance lace collar and handkerchief.—Concepcion School, Manila.

netting may claim the distinction of having come from the oldest form of ornamental openwork made from threads. The style of netting has survived not only in fish nets common to all people but in the fine netting done in western Asia to-day, known as Jewish or Armenian lace. In all the types of filet netting the meshes or holes have remained diamond-shaped, just



as the threads naturally lie when first netted; but sometime in the middle ages there was conceived the idea of pulling the net square; this was the beginning of what is now known as filet. It has been said that the idea of darning a design into this net was suggested to the fisher women by seeing the seaweed caught in the meshes of the fish nets as they were hung up to dry.

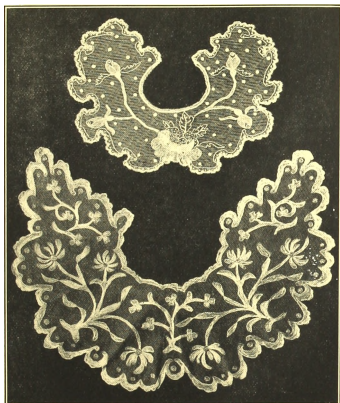


Tambour lace scarf.

Though this form of lace is having a period of especial favor just now, it has always been more or less popular. Perhaps its popularity has been due in part to the simplicity of its construction, the only articles of equipment necessary for making the netting being a filet needle, or shuttle, usually of steel, upon which to wind the hard-twisted thread, and a mesh stick, or

gauge, which may be of steel, wood, ivory, bone, or celluloid, for regulating the size of the meshes or holes of the net. These mesh sticks and also the needles vary in size according to the coarseness or fineness of the work. The handmade netting is begun with a single stitch and increasing a stitch on each side until the required size is obtained. Such netting can be cut anywhere without raveling.

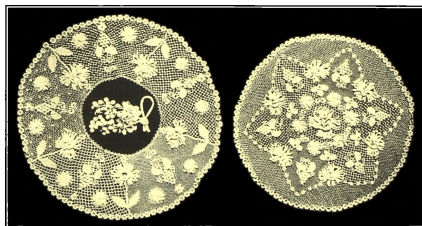
An exceedingly close imitation of this handmade netting can



Tambour lace collars—Singalong and Malate Schools.

be purchased at reasonable rates in Paris, thus enabling those who desire filet lace to indulge in the luxury at a comparatively small expense. The perfection to which machinery has been brought, has enabled experts to produce very excellent imitations of handmade netting to a very remarkable degree, so that those who desire to make filet lace at the present day have only to purchase a length of the desired quality of netting, cut it the desired shape and size, and begin work upon it.

To prepare for darning a design into any piece of netting, round or square frames may be used, the square frames generally being preferred. A long, rather slender, blunt-pointed needle is best. In most of the beautiful laces of olden times, and of the present as well, the thread used for the netting is coarse enough so that the same-sized thread if darned over and under twice each way in each mesh will just fill the spaces. This over and under darning both ways is the most common method of making a design in filet, and is known as "cloth of linen stitch" (*point de toile*). One invariable rule may be laid down for this darning—that is, always go over one line of the netting and under the next line, horizontally and perpendicularly. Turning corners as well as passing from one part of the work to the other should



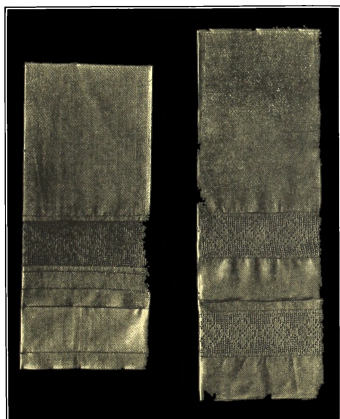
Irish crochet net.

be done in the same way. The most common defect in poor filet is the failure to darn around the intersection of a corner, thus leaving the design free to pull in from the corner when handled or laundered.

Filet lace when finished needs straightening; this can be easily and perfectly done by laying the work face downwards upon a board covered with a flannel or something soft, and ironing carefully over the back with a warm iron without dampening. If it is soiled, it should be scalded a few minutes in boiling soapy water, then rinsed with cold soft water, and when almost dry it should be ironed as already described. Filet work is becoming a pastime among some of the leisure class, and occasionally one hears of it as a paying enterprise among those who are poorer.

Modern point-lace work is also known as Renaissance lace,

which means a lace having the form of the design in braid with the intervening spaces filled in with stitches; the ultimate success and effect of the finished work depends entirely on the selection and arrangement of the design and materials. This style of needle-point lace is made to a small extent by the leisure classes in England at the present day; it is usually made of braid of varying sizes and widths, arranged in a pattern, the design being



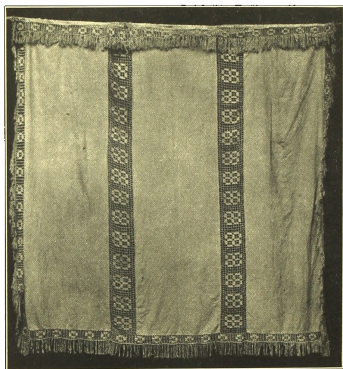
*Fitel crachet in linen towels.*

filled in with stitches copied from those used in antique foreign needle-point laces.

Among the light qualities of net laces may be mentioned Limerick and tambour. Limerick, so called from the city where it originated, is, properly speaking, embroidery upon net. It has been made in several styles, two of which are in vogue at the present time. It is much lighter and more delicate in general appearance than tambour lace. Net for making Limerick lace

must be stretched in a frame, when the design may be run with fine soft cotton or linen thread and filled in with various fancy stitches in the most delicate darning.

Tambour is a chain-stitch work on net. This at one time was done entirely by hand. The name is derived from the tambour stand used by the operator to hold the work. On fine goods the work is still done by hand, but by far the larger proportion of tambour work is now done by the chain-stitch sewing machine. To make tambour lace, the net should be stretched upon a frame



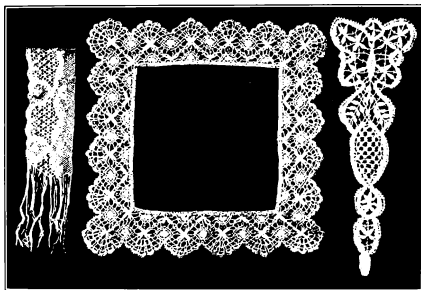
Filet crochet and linen bedspread—Intramuros School.

and the design worked upon it in fine soft cotton thread with a hook resembling a crochet needle. There are not so many fancy stitches used in tambour lace as in run lace, but it is surprising how much variety can be produced by slight differences in the manner of working this one stitch. The lace scarf and the two collars seen on pages 358 and 359 will serve as examples of this beautiful lace.

Space forbids a lengthy consideration of a most beautiful and fluffy net lace called Carrickmacross, which has a most interest-

ing historical development and is very delicate and pretty; the demand for it is so great that the supply is not sufficient to meet it. The materials are inexpensive and easily obtained and it is comparatively easy for adult beginners to get satisfactory results from printed instructions.

Princess appliqué is considered a handmade lace. The name refers to the laying of one material on another, which in this instance means the applying or sewing of braids, such as Honiton, point lace, etc., on a foundation of Brussels net. This is a favorite method with lace workers of various countries for mounting delicate and costly sprays and motifs. Much of the



Bobbin lace.

English Honiton and also various makes of Belgian lace are finished in this manner. This has probably arisen as an imitation of the original method of procedure; namely, that of tacking the lace sprays to a cloth foundation and connecting them by fine needlework stitches; when finished, it has the appearance of what we now know as Brussels net. The wedding dress of Queen Victoria and those of three of her daughters were made of appliqué lace.

Net or appliqué laces range from the finest and daintiest of filmy laces to the coarser styles of Marie Antoinette. In the former the regular point and Honiton braids are used, while in the Marie Antoinette coarser cords, rings, and various heavy

showy braids are used to represent flowers and foliage, bowknots, scroll effects, etc. The net must be basted smoothly and carefully on the stamped pattern. Much of the beauty of the finished

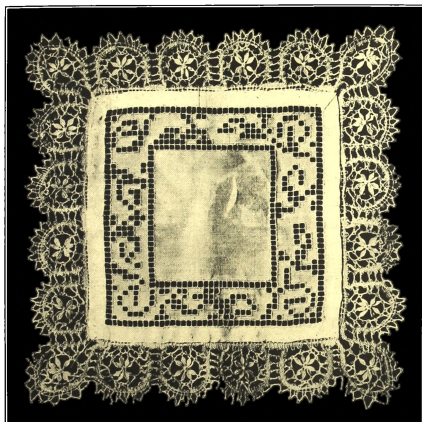


Bobbin lace.

work depends upon the neatness and exactness of this part of the work. The lines of the pattern can be seen through the net, and over these the braid, etc., must be basted. Where the net under-

neath is to be cut away, the edge of the braid must be fastened to the net with close buttonhole stitches of fine thread. A row of braid almost always outlines the edges of the lace. The various stitches are then worked in the spaces of the design outlined by the braid. Dots made in various ways may be effectively arranged in the larger spaces.

Many beautiful and valuable laces have this same net for their



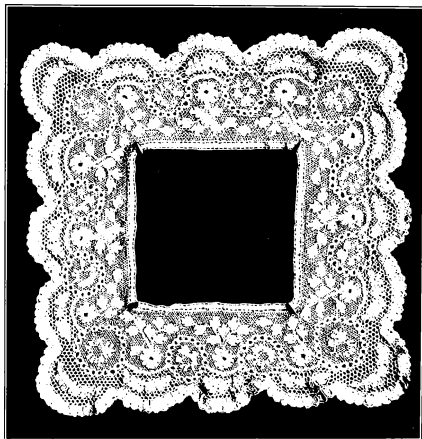
Bobbin lace edged doily—San Andres School.

foundation. In Limerick lace a design is worked into the net itself, with delicate and somewhat intricate stitchery. Isle of Wight lace and the pretty old-fashioned needle-run laces, which are too seldom seen in these days, are all worked on much the same lines. Princess appliqué should present no difficulties to ordinary needlewomen, as neat sewing is really the principal requirement for the making of this charming lace. Materials selected for the making of Princess appliqué should be of the



best quality. The net should be tacked to a stamped pattern, and the design, which shows clearly through it, should then be followed out in the various braids which are first basted and afterwards neatly sewed down. Light and dainty darning stitches in wee patterns may then be worked in to relieve the bareness and monotony of the plain net.

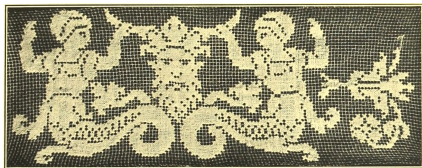
History, we are told, repeats itself and fashions most certainly



Very fine bobbin lace.

recur after long periods of time. The same may be said with regard to different kinds of needlework. Crochet, after many years of obscurity, has again come to the fore with increased popularity. The stitches are comparatively few in number and easy of accomplishment, and if carefully worked and judiciously combined, the result will most certainly give complete satisfaction.

The inventor of this style of crochet was Mademoiselle Riégo de la Blauchardiére, who discovered that a particular kind of antique Spanish needle-point lace could be most effectively copied in crochet. About the year 1846 she published instructions for a few patterns, which, after the distress caused by the great potato famine, were used by many ladies of high position for teaching the work to classes and schools, thus giving opportunities for cottage workers to earn a living. Forty years later this gifted French lady, seeing how successful her first books had been in establishing the industry, published her last book on the subject, spending her spare time for five years on this labor of love. Her books are all long since out of print, and her name is probably unknown to the numerous workers who owe so much to her invention. Her lace, however, continues and has developed rapidly the last ten or more years.



Filet lace.

There are three distinct styles of Irish crochet in vogue at the present time. The one most commonly seen is slightly corded, a second style is very heavily padded, while a third has no padding at all. The best lace is always very firmly and evenly worked, and is fresh and clean when it comes from the hands of the workers. The motifs in Irish crochet which consist of numerous sprigs representing leaves, flowers, etc., in more or less conventional style, are worked over a cord foundation. These rather solid pieces of crochet are then arranged according to fancy and firmly sewed upon a foundation pattern of the desired shape. The spaces between are then filled in with lacelike bars of crochet. Attention should be given to the designs of Irish crochet lace to avoid haphazard work which is hardly worth the name. Purchasers are beginning to recognize that a number of meaningless sprigs of no special shape, placed at random and filled in, will not produce a piece of high-class Irish crochet lace. There is

plenty of opportunity for originality, as designs do not have to be followed blindly as is necessary in some laces. If by changing a curve or adding a leaflet to a sprig, the worker can make a design more pleasing to herself, she should not hesitate to do so. Irish crochet bears much the same relationship to ordinary crochet that net embroidery bears to cross-stitch work.

Filet crochet, like ordinary crochet, progresses in rows of carefully counted stitches. The former is easy to make and can be readily copied from any pattern of filet or cross-stitch work. It is adaptable for many purposes such as bedroom sets, towels,



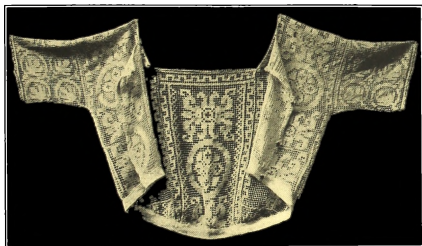
Filet lace.

frounces, draperies, bureau and stand covers, window shades, curtains, porch and lingerie pillows. Cream, *écru*, and even darker shades are suitable for country homes, while the lighter shades prevail in the town house. Cotton thread, as a rule, is better for the inexperienced worker. Very many designs with adequate instructions suitable for all classes of workers may be purchased at reasonable rates.

"Pillow lace" is a term which is often inaccurately used to describe "bobbin lace," as needle-point and knotted laces are also made on pillows. In the middle of the sixteenth century Barbara Uttmann, a burgher's daughter of Nuremberg, improved

upon the coarse network of the Saxony Harz Mountains and introduced into Germany the art of making bobbin lace. In 1561 she set up her own factory at Annaberg, and the industry soon spread from the Bavarian frontiers into the surrounding country, until at her death in 1575, 30,000 persons were employed.

Bobbin lace is not built upon a substructure, or skeleton thread pattern, such as is used for needle-point lace. It is the representation of a pattern or design obtained by twisting and plaiting threads by means of bobbins on a pillow. It is made from many threads, each wound upon a bobbin. Various shapes and styles of pillows or cushions have been used, but they may be classed under either the bolsterlike variety used in Germany, Austria,



Finest lace waist.

Italy, and Russia, where the bobbins are manipulated with the hands underneath, or the flat cushions with or without a small revolving cylinder near the back, for the pattern, lace, etc. The bobbins on the flat cushion are manipulated with the hands above them. This variety is used in the Netherlands, France, and England. The patterns were formerly made of parchment, but now most of them are made of tough thick paper. Blue-print patterns may be made from designs traced on architects' linen, being subsequently reënforced by pasting cloth or tough paper on the back. Very many kinds of lace may be copied by making blue prints directly from the lace itself, it being necessary, of course, to paste strong tough paper or cloth on the back of the blue print before attempting to use it as a pattern on a pillow.

In the public schools of the Philippines, bobbin lace can usually be made with less supervision than some of the simpler laces, because so many of the native teachers are already somewhat familiar with the art. The narrow edges and insertions are more profitable and less tiresome for the inexperienced workers in school. It is a good plan, especially in primary schools, to have an assortment of easy designs suitable for small articles, such as motifs for inserts, baby shoes, hand bags, doilies, etc., in order that the less-experienced workers may not become weary with the monotony of making yards and yards of never-ending lace. Small boys frequently like to make laces if the work is taught in an interesting manner.

Bobbin lace making is closely allied to weaving; the threads used in it are fastened to the pillow at one end by means of pins, while the other end is wound round bobbins which are generally made of wood. The method of working in pillow lace is by plaiting and twisting the threads, by throwing the bobbins under and over each other. It is by no means a difficult handicraft, and a certain amount of proficiency can be attained through patience and perseverance, though not equaling the proficiency of lace makers who have been trained from their early childhood in England, France, or Italy. From Belgium and Italy the art of bobbin lace making soon spread to other countries, and each country introduced its own special designs and patterns, so that in time each country had its own special lace name for it. Thus Honiton lace is so named from Honiton in Devonshire, Venetian from Venice, Genoese from Genoa, Maltese from Malta, Buckinghamshire from Buckingham, and so on through all the laces. The difference between the various kinds of bobbin lace is mostly in the design and the kind of thread used. The value of the lace depends on the design, on the way it is executed, and on the age—very old lace being the most valuable. Honiton, old Genoese point, and all the laces now technically known as guipure are made in separate pieces; in Honiton these pieces are generally flowers and leaves and sometimes butterflies and birds, which are afterwards joined by means of plaits and twists, or occasionally with a needle. This, and the cord often used in them, make the distinction between guipure laces and what the French call "dentelle," which is a ground of network with a design worked in it. The Flemish lace makers invented guipure lace also. Guipure de Venice is a flat Venetian lace made with bobbins. Cluny guipure is one of the earliest forms of lace known, and is distinguished from the ordinary darned netting or "Point Conte" by raised stitches, wheels, circles, and triangles.

The word "cluny" is now commonly used to refer to a coarse, thick, strong bobbin lace, usually of old design and frequently geometric in character. Cluny and torchon are closely related; both are geometric in design, but torchon is more decidedly so, with straight line forms predominating. They are chiefly distinguished by their background; torchon always has a net background while cluny has plaited bars or "brides." The term "cluny" is of modern origin when applied to bobbin laces, and comes from the Cluny Museum in Paris.

Teneriffe, like many fabrics of a special character, takes its name from the country whence it originated. In these days of enterprise and travel, much of it has found its way into America. The position expected for Paraguay or Teneriffe effects has materialized, and Teneriffes are really becoming dominant in the market to-day. No special knowledge of lace making is necessary, and with undivided attention and a careful perusal of instructions, the most beautiful specimens of lace may be obtained. A novel and effective treatment of Teneriffe work is the colored lace in conjunction with colored material. One of the most exquisite patterns of laces this season was a beautiful and imaginative design combining Paraguay motifs with fine net. These spider-web-like creations are increasing in popularity. They possess the essential qualities of lace beauty to the highest degree. Leading designers are using them very effectively in combination with other lace materials.

Tatting, a knotted work, is one of the spidery laces that is showing a gradual but steady increase in popularity. The art of tatting dates back to the sixteenth century. Her Majesty the Queen of Roumania, known to many of us as Carmen Sylva, is mistress of the art of tatting and has done much in recent years to raise it to a fine art. Though one of the simple forms of fancywork, it possesses possibilities of endless adaptation and design for workers in art needlework, such as collars for coats and dresses, dainty handkerchiefs, cardcases, coin purses, etc. Combined with fine net and edgings, in the hands of an artistic worker, it becomes a most effective trimming.

An article of this kind might not be considered quite complete without some mention of "macramé," another of the knotted laces. The term macramé is of Arabic origin and means a knotted fringe. It was used by the ancient Assyrians, Egyptians, and Romans to decorate the edges of garments, draperies, and floor coverings. In Italy, about the sixteenth or seventeenth century, wonderfully intricate geometrical patterns were evolved, which were so suggestive of their oriental origin that one is

reminded of the beautiful Moorish lattice windows and fretwork. It was known as "punto a groppo" and was used principally for church and household purposes. The materials and equipment necessary to make this simple form of lace work are inexpensive and are easily obtained.

A word in regard to the mending of some laces might not be out of place. The part of the lace to be mended is first tacked to a colored oilcloth or stout paper and the edges cut straight to the thread. It takes three rows of stitches to fill up the damaged part so as to imitate lace or net. In the first place, cross threads must be laid from side to side, darned well beyond the cut edge; secondly, beginning from one corner the threads are laid diagonally across, the first layer being taken once around each thread; lastly, threads are carried across the first and second layers, worked diagonally the opposite way from that of the second layers; in working the third layer, the first and second layers are each in their turn encircled twice by the third layer, thus forming a complete mesh.

To clean lace successfully in general requires great care and plenty of time. Sometimes all that is necessary to clean a piece of lace is to lay it between two sheets of white or blue paper, first sprinkling it well with powdered magnesia then placing it between the leaves of a book for several days. Lace placed between sheets of blue paper will keep white longer than when put between white paper or laid away in a box. When actual laundering is necessary, the lace should be basted on a strip of cheesecloth and wound very carefully around a cylindrical bottle (which has been partially filled or weighted with water or sand), then covered with another piece of cheesecloth. Cold soft water and a small piece of ivory soap should be put into a granite pan. The lace-wound bottle should be placed in the soapy water, which is allowed to come to a boil. As the water becomes dirty, it should be poured off and replaced with more cold water and soap. This process is continued until the boiling water remains clear. Then the lace is rinsed thoroughly in a basin of clean cold water. It is allowed to remain on the bottle until dry, when it is separated from the cheesecloth. To clean Princess lace, a smooth board should be covered with a white linen or cotton cloth. The lace should be pinned upon this with small pins. It should then be touched lightly with a sponge and warm soapy water, and on no account rubbed; this sponging process should be repeated until it is perfectly clean. The soap is then carefully rinsed from the lace. It may be dried by pressing with a dry sponge or soft towel. Should it be deemed necessary to iron the lace, it should

be laid face downwards upon a soft piece of flannel and ironed on the back with a piece of tissue paper between the lace and the iron. When ironed, it should be left pinned down to the board until perfectly dry, otherwise it might shrink and pull out of shape. Large pieces of lace may be basted evenly and securely on cheesecloth. Another piece of cheesecloth should be basted over it, then it should be boiled in a series of soapy waters. It should then be rinsed and squeezed—not wrung. The cheesecloth upon which the lace was basted should be pinned to a sheet stretched in a frame or fastened to a carpet. If it is desired to starch the lace, a sufficient amount of good laundry starch should be dissolved in cold water. Half of this should be boiled and, when moderately cool, the remaining uncooked starch should be added until the mixture is of the consistency of cream. The lace should be dipped into this and carefully squeezed and patted until the starch is uniformly worked in. Then it is rolled in a towel and left for some hours.

A hot iron is a dangerous instrument in any except the most experienced hands. It is far better to stretch the lace face downward on a clean surface such as a drawing board or soft-wood table, pinning it with thumb tacks or drawing pins till all puckers disappear and all creases are smoothed out. The back should then be treated with a gum-arabic solution or Brigg's glazine. Machine-made laces may be ironed successfully on the wrong side if placed on several thicknesses of flannel. First the picots may be carefully pulled into place, then the lace must be placed in its original shape and ironed until dry. The lace must then be pulled along its entire length between the fingers from the footing to its opposite edge, and the iron passed again over its length. The pulling relieves the lace of the stiff starched effect and gives it a pliable appearance. Newly made or un-starched lace may be ironed by placing the right side downward upon a pad or ironing board covered with several thicknesses of flannel. A damp cloth should be carefully spread over the lace and pressed with a hot iron until dry. A little sugar added to the water in which the overcloth is dampened will stiffen the lace. Another excellent method is to moisten a piece of new white goods containing starch or dressing and place it over the lace, then press until dry. A little cold tea added to the rinsing water will tint lace a greenish hue; a few drops of black coffee in the rinsing water will produce a cream shade. If it is desired to bleach lace, it should be soaked about fifteen minutes in a bowl of white soap suds; this is poured off and replaced with clean suds. The bowl is then put in the sunshine and the lather



changed twice a day until the lace is restored to its original whiteness. It is then rinsed thoroughly in several waters, the last one of which should contain one or two lumps of sugar to a pint of water. It should be ironed with the right side down, after it has been covered with a thin muslin cloth. When the lace is ironed dry, it should be manipulated with the fingers until the original shape is restored. The picots can be arranged with a fine lace needle that will not split the delicate threads.

When "real lace" has become stained or greasy from wear, it should be placed in pure olive oil for a day or two, then basted on cheesecloth and wound on a cylindrical bottle and boiled as already described. Irish guipure and real point lace should be pinned out and never ironed. A piece of white muslin should be stretched over several thicknesses of flannel on a board. Only a portion of the dampened lace should be removed at a time from the cloth within which it is rolled. If the lace while being pinned should become dry, it should be again moistened. The footing should be first pinned down to the padded board with plenty of pins put close together; then each picot should be pinned separately and the lace left until it is dry; if it has a raised design, it should be stamped on the wrong side with a lace awl.

Never before has there been such an age for elaborate and costly handworked accessories of every kind and description—lace, embroideries, ribbon work, all are brought into the service of the dress scheme of the up-to-date woman and serve to give the touch of individuality so much desired by leaders of fashion. These dress accessories are so very expensive that they are generally considered to be the luxuries of the rich. Usually the materials for the most costly and exquisite laces are worth only a few cents, the value of the finished article depending upon the amount of artistic skill and labor expended upon it, thus placing within the reach of the average ambitious woman the possession of many beautiful and otherwise unattainable articles of attire. A first-class product could be produced in large quantities here in the Philippines, and there is a market in the United States for such goods greater than could possibly be supplied from the Philippines. Lace making may be considered by some to be only the creation of a simple, graceful fabric or a diversion for women. It may be a surprise to some to learn that the great Napoleon stimulated an interest in the beautiful and fascinating art of lace making as a means of improving the finances of his country.

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NOTE.—The "Encyclopedia of Needlework" contains many valuable ideas for those who desire to learn various kinds of art needlework.

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There is no greater blessing in this world than a steady job, with increasing efficiency and hence increasing wages as time goes on; and the only way to insure that happy state for each individual is to give him the training for some skilled vocation in life, whether it be in business, in a trade, or in a profession. (Paul H. Hanus.)

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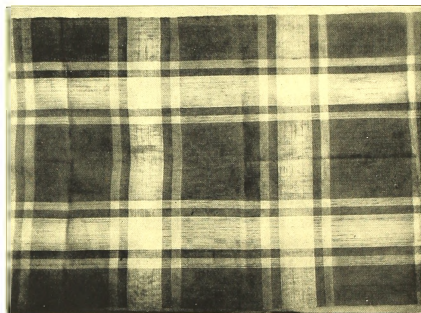
## PRIMITIVE LOOMS AND WEAVING IN THE PHILIPPINES.

By LUTHER PARKER, Industrial Inspector.

[Illustrations by the author and others.]

ONE of the most interesting discoveries made by the industrial teachers of the Bureau of Education in their search for work utilizing local materials and the previous training of the people, has been that of the ancient art of weaving a coarse, cheap cloth from the raffia or outer skin of the leaflet of the buri palm (*Corypha elata*).

This cloth is reported as being woven in several isolated com-

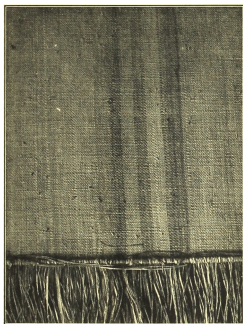


Buri-raffia cloth from Isio, Occidental Negros.

munities in the Philippines, such as the islands of Burias, Masbate, Tablas, Romblon, and Marinduque, in some isolated island barrios in the Aklan district of Capiz Province, in a few places in Bohol, a few mountain barrios of southern Panay, in some towns of Occidental Negros, and in certain districts of the Bicol provinces. It is probable that it is woven in several places yet unreported.

The cloth is known by various names in the different districts where woven. In Capiz and Camarines it is commonly called "daet," in southern Iloilo and southern Occidental Negros it is known as "banlo," while the term "saguran" is generally used in Bohol and in the Bicol provinces. "Bayocboc" in the eastern part of Iloilo Province and "hubuk" in Occidental Negros have also been reported.

In some isolated communities it is still used for clothing for both men and women, as in the barrio of Jardin, Bakon, Sorsogon. It is sometimes used for sails, mosquito curtains, pillows, sleeping mats or "blankets," and as a wrapper for baled tobacco.



Buri-rafia cloth from the "sicad" of Leon.

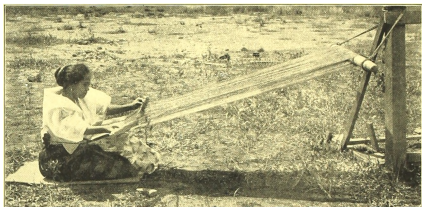
The coarsest cloth is made in Bohol and the finest is woven in Isio, Occidental Negros, and Leon, Iloilo. At both Leon and Isio colored stripes are woven in, the colors used being red, from sappan wood or "sibucao" (*Caesalpinia sappan*) and the yellow of the turmeric root (*Corcuma longa*) quite generally known locally as "dilao."

The weaving is usually done on the ordinary well-known loom at which the weaver sits on a bench and works the treadles with the feet. In a few out-of-the-way places, however, the

weavers still use a kind of primitive loom, called the "sicad" in the Visayan dialect.

The word "sicad" is common to several dialects, among which are the Tagalog, Bicol, Visayan, and Pampangan, having in each practically the same significance—that is, "to thrust or push with the foot," or to brace oneself with the feet against some object as a log or bar. It needs but a glance at this type of loom, in which the weaver sits on the floor and braces the feet against a horizontal bar of bamboo or wood, to understand the significance of the name.

The loom is without pedals and so constructed that the warp is kept taut by pushing the body back against a piece of wood or cloth to which the bar holding the cloth end of the warp is



Weaving on the Leon "sicad."

attached. In order to sustain this backward thrust of the body it is necessary to brace the feet against a crossbar which lies on the floor at right angles to the body of the weaver.

The following list of names of the parts of a sicad were obtained personally by the writer in the barrio of Bayag, Leon, Iloilo Province, where a loom of this type was found in operation:

*Sicad*.—The whole loom.

*Pudan*.—A piece of wood back of the weaver.

*Atip*.—Cloth beam.

*Barira*.—Batten, knife-shaped, of heavy wood.

*Bintingan*.—Harness. (*Guyon*, Tagalog.)

*Libo*.—Lease rod of round bamboo.

*Sarabdan*.—Piece of palma brava across threads beyond the libo (lease rod).

*Binting*.—Heddle.

*Siligsig*.—Two strips of buri midrib at the beginning of the cloth.

*Sablayanan*.—Warp beam.

*Sicadan*.—Bamboo to brace feet against. (*Sicaran*, Tagalog.)

*Tucod-tucod*.—Two bamboos that go through the sicadan to form a frame.

*Palay*.—Peg in the tucod-tucod.

*Pagsadan*.—Bamboo at back, parallel with the sicadan.

*Rorong*.—Upright bamboo against the wall to hold the warp beam.

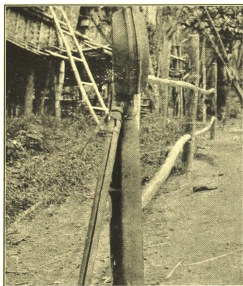
*Lanzadera* (Sp.).—Shuttle (modern).

*Sicuan*.—Bamboo shuttle (primitive type).

*Calinyas*.—Bobbin.

*Patiyo*.—Coconut leaf midrib that holds the bobbin in the shuttle.

Spindle. (*Culatingting*, Tagalog.)



Principal parts of the Lumangan "sicad."

*Purundan*.—Bamboo spool on which thread is wound before it is put on the warping frame. (*Pulunan*, Tagalog.)

*Tondag*.—Warp. (*Hanay*, Tagalog.)

*Pugana*.—Woof. (*Pacain*, Tagalog.)

*Samay*.—Design. (*Samay*, Tagalog.)

Another sicad was found in the barrio of Lumangan, Miagao, Iloilo Province. The former owner of this loom, Juana Panugadia, now deceased, wove a hard cotton cloth of homespun thread and of a design peculiar to that section of the province.

At this place I found the pieces of a very primitive warping frame, that, so far as I know, is unique especially in the use of the fallen trunk of a banana plant to hold the upright pieces on which the thread is wound. The Manobo weaver uses a piece

of bamboo in place of the banana stalk. Each part of the frame having a name in the dialect would argue its antiquity. In the hope that this article will reach the notice of some one who has seen a similar contrivance in other parts of Malaysia, a photograph of the frame and a list of the names of its parts are given.

PARTS OF THE WARPING FRAME.

*Sabunganan*.—Warping frame.

*Barakdan*.—Long horizontal brace of the warping frame.

*Patuctuc*.—The upright pieces, called a pair, that hold the ends of the "barakdan."



The warping frame at Lumangan, Iloilo.

*Libo*.—The knifelike piece used to mark the place of the lease rod.

*Bintinganan*.—The piece of wood to mark the place of the heddle or "binting."

PARTS OF THE SICAD.

*Pudan*.—Piece of wood back of the weaver.

*Barera*.—Batten.

*Binting*.—Heddle, worked by hand.

*Atep*.—Cloth beam. (The pronunciation of this word varies with the locality.)

The present owner of the loom being absent, I was unable to procure this very interesting, and, I believe, rare example of a primitive warping frame.

I saw and photographed a piece of cloth (see illustration) that was woven on the *sicad* of the deceased Juana. No one now weaves on the *sicad* in Lumangan, but it was asserted that in Bitaoayan, near the barrio of Igpaho, Miagao, there is a woman who still weaves on a *sicad*.

In the town of Miagao there are but two or three women who now weave buri cloth or "banlo," as it is called, and their weaving is done on the ordinary treadle loom. This loom is often made



Cloth woven on the Lumangan "*sicad*."

almost entirely of bamboo. "Banlo" was formerly woven quite generally in this community, as was also a form of homespun tapestry of which a few pieces are yet in existence, having been handed down as heirlooms. I saw and photographed several of these interesting "*sobre-camas*" or bedcovers, as they are quite generally known. (See illustrations.)

As can be seen by consulting the plates given herewith, the designs are in some pieces quite highly conventionalized. The



significance of many of the designs has been forgotten, generally, but it is hoped that a closer study of this question of design will enable the Bureau of Education to discover the significance of most of the designs. Few women are now alive who know how to reproduce the difficult pieces of this tapestry. An old man, who had seen this cloth woven on the *sicad*, gave a vivid dramatization of the method of weaving one of the intricate designs. According to his description of the process there were two or more heddle tenders on each side of the cloth who passed and repassed each other rhythmically, and, as he expressed it, "as if



Embroidered Miagao "tapestry."

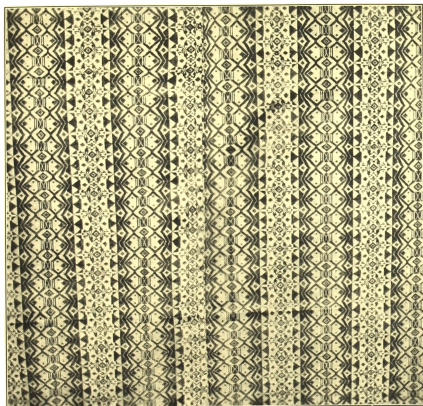
they were dancing." He stated that no one lived now in that community who knew how to weave in the old way.

The age of some of these bedcovers, or hammocks ("*duyan*" in Visayan) as they are also called, is well authenticated, and in a few cases the date is woven in the cloth. I saw one dated blanket over 80 years old. Others were said to have been made as far back as the latter part of the eighteenth century and are yet in a good state of preservation.

Several of these blankets have been heavily embroidered with native cotton thread for the space of 2 or 3 feet from each end. The designs used appear to have had an European

source or at least to have been influenced thereby, although the "manaol," or white and brown hawk, is a bird well known in Philippine mythology, and as "Singalong Burong," or war god, of the Dyaks of North Borneo from whom the Visayans of the Miagao section claim descent.

Likewise, the tiger which is used as a motif in these designs is native to the Malay Peninsula and therefore well known to the Bornean ancestors of these people through their contact with



Some Miagao "tapestry."

the traveling Malay merchants of pre-Spanish times. These tapestries have been used in Miagao for a century or more for decoration of the *via crucis* on Corpus Christi day, a carpet being made of them from the church door over which was carried the image of the saint.

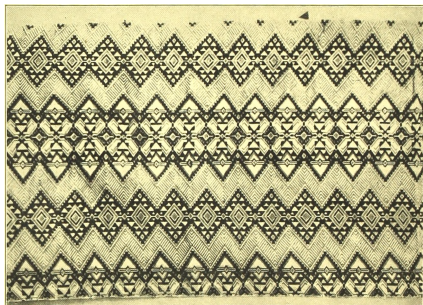
The number of blankets is decreasing yearly and the quaint customs connected with their use will soon be of the past.

A study of the distribution of the sicad develops the fact that it is used quite generally in the Mountain Province (see plate

of Ifugao woman weaving on primitive loom) as well as among the non-Christians of Mindanao, in addition to the more or less isolated communities cited in the Christian provinces.

Its use is quite extensive among the tribes of northern Borneo. Mr. Thomas S. Chapman is quoted by H. Ling Roth in "The Natives of Sarawak and British North Borneo" as follows:

At present there are only two kinds of looms, the "tumpoh" at which the weaver sits on the floor and uses the hands only, and the "tenjak" at which the weaver sits on a bench and uses hands and feet, the latter working treadles.



Some Miagao "tapestry."

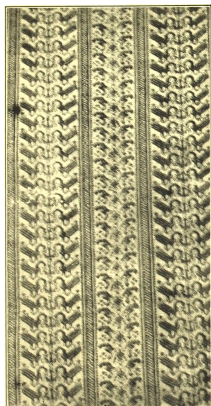
Evidently weaving in Borneo is done much as in the Philippines as far as the matter of looms is concerned.

The "tumpoh" is the hand loom of the Dusuns of British North Borneo and a plate of this loom, the original of which is stated to be in the British Museum, is shown on page 30, of Volume II, of "The Natives of Sarawak and British North Borneo."

A photograph of the "sicad" from Iloilo Province accompanies this article and will serve for comparison with the "tumpoh" of the Dusuns.

From all evidence at hand it would seem reasonable to suppose

that the "sacad" is the original primitive type of loom of the Philippine Islands and that it was introduced directly by people from Borneo, Java, or Sumatra with which places trade was being carried on when the Portuguese first came to the Indies, near the end of the fifteenth century, and with which countries there were probably commercial, political, and religious relations for many centuries before the arrival of the first Europeans.



Some Mlagao "tapestry."

It is quite probable that the art of weaving on this primitive loom was brought from India originally. The Hindu weaver of the present day uses a very similar loom of great simplicity. It would seem likely that weaving might have been introduced in various parts of Malaysia by Buddhist missionaries, since the strongholds of Buddhism were comparatively near for many centuries.

The Japanese still use a loom of the "sacad" type in which the

weaver sits on the floor inside a framework that serves as a brace for the body and feet, the "sicaran" of the Tagalog, Pampangan, and Visayan dialects.

In ancient times the people of Malaysia, quite generally, no doubt, wore cloth made from the beaten bark of trees and later learned to weave cloth from the fibers of various plants such as the "saba," a species of banana, the abaca fibers, and the raffia from the buri palm. Mr. Thomas S. Chapman, already quoted by Roth, says (Vol. II, p. 35) :

"Tekalong" bark in former days, when cloth was not to be had, was used by the Dyaks of the Batang Lupar district (Borneo) for their waist cloths.



Ifugao woman weaving on the primitive loom.

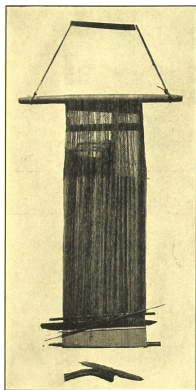
It is even now in use by the Dyaks in the "ulu" or heads of rivers where cloth is expensive, and by persons who cannot afford to buy cloth.

In 1907, I saw a Negrito woman make a piece of bark cloth on the Gumain River in the Zambales Mountains of Pampanga Province. I believe that Prof. Frederick Starr, of Chicago University, secured the piece for his collection.

The above discussion, with the citations given, and others omitted for lack of space, makes it clear that the Filipinos were undoubtedly familiar with weaving, especially on the hand loom, long before the advent of the Spaniards. As to the time of the introduction of the foot loom in the Philippines no reliable information has yet come to the knowledge of the writer.

Jagor, who was in the Philippines about 1860, makes the statement that Father Sedeño, a Jesuit, introduced the culture of the silkworm and weaving in the Philippines in 1581, but in view of the undoubted antiquity of loom weaving in the Archipelago, it is likely that Sedeño introduced the weaving of silk only, and not weaving in general.

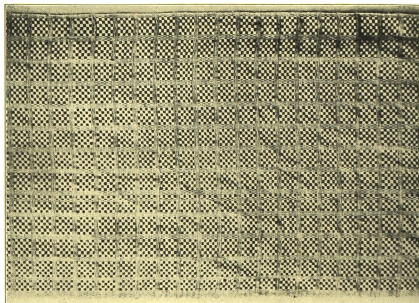
The writer visited the barrio of Bayang of New Washington, Capiz Province, on July 27, 1912, in company with the division



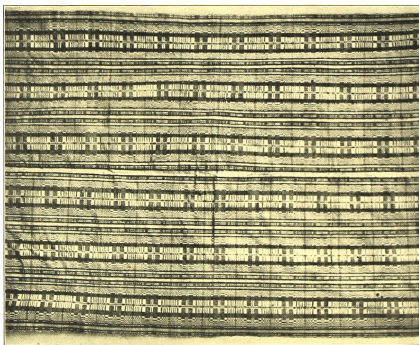
The "sicad" of Leon, Iloilo.

superintendent and the division industrial supervisor for the purpose of investigating the weaving of buri-raffia cloth.

This barrio is on a small island several hours' row from any municipality and but little visited or influenced by any one from the outside world. Our investigations were carried on in the house of the Reyes family, who lived on a small hill just above the landing place and wove raffia cloth, of ordinary quality, for the market. The mother and grandmother of the present head of the house wove this cloth and there is no family tradition as to when their ancestors settled at this place or learned the craft.



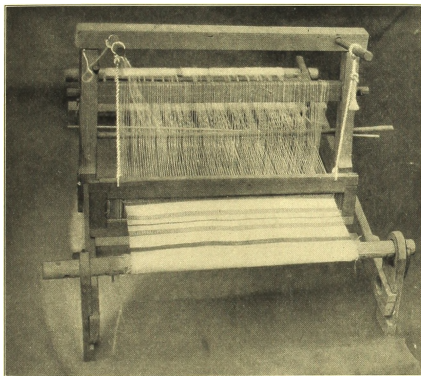
Hamasaut from Bahai.



Cloth woven on "slead" in Bayag, Leon, Iloilo; "Whirlwind" design.

The family consisted of the mother, 40 years of age, and several daughters who gave most of their time to weaving outside of the time consumed in necessary housework. Working thus it was calculated that it would take five persons four days to tie and reel 28 meters of thread and about ten days would be required to weave 28 varas of "daet."

It was stated that a woman working steadily could weave 4 varas of cloth in a day of ten to twelve hours. Only approximate



Hand loom for buli-rafia cloth.

figures could be obtained and these after much questioning and checking of answers as the methods of the "efficiency engineer" were of course unknown to this family in their little industry and they were unused to the idea of figuring out processes. It would be interesting to follow up our visit and ascertain its effect on these simple people and learn if they considered that they had been entertaining some fanatics obsessed with figures or whether they grasped the idea of experting their own work and by figuring on it came to the same conclusion that we did; namely, that it



did not pay them to work for the 7 centavos a day each that their weaving brought them.

The names of a few of the parts of the loom used here and the parts of a leaf of buri, follow:

*Binting* (Visayan: Thread).—Heddle made of raffia.

*Sabungan*.—Reel on which the thread is wound preparatory to putting it in the loom.

*Sulod* (Visayan: Enter; go in).—Reed; made of hibiok splints.

*Bugus*.—(Visayan: All, whole).—A piece of cloth.

*Daet*.—Buri-raffia cloth.

*Buntal*.—An unopened leaf of buri.

*Panid*.—A leaflet.

*Pihac*.—(Visayan: To halve; to split). Half of a leaflet.

*Pungpung* (Visayan: Bunch).—A bundle of raffia from one leaf.

*Pac-is*.—Upper part of "pihac."

*Quisquis*.—Lower part of "pihac."

*Dinaitan*.—Inner part of leaf or waste.

*Cogon*.—Midrib of "panid."

*Pac-lang*.—Petiole of the "buntal."

*Nahot* (Visayan: Fiber, thread, string; buntal fiber).—Fiber from the "pac-lang."

*Taguic* (Visayan: To weave bamboo slats).—Sixteen threads of about 1 meter each.

The upper part of the leaf, or "pac-is," is used for the woof.

The lower part of the leaf, or "quisquis," is used for the warp.

The "pac-is" is smoother and thinner than the "quisquis."

#### STRIPPING THE BURI RAFFIA.

One of the Reyes girls took an unopened buri leaf and separated each leaflet by hand.

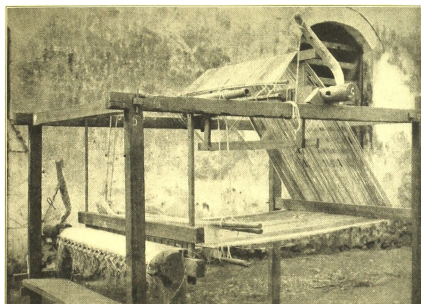
The midrib of the leaflet was stripped off, leaving two separate half leaflets. A half leaflet was then held by the tip with the left hand, the base of the leaflet being held by the foot. With the upper part of the leaflet held uppermost, the top of the leaflet was bent over, away from the person, until the surfaces were in contact. By pressing the tip down and sliding it back on itself toward the body, a blister was raised in the skin of the leaflet serving as a place of departure from which the skin could be separated from the pulp. The remaining or lower half of the leaflet was then scraped free of pulp with a knife.

The skin of the upper part of the leaf was thinner and smoother than that of the lower and was piled separately.

The girl who stripped the buri used her back comb to shred the leaflets into threads which were laid in the sun to dry before being tied. The whitest buri raffia has been prepared in Bohol. The raffia, after being scraped clean of all pulp, is put at once in the hot sun until dry, usually no chemicals being used.

The following directions for putting buri raffia thread on the modern warping frame were given me by the weaving teacher in the public school at San Joaquin, Iloilo, August 10, 1912, for the ordinary treadle loom.

This warping frame had 19 pegs on each side and five double pegs in the middle.



Ordinary treadle loom with buri-rafia cloth set up.

Begin to wind with two threads on peg No. 7, right side, counting from the top, the ends of the threads being tied together and slipped over the peg. Carry to middle double peg, under right peg, over left, to left side peg No. 7, under, to peg No. 8, right, under, back over to peg No. 8, left, up and inside Nos. 9 and 10, outside No. 11, over and down inside and cross outside,



Bamboo shuttle. (a) Upper end; (b) tongue; (c) notched base.

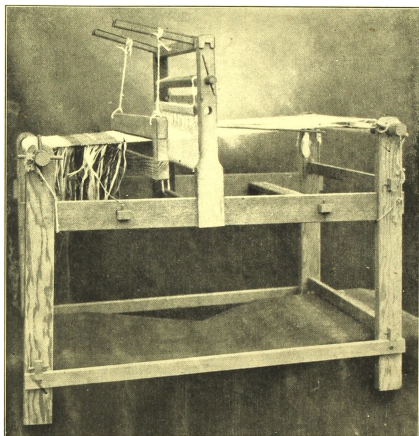
down by Nos. 10 and 9, under No. 8, left, across to No. 8, right, over and under, back across to No. 7, left, over and under and to middle double pegs, under left double peg, over right double peg, across to No. 7, right over and under. Repeat above movements until 17 ties of 40 threads are wound.

A simple bamboo shuttle, about 18 inches long, like the one

illustrated, was used to carry the buri raffia thread for the woof. Another primitive shuttle is made of a strip of bamboo or wood with a notch cut in each end.

The following directions were given for threading the "sikuan" or primitive bamboo shuttle:

Take shuttle in left hand, point *a* up with thread tied at base of tongue *b*; bring thread down to base *c*; under base, up, turn



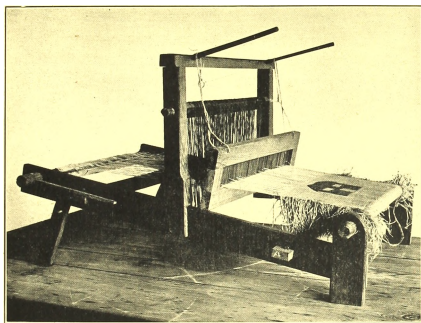
Side view of hand loom with legs.

shuttle in hand toward right, push tongue forward and out using forefinger and thumb of left hand, bring thread over end of tongue; away from the body, bring thread down, under base, turn shuttle toward right, bring up, push tongue backward, put thread over end of tongue away from body. Repeat these motions till the shuttle is wound.

Any study to be of value should result in increasing the efficiency of the workers and thus raising the daily wage. Simply

to demonstrate that only 7 centavos a day is earned by work of this nature would be of no practical value unless a method could be devised by which this sum could be increased.

It is believed that the Bureau of Education is in a position to make the weaving of buri-raffia cloth a profitable industry, though it is now one of the poorest money getters of the household industries. The improvement of the quality of the cloth so that it can be used in making fancy cushions, screens, porch pillows, mats, and various other articles commanding a good price as articles of luxury instead of being used for the roughest and



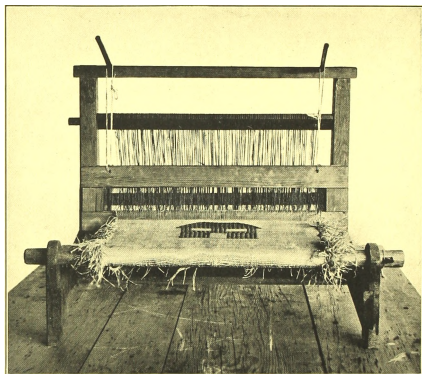
Hand loom for the weaving of buri-raffia cushion covers—side view.

cheapest sort of work will make it possible for a weaver to make a good living wage instead of a mere pittance as at present.

A small loom (see illustrations and working drawings) was perfected at Baguio during April and May, 1913, by Messrs. Jos. H. Loughran and Raymond R. Sage, division industrial supervisors. This loom can be used for weaving raffia cushions and strips of sinamay and cloth that can be embroidered with abaca and made into screens, porch pillows, mats, and like articles. It will be put into a number of schools this year and it is believed will form the basis for a regeneration of a decadent industry that commands the interest and respect of students of textiles for its

primitive character and for its persistence through the centuries during which the people possessing the art traveled by slow stages far from their ancestral homes probably in Sumatra, Java, and Borneo to the distant "three islands" spoken of in the thirteenth century by the Ptolemy of the Philippines, the Chinese geographer, Chao Ju-kua.

In the ethnological museum of the Bureau of Science on Calle Anloague, Manila, there are several primitive looms from Min-



Hand loom for the weaving of buri-rafia cushion covers—front view.

danao, which have been set up, making an interesting exhibit for the study of primitive methods of weaving. There are also similar looms in the museum from northern Luzon.

Since the Manobo and Mandayan peoples of eastern Mindanao are geographically nearer the Visayans than are the people of the north of Luzon and have closer affinities in language and customs it is interesting to compare the names of the parts of their primitive loom with those of the Visayans.

The following list was furnished me through the courtesy of

Mr. J. M. Garvan, who has personally collected in Mindanao many of the articles named:

*Loom*.—Hablón or habion (Manobo); ablón (Mandayan); habol (Visayan).

*Warp beam*.—Sapatán (Mandayan).

*Cloth beam*.—Pangana (Mandayan); ososan (Manobo).

*Batten*.—Balila (Mandayan).

*Reed*.—Sood (Manobo and Mandayan).

*Lease rod*.—Sikuan (Manobo and Mandayan).

*Shuttle*.—Bibitan (Mandayan).

*Abaca thread*.—Lanot (Mandayan) lanot or yanot (Manobo).

*Abaca thread before being set up*.—Hinanay (Manobo).

*Basket for holding thread while being knotted*.—Supónan (Mandayan).

*Design*.—Bentok (Mandayan); batok (Manobo).

A primitive warping frame, made of a few pieces of bamboo, is used by the Manobos. One of these warping frames is exhibited in the Anloague museum under No. 3592.

The foregoing article is not exhaustive of the subject of primitive weaving, but is intended to stimulate similar studies of like interesting subjects bearing upon the industrial work of the Bureau of Education in the Philippines.

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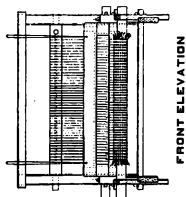
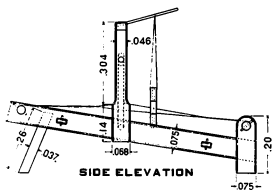
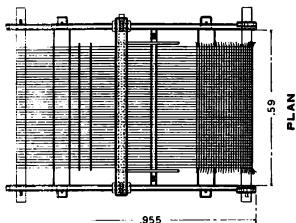
#### WHAT THE BEST SIGNIFIES.

Many persons have no conception of what progressive ideas really mean. Now and then one has an opportunity to get a tangible demonstration of progressiveness, such as the work of Professor P. G. Holden and his associates in Iowa, who promoted seed testing for eight years.

We do not need to insist that the figures which are here given in round numbers shall be verifiable in every particular in order to realize that the enormous gain is beyond comprehension. If they were half as great they would still be incomprehensible.

Iowa's corn crop has been increased fully 3 bushels per acre. There are about 100,000 acres in corn per county, and there are ninety-nine counties. This makes 300,000 bushels per county or about 30,000,000 bushels extra for the State. This production would be literally realized if every farmer tested his corn scientifically and if all good corn land were utilized. At 50 cents a bushel this would mean a gain forever and ever of \$15,000,000 a year to one State from the activities and scientific revelation and promotion of one man.

Every decided improvement in school work has as definite a possibility as this. (Journal of Education.)



Mat loom.





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## YACAL, OUR MOST ABUNDANT STRONG-CONSTRUCTION TIMBER.

By E. E. SCHNEIDER, Wood Expert, Bureau of Forestry.

Yacal is produced by several different trees of the greatest timber-producing family in the Philippines. It is the hardest, heaviest, strongest, and most durable timber of its family (with the possible exception of the dense yellow heartwood of *narig*), and is at the same time the most abundant of all Philippine woods possessing this combination of good qualities. Beside these advantages, it is also the cheapest of our strong and durable construction timbers.

Yacal (using this as the trade name of all the species that produce wood of this grade) is hard, heavy, strong, tough, and very durable. When freshly sawn it is of a dull yellow color, rapidly turning to brown which, on long exposure to the weather, becomes a brownish gray. Sound dry wood from mature trees, when finished with a sharp tool, has a somewhat translucent appearance, like yellowish horn. The wood is rather coarse in texture, somewhat cross-grained, therefore not difficult to split tangentially, but very difficult to split radially. It is not difficult to saw, especially when fresh, the sawing leaving no "furry" surface. When old and dry, it saws, if possible, with an even cleaner surface than when fresh. Nor is it difficult to plane, except that, on account of its cross-grained structure, the plane has to be set very fine for the finishing cut.

Yacal is one of the best all-round structural timbers in the Islands. It can be obtained in almost any length or size desired, and in price it is much lower than ipil and molave, its chief competitors for large construction timbers. The following table shows the prices and the mechanical properties of yacal and a number of other well-known timbers; the prices are quoted from the Bureau of Supply, which, as is well known, is one of the largest timber purchasers and purveyors in the Islands at present; the figures showing weight, stiffness, and strength are from Gardner's "Mechanical Tests, Properties, and Uses of Thirty-four Philippine Woods." (Bull. 4; also Bull. 11). In each case where several figures are given by Gardner for timber from dif-

ferent sources, or of different degrees of seasoning, the highest figure is quoted.

Name of timber.	Price per 1,000 board feet.	Weight per cubic foot of dry wood.	Stiffness (modulus of elasticity, 1,000 pounds per square inch).	Strength (modulus of rupture, pounds per square inch).
	<i>Pounds.</i>			
Molave .....	₱250	49	1,614	8,580
Ipil .....	₱192-250	50	1,953	13,520
Yacal .....	130	52	2,583	15,690
Mangachapuy .....	125	37	1,528	8,600
Palo Maria .....	120	39	1,461	8,930
Guijo .....	107	44	2,158	15,150
Lumbayao .....	76	35	1,570	11,390
Apitong .....	71	40	2,144	11,620

\* Approximate.

A cursory examination of this table shows the superiority of yacal in strength and also that it has the advantage in price over the only two of the whole list that equal it in durability namely, molave and ipil. For all structural purposes, except salt-water piling, yacal is only slightly less durable than those two, even when in contact with the ground. Railway ties of yacal have been known to last ten years, and termites do not destroy it easily, but the teredo attacks it rapidly when used for piling.

Yacal is used and recommended for the following purposes: Posts; poles, paving blocks; ties; bridges and wharfs (above tide water); beams, joists, rafters; window sills; sash; siding; flooring; keels and other heavy framing in ships; ax and other tool handles; spokes, fellies, hubs, poles, singletrees, axles, cart frames; steering wheels; plows and harrows; skids, levers, etc.; fence posts, rails, pickets, etc.

On account of its great strength and durability, cheapness and abundance, yacal is especially valuable for heavy construction as a substitute for molave, ipil, dungon, betis, bansalaguin, and similar strong and durable, but comparatively scarce and high-priced, woods. As seen from the above table, it costs from ₱60 to ₱120 less per 1,000 feet than molave and ipil; whereas it weighs but very little more, it is nearly 14 per cent stronger than ipil and over 45 per cent stronger than molave. On the other hand, it is much more durable than, for instance, guijo and apitong; both of these are more abundant than yacal, are considerably cheaper and approach it in strength, but neither one of them can be compared to it in durability under severe conditions.

In situations exposed to rain, such as window sills, frames

and sash, porch pillars, balustrades, and floors, yacal has another advantage over molave and ipil. Both of these stain the water that runs over them, molave to a dirty yellow and ipil to a dark, rusty brown. In the case of molave, the stain is not so penetrating nor does it continue to come out for more than the first rainy season, but the coloring matter of ipil continues to come out for years, badly discolored any adjacent masonry, cement, or other



Base of yacal, showing characteristic bark.

woods, whether painted or unpainted. Yacal is practically free from such soluble coloring matter and consequently does not disfigure neighboring parts of the building.

Such comparisons might be made with almost all the woods known in the Islands and in almost every case yacal would be found to excel any given competitor in two out of the three great requisites—cheapness, strength, durability.

Yacal is very widely distributed, one or more of the species producing commercial yacal being found in most provinces.

True yacal (*Hopea plagata*) has been reported from the following provinces, the words in parenthesis being the local names of the species in each given region: Cagayan (*taggay*), Ilocos Norte (*seggay*), Nueva Vizcaya (*banutan*), Pangasinan (*yacal*), Bulacan (*saplungan*), Zambales (*yacal*, *siggay a purao*), Min-



Bole of a tall yacal tree.

doro (*malium*), Tayabas (*yacal*), Camarines and Sorsogon (*guisoc-guisoc*), Zamboanga and Basilan (*quiebra-hacha*), Cotabato (*yacal-negro*).

Black yacal is a variety of the same species found in Zamboanga, Pangasinan, and Zambales. In Zamboanga, especially, it is generally of smaller diameter than the typical form; for this reason the minimum diameter limit for cutting it was reduced to 40 centimeters in those regions where it is common. The local

name yacal-negro given it in Zamboanga is derived from the dark color of the bark, the wood being identical with yacal. Beside the Zamboanga name of yacal-negro, it is known by the same local names as yacal.

Other species producing commercial yacal are:

Guisoc (*Shorea balangeran*), reported from Pangasinan (pamayausen, yamban), Zambales (yamban puti), Tayabas (yacal), Camarines and Albay (guisoc, guisoc-guisoc, guisoc amarillo, guisoc kalabañgan), Leyte (guisoc madlao), Zamboanga (guisoc, yacal), Davao (guisoc); Malayacal (*Hopea ovalifolia*) and magasusu (*Hopea mindanensis*) from Zamboanga and Basilan.

Another species (*Hopea foxworthyi*) is known both in Zamboanga and Sibuyan as mangachapuy, but the wood is hard and heavy and would certainly pass in the market, not as a mangachapuy, but as a yacal.

One of the most recently discovered species (*Hopea* sp. undescribed) is reported so far only from Tawi-tawi, where it is known as gyam.

Narig (*Vatica mangachapoi*), the yacal-like wood mentioned above (with some other, so far undescribed kinds of the same genus), is reported from a large number of provinces: Cagayan (banik, narik), Ilocos Sur (labang, kalanigin), Benguet (aniga), Union (salungan), Pangasinan (tiranlay, aningat, putungan), Nueva Ecija (palosapis), Tayabas (yacal blanco, bibit), Rizal (lasikan), Laguna (palosapis), Bataan (karig), Camarines (dagam), Albay (tapurao), Leyte (saung-saungan), Davao, Cotabato (narig), Zamboanga and Basilan (narig), Misamis (banga-susu). It has a large and rather perishable sapwood, easily attacked both by fungi and insects, but the heartwood is probably as durable as the best of the yacals. It is of very fine texture, straight grained, hard, and heavy, but not difficult to work, taking a smooth and glossy finish under a sharp tool; it is pale yellow when fresh, turning to clear yellowish brown on exposure. The trees are tall, straight, and rather slender, of excellent form for posts, piling, and sawn or hewn railroad ties.

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"It is the imperative duty of the state to create school organizations which deal with the trade-training of boys and girls, which enter into the question with the utmost thoroughness, enlarging and deepening it, and thereby awakening in boys and girls many-sided capacity for work and a living joy in work." (Dr. Georg Kerschensteiner.)

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## RELATIONS BETWEEN OWNERS AND TENANTS.

**T**O Americans contemplating the purchase of agricultural land in the Philippines, and a permanent residence in the country, the matter of native labor has seemed an almost insuperable obstacle to investment. There is less uniformity in the land-tenure system in the Philippines than in the United States, and, owing to the native laborer's lack of intelligence, whatever harmony of adjustment comes about must originate in the investor's power to adapt himself to well-established conditions; and while it is true that American business concepts do influence the relations of employer and laborer, that influence must be primarily subtle, not obvious. The American who would be a successful farmer in the Philippines must inform himself, in far more than superficial details, of the systems of land tenure in use, of their distribution, and of the peasant's own attitude toward landownership and agricultural industry.

Among the Americans who have foresight and ability in adapting themselves to local conditions is Mr. Percy G. Hill, whose experiences have a utilitarian value to every prospective hacendero, Filipino or American, or to any corporate body contemplating agriculture on a large scale.

In the early days Mr. Hill took up land in Nueva Ecija, in the Muñoz district, not far from the Central Luzon Agricultural School. He was not a scientific man, but he was instinctively a practical analyst, and he perceived that, for the most part, labor difficulties in the Philippines grow out of mutual misunderstanding, and that, in the case of parties mentally unequal, the burden of effort to adapt must be with the more intelligent party. He therefore acquainted himself with the nature and form of contracts to which Filipino labor had long been accustomed. Owning a large hacienda, he worked it on the share system. His contract with his laborers is a most interesting document; but before its translation in detail is submitted, a few words of explanation are necessary.

Philippine agricultural lands<sup>1</sup> are owned in large, medium,

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<sup>1</sup>For the statements of fact with regard to land tenure and systems of cultivation, the writer is indebted to Mr. Hugo Miller of the Bureau of Education, who discusses them in Chapter XII of his book, "Economic Conditions in the Philippines." (Ginn & Co., Boston.)

and small parcels. The large parcels are cultivated on either proprietary, share, or rental systems. The "kasama," one of the varieties of the share system, prevails on "nearly all the large holdings in the central plain of Luzon, in Zambales, and in the Cagayan Valley." The wording of Mr. Hill's contract is a practical explanation of the kasama system, except as the word *takalanan* needs definition. The word signifies a repayment with interest, from the laborer's share of the crop, on advances in food or money made in excess of contract stipulations. The rate of interest varies, increasing from 50 per cent to 100 per cent.

CONTRACT REGULATIONS AGREED TO BY TENANT.

ARTICLE 1. A tenant who enters into a contract presumably wishes to better his condition and to gain a livelihood for himself and his family; therefore, no one is expected to present himself who is trifling or lazy, who intends to defraud the proprietor of his (the proprietor's) half of the crop, or who does not wish to obey instructions.

ART. 2. During the working period,<sup>1</sup> a ration of palay is issued each Sunday, sufficient for the family for a week; and, on this day, the tenant must labor a few hours, mending fences, plowing the garden, or doing work of like nature.

ART. 3. (a) The tenant is strictly forbidden to take the carabao or work animal to any other barrio or town, to use it in catching deer, fish, or partridges (pamoge, etc.), or to use it in performing any other work without the permission of the owner. In case an animal is injured through the tenant's disobedience of this order, the tenant will make due compensation to the proprietor.

(b) If an animal is sick, the tenant will immediately give notice, so that the animal may receive medical treatment if it is necessary.

(c) The tenant will be held strictly responsible for proper care and feeding of the animal.

ART. 4. (a) The expenses of the transplanting, including food of the laborers engaged in this work, will be borne by the proprietor.

(b) The harvest will be the tenant's work, and all expense will be borne by him.

(c) The regular ration will stop upon completion of the transplanting, but if the tenant continues to draw rations, he may do so at current market prices.<sup>2</sup>

(d) After the planting of the main crop, the tenant will plant two paddies for the use of himself and family during the harvest time; but, as these will mature late, he will cut for his subsistence from the first ripe palay, leaving his own paddies as a substitute to the main crop.

<sup>1</sup> The working period means the planting period during which the tenant lives at the proprietor's expense. While the crop is maturing, the tenant lives at his own expense.

<sup>2</sup> It is the repayment with interest of this ration bought that is later described as "takalanan."

ART. 5. In case the tenant neglects to plant the seed given to him in proper season, he will be held responsible for loss or damage caused by said neglect.

ART. 6. (a) The winnowing is the work of the tenant, for which he will receive four per cent of the output, or one ganta per cavan.

(b) After winnowing, an amount of seed equivalent to that advanced to the tenant for planting will be deducted, and the remainder of the crop will be halved.

(c) The light grain winnowed out will be equally divided, since it is a part of the harvested crop, and will be used for the maintenance of the animals of both proprietor and tenant.

(d) If a threshing machine is used, the tenants will, each and all, help the threshing crew.

ART. 7. There will be no extra sheaves left in the field, as the loose palay of the stacking will be equally divided; and the palay once stacked, threshing commences.

ART. 8. The proprietor's share of the crop must be hulled first, but the tenant can hull an occasional cavan (for his own use); but after the proprietor's share is hulled, the tenant can have the use of both carts and animals for hulling his own share.

ART. 9. The tenant will make no agreement with other parties to raise hogs or chickens on share so long as the proprietor has animals which he (the tenant) can raise on equal share.

ART. 10. All secondary crops such as mongos, beans, oil seed, tobacco, camotes, and peanuts will be equally divided after seed has been deducted.

ART. 11. Corn will be harvested by the tenant and tied in bunches of twenty. An amount of corn in the ear equal to the amount of seed advanced will be deducted, and the remainder equally divided.

ART. 12. Sugar-cane products, either sugar or *base*, will be equally divided.

ART. 13. Enough rice will be hulled by the tenant to furnish sufficient food for his transplanters. During the transplanting season, each tenant will furnish at least one planter who will not be allowed to transplant the tenant's or any other's rice until the proprietor's crop is planted.

ART. 14. The tenant will work on the main dam and ditches, doing so on whatever day or days shall be appointed, and will strictly comply with the regulations governing the use of water on proper days and during proper hours.

ART. 15. The ration received by the tenant will be returned to the proprietor in the same amount as received. The proprietor does not wish the tenants to run into debt or to pay out money in *takalanan*; but, if there is no remedy, the tenant will pay at the rate of one peso per cavan in the patio. Once the threshing is finished, the tenant, for his guidance, will be given a statement of his debt or credit.

ART. 16. (a) The tenant will strictly comply with the orders he receives from the proprietor or foreman. Since his reason for entering the contract is to harvest as large a crop as possible, he is not to promise anything with which he will not comply.

(b) When the tenant hears the horn blowing, he will at once respond quickly, as this is generally a call to fight fire or thieves, or to maintain



order; and he is expected to work in harmony with his fellow employees in rendering efficient help.

ART. 17.—The tenant will see that his work is thorough and clean, so as to increase the yield of the land. He will use a hoe to uproot the *talahib*<sup>1</sup> and will clean and strengthen the rice dikes.

ART. 18. When a tenant neglects to tie up his animal, and it destroys crops, he will pay for the amount of damage done.

ART. 19. That all the tenants may obey these regulations, a set of fines will be in force as follows: For disobeying article 2, six gantas of palay; for article 3, one-half cavan; for article 6 (see No. 7), the seizing of the palay; for article 13, twenty centavos; for article 16, first six gantas to one-half cavan; for article 18, the amount of damage done. If all the tenants obey the regulations, no fines will be imposed, but it is necessary to punish the *paking*, or willfully deaf, as these men thrive on the labor done by the willing ones.

ART. 20. For the protection of both parties, the pass book will be presented whenever money, palay, or tools are issued.

ART. 21. The tenant who is industrious and diligent will live in comfort, as his share of the crop will be large, but the lazy, the hidebound, and the triflers will suffer want and poverty till death.

This contract is, in itself, a chapter on economics. It is not a document expounding a theory, or one compiled with the intention of enlisting sympathies. It is a matter-of-fact record of real conditions. Article 2, for instance, indicates clearly the paternal relation existing between landlord and tenant. The tenant is heedless and wasteful, taking no thought for the morrow. His employer deals with him as a child, limiting his ration to amounts which must be quickly consumed. The tenant trusts his employer. The palay used in the ration must be returned from the tenant's half of the crop. The employer keeps the account, and an unjust man may demand many fold what was given. On the other hand, the employer sometimes loses. The working season—roughly, from May to October—is usually the period of highest price for palay. The employer may issue several cavanés of rice for rations at ₱3 or ₱4 per cavan, but he takes rice in payment at a rate of ₱1.50 per cavan.

Article 4 of this contract is, from the standpoint of oriental customs, an exceedingly generous one. Usually the proprietor and tenant share the expense of transplanting, and, as the tenant has no capital, he has to borrow at an enormous rate of interest. The insertion of a clause which is intended to prevent the tenant's loading himself with debt is an effort to better the conditions of labor.

Article 13 has in view a steady supply of labor, and is intended

<sup>1</sup> Talahib, a rank grass.

to protect the proprietor from the thrifty habits of a tenant who might argue that a bird in the hand is worth two in the bush and that a daily wage in the present is worth more than a possible recompense in the future.

Of article 15, Mr. Hill himself states that all men who live from hand to mouth will run themselves into fabulous debt unless checked, and that "takalanan" is about the only way by which an employer can get even. He estimates the employer's loss through theft at 8 per cent of his half of the crop. The employer loses, also, by the fact that he issues rations when palay is at its highest price, and is repaid in kind when it is at its lowest. Lastly the tenants, from October to February, take the grain that they need for subsistence from the fields, and sell or trade it to peddlers. This grain should be equally divided but, as it is impossible to check it, it goes to the tenant. On these three counts the employer estimates his loss to be from 12 to 15 per cent of his half of the crop. He evens up by taking "takalanan." The system is a very old one, satisfactory to both tenant and proprietor.

Article 17 is an endeavor to secure fair work. Capital is intelligent, handicapped, and honest or dishonest according to the accident of circumstance. There are apparently none of the protections for either party which are the inevitable concomitants of intellectual development within the state. If, within the next two generations, such a stage of intelligence can be secured, through the medium of academic and industrial training in the public schools, that the laborer can arrive at a fair working knowledge of the elements of agriculture; if he can attain enough of arithmetic to keep his own accounts, and enough of general education to do a little thinking for himself, there is no doubt that the better class of proprietors will be only too happy to meet him halfway and to modernize the contracts in his favor.

There is nothing in the prevailing systems of agriculture leading to a betterment of conditions. The only hope for the Islands is an advance in intelligence in the laboring classes. Mr. Hill, himself, says that tenants are at the mercy of an employer's caprice as regards debt and the rules governing the same, and that an unrest is already beginning to show itself among the kasama. But he feels also that "no man has to be a paragon to get along with native labor on its own lines, if he does not expect too much," and he sums up his convictions in these words: "As a rule, the Filipinos have their own way of gathering their crops and doing their other labor;" and when

one considers that they have no real necessity to urge them to work, they are more truly industrious than we who are obliged to toil. The business of collecting and of disposing of their products is apparently loosely organized and unique; but it is admirably adapted to the people and to the conditions that obtain at present in the Islands. What they may be a generation hence is another problem.

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#### PLAN FOR TEACHING LACE MAKING IN THE BARRIOS.

Most teachers in barrios being men, they have difficulty in directing girls' industrial work. They know little about fiber exercises, less about plain sewing and nothing about lace making and embroidery. Where this difficulty is met the following plan is found to be helpful in the Catbalogan district where it is being used in connection with lace making.

Two girls in grade two or grade three, industrial work, go to the central school and take a two weeks' course in lace making under the direction of the teacher in charge of the work in the central school.

The lace-making course as given in the Samar Normal Institute of 1913 gives eleven preliminary lessons. Pupils who learn these are able to begin practice work on any of the lace models in the industrial catalogue. The girls who take this work are considered as "pensionadas" of that barrio. It is not difficult or expensive to get them to come to the central school. Many of them have relatives or friends with whom they can stay. If they have not, they may bring their food with them; or, better still, the other girls of the school may contribute a small amount toward their support while in the central school. In return for this the "pensionadas" will teach the lessons they learn.

These girls have their bobbins and pillows prepared before they leave their barrio. During the two weeks the "pensionadas" are in the central school they can learn the eleven preliminary lessons and one advanced lesson. All of this work they take back to their school with them. They give all or most of their time during study hours to the practice of these lessons.

This plan seems practical and can be used in introducing such other lines of work as plain sewing, fiber work, embroidery, or even mat weaving. Care must be taken however, not to abuse the system. Supervising teachers and principals should see that girls are taught work that is needed and can be successfully carried on in the barrios. (Chas. S. Crowther.)

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## THE BAQUI-BAQUI SCHOOL BAG.

By RAYMOND R. SAGE, General Office.

**T**HE baqui-baqui school bag, now extensively made in many of the hand-weaving classes of the Philippine public schools, but not widely known by this term, derives its name from the material from which it was first fabricated. The bag is the result of numerous trials and experiments in the evolution of raffia and lupis bags, until now a strong, serviceable, and perhaps commercial bag has been fabricated.

Numerous materials may be utilized in its fabrication, among which abaca, lupis, tikug, balangot, buri midribs, and baqui-baqui are to be noted. The proper preparation of these materials has been taken up in detail in a previous number of THE PHILIPPINE CRAFTSMAN (Vol. I, No. 4).

### PREPARATION OF MATERIAL.

For convenience, the following brief description of baqui-baqui and its preparation is given.

Baqui-baqui is a sedge so far reported only from Capiz; it may, however, be found in other parts of the Philippines. It is over 2 meters high and, like balangot, grows in swampy places. The base of the stalk is as large as a pencil and sends forth a few leaves. At the base it is more or less round, but as a whole the stalk is three-sided and tapers to a compound cluster of flowers. Baqui-baqui appears much like balangot (*Cyperus malaccensis*), except that it is taller and the stem is harder and more rigid.

The triangular stem of this sedge is split lengthwise into two or three segments in such a manner as to leave an angle of the stem on each. The soft pulpy substance adhering to the interior of the stem is then removed by scraping and the strips are made uniform in size.

To bleach baqui-baqui, it is dried in the strong sunlight for two or more days. Care should be taken to protect this material from dampness for if such precaution is not taken inferior results will be secured. Quite often baqui-baqui becomes brittle a few days following its preparation, but this difficulty may be overcome by leaving it in a dry place for several days, at the end of which time it becomes tough and pliable and is ready for working.

The last step in its preparation is the process of flattening, done in a simple manner by pulling each segment several times

over a round stick, exercising care that the sides of each are so folded as to insure uniform width throughout.

#### TECHNIC.

For beginning the bottom see figures 1 to 4. From these figures it is noted that two bamboo strips of equal dimensions



Plate 1. Baqui-baqui hand bag.

Dimensions: Length of base, 23.5 cm.; width of base, 7 cm.; height at corner, 21.2 cm.; height at center front, 23.5 cm.

Materials: Baqui-baqui, tikug, balangot, buri raffia, buri midrib, abaca cord, or abaca lupis.

throughout and running lengthwise of the bottom form the foundation over which the split segments of baqui-baqui are interwoven or bound. Over this foundation doubled strips of baqui-baqui are laid in pairs, one pair on the upper side and one on the under side. These too are bound securely by four weavers or strips of the same material running lengthwise between the

two bamboo strips. This process is continued until the bottom is finished. In hand bags of the size given herein (Plate I) 29 double strips are required for each long side of the bottom, and 28 double strips for each end. The end segments are added as the bottom of the bag is made, and are securely bound in place by weavers of baqui-baqui running horizontally around the bottom. These strips form the rib or foundation work of the sides and are purposely laid double in order to procure the necessary number of strips for the openwork of the sides, incidentally making the bag stronger and more durable. (Figures 5 and 8.)

Upon the completion of the bottom, a simple weave or pairing is begun by which all straws are securely bound and held in their proper positions. Care should be taken that the strips

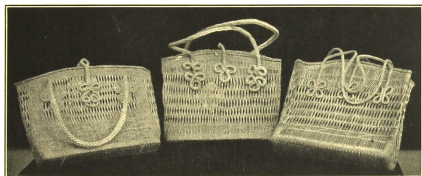


Plate II. Types of baqui-baqui hand satchets fabricated from buri midribs and abaca.

or segments of baqui-baqui are kept perpendicular while the first few horizontal side weavers are being interwoven with the perpendicular ribs. After one or two rows of the horizontal weavers have been completed these strips will hold their proper positions.

The finish at the top of the bag is important but not difficult. (See figures 16 to 19.) A start can be made at any of the four corners. The rope effect common to all finished bags of this nature can easily be secured by following the figures referred to above. After the desired number of rounds have been completed, it will be noticed that the remaining ends of the perpendicular strips are pointing toward the bottom of the bag. (See figure 18.) These are tightly pulled to make sure that they are firmly fastened, after which they should be evenly trimmed to a uniform length with a sharp knife. (Figure 19.)

## THE HANDLES.

For beginning the handles, figures 6 to 10 should be studied for the process of making the rosettes from which the handles are hung. In order that the load or strain may be distributed as equally as possible, these rosettes are placed near the top and middle of the sides. For the attachment of handles see figure 11 and for their fabrication note figures 12 to 15. These handles are very simple in fabrication, a foundation of baqui-baqui being used which is wrapped with narrow twisted strips of the same material making a durable handle binding with an



Plate III. A simple baqui-baqui hand satchel fabricated from abaca and tikog.

appearance similar to that of rope. These handles may also be made of abaca, which is serviceable and durable.

No set way is given for the fabrication of these bags; however, for a suggestion, see Plate I, showing a neat standard bag of approved dimensions.

It is believed that school bags of this class can well be made into a commercial article of importance; however, in doing so endeavor should be made to limit the cost of production to the minimum. At the present time, bags as shown in Plate I are produced at 50 centavos each; while those shown in Plate II

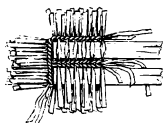


Fig. 1

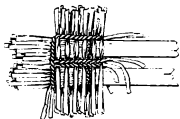


Fig. 2

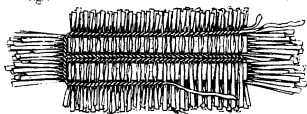


Fig. 3

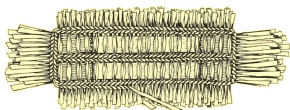


Fig. 4

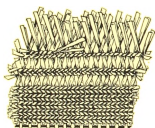


Fig. 5

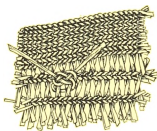


Fig. 6

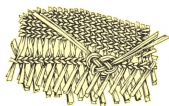


Fig. 7

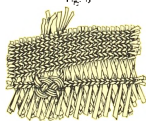


Fig. 8

Plate IV. Steps used in making baqui-baqui hand bags.



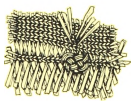


Fig. 9

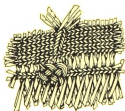


Fig. 10



Fig. 11



Fig. 12



Fig. 13



Fig. 14



Fig. 15

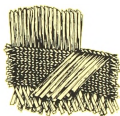


Fig. 16

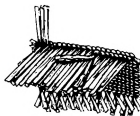


Fig. 17

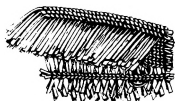


Fig. 18

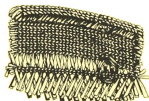


Fig. 19

retail at ₱0.50 to ₱1 each. These prices are rather high when considered from a commercial viewpoint; however, by fabricating the bags in large quantities and leaving off much of the overcrowded decoration it is believed that these prices can be reduced considerably.

Baqui-baqui bags are of economic importance in school life. The matter of taking care of schoolbooks is an essential feature of daily school life, and if for no other reason, these or similar school bags could well be utilized.

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#### EVOLUTION OF WOVEN FURNITURE.

In all probability there was a time when no woven furniture was made, but a review of past eras shows that something in this line, if no more than the weaving of splint and reed bottoms of primitive seats, has long been known. Such reed bottoms may have been the precursors of the frames of hickory withes, or the modern, elegant, bent woods, though these may hardly be termed woven. It is very likely that the most primitive form of industry in the domestic manufacture of household equipment tended to the use of pliable vegetation, like rushes, which would stiffen into a permanent form when dry; hence it is certain that woven furniture is by no means modern in its origin. Primitive peoples are said to have made bridges by twisting together tough vines, just as the children in country districts make swings of grapevines. These ropes of vines were swung across streams or ravines and formed supports for the boards or logs used for flooring. This construction became the model for the suspension bridges of to-day. That chairs, tables, beds and other furniture were evolved from the same material is a plausible theory. (A. W. Adams.)

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“Technical instruction must be regarded in the first place as a means of character-training, and it must be supplemented by other forms of instruction with a view to making it as many-sided as possible. In the life of great economic groups and of nations there are moments; and they are the critical moments, in which neither knowledge nor skill, but character, decides the day—character that has learned to regard its own egoistic interests as of no account when their sacrifice is demanded by the welfare of the community to which we belong, the welfare of the service that we have chosen, the welfare of the subordinates intrusted to our care.” (Dr. Georg Kerschensteiner.)

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## INDUSTRIAL WORK AND CHARACTER BUILDING.

By CARRIE ANDERSON, Industrial Inspector.

**B**ETWEEN the most crude and awkward turn or twist of a soft straw made by the tender, untrained fingers of a little 6-year-old, who is just learning his first lessons in weaving, and the most deftly made Polangui basket, or the finest hat or mat produced by a skillful weaver, there is quite a gap. Yet this gap must be traversed by the little tyro in some way in the course of time.

Because a first grade pupil is not able to turn out elaborately finished articles of some commercial value, or articles that approach our standard of beauty, is no reason why he should be considered too young and incapable of doing any kind of industrial work. As soon as he is old enough to toddle to school and to distinguish one word from another, and even sooner, does he desire to construct objects and to imitate the occupations of others. The muscles of his little restless body crave exercise and his mind is alert for new experiences. Every impression received demands expression. The larger things in life, which occupy the attention of grown people, do not enter his life at this age. Receiving his food and clothing and other necessities from others, he is not concerned about the manner of their acquisition. His mind is occupied with his immediate surroundings, which he looks upon from a viewpoint differing greatly from that of older and more experienced people. He will put life into a stick, a stone, a shell, a leaf, a string, or any simple little object that for the time attracts him. He will manipulate the materials that he finds at his disposal according to the skill he possesses, in expressing that which appeals to his vivid imagination. In this way he becomes a creator himself.

The teacher should avail herself of the opportunity to direct his activities into right channels, and so aid him in his development. She must see that the child's work has an application to something definite, even if it is but a temporary plaything for the day. If it satisfies his desires, his imagination, and if it is the expression of his very best efforts, it has fulfilled its mission. To the child such a plaything is of as great a value,

and means as much, as any article that is used for pleasure or is otherwise employed by grown people. The making of his little toy occupied him for the time being very profitably, and who knows but that in those happy moments are engendered the germs of a thought that will some day be felt as a power in the world. Many worthy thoughts and deeds have received their inception from such pleasant occupations.

The obstacles the child encounters in his daily industrial work, and the manner in which he masters them, help him to become self-reliant and to overcome the problems he meets later in life. He should not be babied and made helpless, expecting others to do for him the things he can do for himself with a little perseverance. He has had many lessons of self-help before entering school, and he must now learn to adapt himself to new conditions and demands. Every assistance given to the pupil when he should work independently weakens him, lessens his powers, and robs him of further interest. One of the strongest lessons the teacher needs to learn, is "hands off" as long as the pupil is on the right track. He does not wish to be interrupted while he enjoys his work. Still, he should never be without the proper guidance of a more mature hand, willing to direct him when he needs assistance.

The teacher must at all times be patient in teaching the child his work and show him how to correct the little errors he is likely to make. Each new step must be thoroughly mastered, and the child should not be permitted to hasten to the end with the work but half learned. He must learn patience. At the same time the child should not be employed at a task that is beyond his powers to accomplish, nor should he attempt to make articles that, on account of his lack of skill, take him an unreasonably long time in finishing. He must get them off his hands before his interest lags. A partly finished object that is being carried back and forth to school for a month or two, often thrown about carelessly, while the materials are deteriorating, loses its freshness. The work becomes monotonous to the child. This monotony does not appeal to him and is not conducive to fostering his love for industrial work. He actually becomes careless and would probably throw it away in disgust were he not prevented from doing so. If he does finish it, it is under compulsion, for he would rather begin anew or cast industrial work aside as distasteful.

The child should learn that his time is not to be wasted, and that he is expected to accomplish something every day. He

should learn the value of industry and should not spend his industrial periods idly or in worthless play. The materials used represent an outlay of money or, at least, of labor on the part of some one and, no matter how small their value, they should never be ruthlessly wasted. Wastefulness entails poverty. A habit of economy brings prosperity.

Often wrong habits are formed for the reason that much of the work comes unnaturally, and proper development is not obtained. Whatever is not learned step by step—by easy stages—will engender faults which need to be unlearned at some future time to the sorrow of the child and with much waste of labor. If the foundations are not well laid, habits of indolence, thriftlessness, and shiftlessness will be the results.

It is the mission of the teacher to develop good traits in the child and to weed out undesirable ones as soon as detected while she is leading him through the mazes of his industrial activities. The teacher must know the difficulties the child has to cope with. She will never know them nor the child's struggles unless she becomes familiar with all the details of the work. She must also enter with spirit into the play instinct of the child.

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"Our present schools have not yet fully grasped the meaning of this *threefold task*: first, education to skill in work and joy in work; secondly, education to readiness of service, consideration for others, and loyalty to schoolfellows and to the school; and, thirdly, education to insight into the aims of the state community. Well-organized schools fulfil the first task, the development of personal capacity. It still remains to enlarge them to schools for social service, and our most important task is to provide such schools for the mass of the population, based on training for a trade." (Dr. Georg Kerschensteiner.)

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"The only path to real state-community is to accustom the children from their earliest years to do their work not only for their own personal advantage but also for the advantage of their youthful companions. Only thus can we hope to develop the two great fundamental virtues of devotion to aims outside ourselves and of consideration for the interests of others. And only, thus will it in all probability be possible to preserve our great modern constitutional states from the dangers that threaten them through their own industrial, economic, social, and political development." (Dr. Georg Kerschensteiner.)

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## EDITORIAL.

The Government of the Philippine Islands has undertaken to establish home industries throughout the Archipelago, not with the idea that they will in any measure supplant agriculture or other existing industries, but that they may supplement these industries. There are certain seasons in all parts of the Islands when those who follow agriculture as a pursuit are thrown out of work awaiting the return of the season for cultivating and planting the fields. During these periods of inactivity, which vary in the different parts of the Islands, the family income could be increased if opportunity were offered by organized industries where handicraft articles could be disposed of. But probably the greatest and most immediate need is for the establishment of industries which may be carried on by women at their homes. There are in the Islands probably from two to three millions of women who could with advantage take up some form of home work such as embroidery or lace making. It is in this large field that the Philippine Government, and especially the Bureau of Education, has undertaken to establish industries that will affect the general welfare and prosperity of the entire country.

An active and well-directed effort is being made to revive the ancient cottage industries and to establish new ones in many countries of continental Europe, especially in Switzerland, Austria, Germany, Russia, and Italy. The Governments of these countries are spending large amounts of money in establishing these industries—in training workers, investigating the cost and sources of material, markets, and, in fact, every phase of the industry. The home industries thus established are the means of directly increasing the earning capacity of the family and of improving the living conditions and prosperity of the community.

The Government of these Islands has undertaken to establish home industries along lines similar to those followed in the countries of continental Europe. Local materials, as well as foreign, are used in fabricating a variety of articles well adapted to manufacture in the homes of the people.

It is the policy of the Bureau of Education to train a large number of workers in one or two industries in a locality, to assist in organizing these workers into productive centers, and to aid in connecting these centers with a market.

It is the policy of the Bureau of Education to fit the industrial work of the schools to local conditions in all possible ways in order to make the instruction of practical value to the pupils during and after their school days.

**Fitting Industrial  
Work to Local  
Conditions.**

The following points must therefore be taken into consideration in determining the kind of industrial instruction that should be given in any particular school.

1. *Grade of culture of the community.*—This fact should not be overlooked since there is a vast difference between the inherent capacity of the children of the Manobo people and those of the Pampangan people in the matter of handicraft activities. While the Manobo children are entirely familiar from infancy with the industrial processes of native handicrafts, the Pampangan children are not, having been taught by circumstances to depend to a certain extent upon foreign importations to supply them with the necessary implements, tools, and utensils used in their daily activities and occupations.

The children of most of the Christian provinces are more or less unfamiliar with the weaving of useful articles and the carving of wood and other materials to express certain inherited symbolic and artistic ideas.

2. *Materials available.*—Children should be taught to utilize the raw materials that grow near their homes, making with them, first, articles of household necessity, such as hats, mats, baskets, clothing, furniture, utensils, and implements; and second, articles for export between municipalities, provinces, and to foreign countries. The making of articles for export to foreign countries should not be overemphasized at the expense of properly fitting up the homes and thereby raising the standard of living.

It is important that the quantity of raw materials available should be considered before deciding on a line of work for a community. In certain communities where this fact was not considered the supply of raw materials has been exhausted and pupils who have learned to make certain articles in school can not continue making them after finishing their course. Such materials as bamboo, rattan, buri, pandan, ticog, banban, abaca, coir, maguey, and a few more are found in practically inexhaustible quantities in certain localities, and industries may be built up on them with safety; but where the supply of these staple raw materials is limited, care should be exercised as to teaching their utilization.

3. *Needs of the home.*—The immediate needs of the average home of the community should be considered in planning the kind of work to be taught in any school.

4. *Transportation.*—Transportation facilities must be given careful consideration when determining industries largely influenced by this element. Nueva Vizcaya, for example, could not afford to import abaca from the Visayas and export abaca coiled baskets in competition with those made in an abaca district.

5. *Number and capacity of pupils.*—The number of pupils in any school, their age, and capacity should always be considered before deciding upon the kind of work to be taught them.

6. *Occupations of the people.*—This element should be given weight. Isolated, thinly settled, agricultural communities are not suitable places for the introduction of Irish crochet or embroidery. Such work is better suited to congested districts where there are many women with nothing to occupy their time outside of the simple tasks of the housekeeper in the tropics.

The amount of spare time on the hands of a community and the time of year when it occurs are elements to be counted.

7. *Relative prosperity of the community.*—Prosperous communities will take more kindly to the higher and finer types of work, as a rule, since the necessity for making a living is not so pressing and leaves more time for the consideration of adornment both of person and home.

The above-named points are by no means all that must be considered before each child can be given the course best suited to his own case, but consideration of the question along the lines indicated will suggest other points to those whose duty it is to direct the energies of the children into the best channels.

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During the school year 1912-13 over 300,000 Filipino pupils received instruction in some form of industrial work. The preceding figure represents over 93 per cent of the average monthly enrollment and includes practically all children in public schools between the ages of 7 or 8 years and 18 years, or thereabout. A distribution of this number into classes of work will show something like the following: 20,000 pupils taking trade and shop work; 115,000 engaged in gardening and farming; 84,000 girls receiving instruction in housekeeping and household arts, to which may

Some Recent  
Figures and a  
Forecast.



be added some 13,000 being trained in lace making, the same number in embroidery, and over 6,000 in cooking; 14,000 girls and boys becoming skillful in the weaving of hats; 30,000 in the making of mats; and 74,000 in the weaving of baskets. This numerical showing involves some duplication since some pupils pursued more than one line of industrial work.

All of this work is of a practical character; articles are being made for home use, to be disposed of in local markets, and for foreign export. New industrial materials are being discovered and utilized to an increasing degree, and new uses found for materials formerly known; the industrial intelligence of pupils is being developed and trained through the preparation of materials, the fabrication of articles according to definite and accepted standards, and the necessity of meeting the requirements of trade. The outlook of teachers is also being broadened and stimulated through the medium of the technical magazines and publications which are widely circulated throughout the Islands; industrial institutes and exhibitions are giving teachers and pupils clear and comprehensive ideas of methods and plans of work; constant effort is being exercised to eliminate useless and undesirable effort along industrial lines; the design element in industrial work is receiving recognition and artistic standards are being raised. And not only are home needs receiving attention through such subjects as housekeeping and household arts, the manufacture of bamboo and rattan furniture for the home, and the increased production and consumption of vegetables and legumes, in home and school gardens, but also the demands of trade outside the Philippines are being considered and production and standards of work being adjusted accordingly.

The present trend is encouraging and indicative of a brighter future for the Filipino people. There have been many wasted hours and days in the past; materials have not been utilized, possibilities realized, nor commercial intelligence sufficiently developed. Agriculture will continue to be the mainstay of the Filipino people, but household industries are gradually but surely being implanted in the homes of many of them. The question of supply and demand and the establishment of business relations between producer and buyer are now the principal factors awaiting solution. When these shall have been satisfactorily settled—and they are being increasingly so as each month passes—we may look forward to a state of economic and commercial independence on the part of each Filipino family comparable to that existing in the homes of the artisan workers of Switzerland, Germany, and Belgium.

## INDUSTRIAL NOTES.

### BURÍ RAFFIA.

By M. M. SALEEBY, Chief, Fiber Division,  
Bureau of Agriculture.

The true raffia fiber of commerce is produced by the raffia palm of Madagascar, *Raphia ruffia* (*R. pedunculata*). It is obtained from the cuticle, or epidermal layer, of the leaflets before they are fully expanded. The leaves are cured the same day they are cut and the thin, epidermal, fibrous strips are divided into narrower strips, ranging from 1½ to 2 centimeters in width and about 1 meter or more in length. This division is made by means of special combs similar to those used in dividing hat straws or fibers. This raffia is used in the United States as a substitute for Russian bast as tie bands by gardeners and nursery men. In England it is woven into a superior matting for covering walls, as a substitute for tapestry. In Madagascar the natives use it for making hats, mats, and as a tying and wrapping material. It is said that the preparation of raffia both for domestic and commercial uses is one of the most extensive household industries in Madagascar.

The true raffia palm is not found in the Philippines, but a similar raffia has for some time been prepared from the leaflets of the burí palm (*Corypha elata*) by the Filipinos. The method used in preparing this raffia is similar to that used in Madagascar. Samples of true raffia from Madagascar and burí raffia have recently been received by the fiber division of this Bureau, and comparative tests of them were made. The burí raffia was superior to the true raffia in color, fineness, and

luster; but the latter proved to be about 30 per cent stronger. The strips intended for the strength tests were 40 centimeters long and 1 centimeter wide, and the results of the tests were as follows:

Sample No.—	Breaking strength in kilograms.	
	Raffia.	Burí raffia.
4 .....	10.3	4.5
5 .....	6.4	5.1
0 .....	7.9	6.65
1 .....	6.8	4.35
6 .....	6.35	4.9
1 .....	10.3	6.8
9 .....	7.25	7.2
3 .....	6.45	5.5
8 .....	8.2	9
7 .....	8.1	6
Average.....	7.8	6

It is believed, however, that if the burí raffia is prepared so as to be of the same thickness as that of the true raffia, it will prove to be equally as strong as the latter. Hence there is no reason why the burí raffia of the Philippines cannot be employed for all the purposes for which the Madagascar raffia is used. Burí raffia might probably be used in preference to the latter in all articles in which color and luster are essential qualities.

### PACOL FIBER.

Pacol is a species of *Musa* which closely resembles the sabá (banana) variety of the Philippines in its general outward appearance. It is extremely hardy of growth and produces a large number of huge stalks which are pale green in color. The leaves are similar to those of most banana varieties, though as a rule they are wider and less tapering than the latter. The seed pod is generally cylindrical in form, about 6 to 8 centimeters in length and

circumference, and full of large black seeds similar to those of abaca, though considerably larger in size.

The pacol plant may be seen growing along the bases or lower slopes of mountains in several of the larger islands of the Archipelago, but more especially in Mindanao, Negros, and southern Luzon. In certain localities in southeastern Mindanao and in Negros, pacol spreads so rapidly and grows so luxuriantly as to actually become a menace to adjoining plantations. It is propagated from seed by birds which are fond of the fleshy part of its pods.

Pacol, like any other species of *Musa*, produces a fiber which is said to be stronger than that of the banana, but undoubtedly much weaker than abaca. It may therefore be suitable for use in the lower grades of binder twine, but not for cordage purposes. It is prepared for commercial purposes in southern Luzon, and is usually of an inferior grade, for, owing to its weakness, the strippers are forced to loosen the tension of the knife on the table.

The pacol fiber has a value equal to that of the lowest grades of abaca, or slightly less. It is so similar to one or the other of the low grades of abaca that only experts can distinguish it from the latter. For this reason, pacol is sometimes mixed with abaca, especially when a shortage in the latter is expected. This practice is extremely unfortunate and every attempt should be made to discourage it. Abaca ranks as the premier cordage fiber because of its superior strength. If this quality is lowered or in any way impaired by mixture with a weaker fiber, abaca will lose the characteristics for which it is particularly desired.

Uniformity in strength is just as essential for many purposes as the absolute quality itself. The weak and the strong fiber have their respective use and value when kept separate; once they are mixed to-

gether, however, the value of the mixture is of necessity reduced to that of the weaker fiber. It is an established fact that the strength of a rope or cable is determined by the strength of its weakest part. If such a part is too weak to stand the necessary strain, then the whole rope is discarded as worthless for that particular purpose. Thus it is feared that if the practice of mixing pacol with abaca is allowed to continue, the reputation of abaca may be seriously injured. (The Philippine Agricultural Review.)

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#### NATIVE VEGETABLES.

The varieties of vegetables grown in the school and home gardens influence the food products of the community to such an extent that more emphasis must be given the selection of seeds which are available in the community or may be purchased of local merchants. The season when a plant grows best and the use for which it is intended are essential points to be considered along with the kind of plant, the part of it to use, and manner of growth, in choosing the vegetables for family use. A classification based upon the time of introduction in the Philippines may be made so as to distinguish the so-called native vegetables from those more recently imported. Few of the garden vegetables grown in the Philippines are of Philippine origin, but many were introduced a number of years ago and are now thoroughly acclimated. For this classification tague, ubi, camotes, sincamas, taro (gabi), the many native beans, tomato, and eggplant, are grouped as native vegetables. They occupy an important place in the food production in the Philippines. Lettuce, endive, carrots, beets, turnips, and radishes are of more recent introduction and do not as yet greatly influence the main diet of the people. The need for

extending the production of native vegetables is shown by the fact that a better variety of food is needed and that the use of these vegetables is now known to some extent by all classes. Increased production by type improvement through seed selection and adequate cultivation, and a wider distribution of these improved varieties, remains to be accomplished. The failure to extend the production of certain desirable plants is often due to the lack of an available supply of seeds.

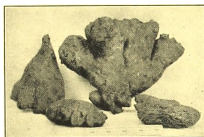
The introduction of new plants is too much emphasized. More energy should be devoted to the improvement of local plants. The people are being educated to believe that gardening and agricultural development is benefitted most by bringing in new plants for experimental work. This has been carried out to such an extent that, while the Bureau of Agriculture offers free seeds of new plants, no source is available for securing seeds of native vegetables. As a concrete example, it may be stated that any person may secure a package of turnip seed, yet nowhere can we obtain any seed of the sincamas, a hardy native vegetable, thoroughly acclimated, which is liked by the people and which has practically the same use as the turnip. This condition must be improved by those Government officials who are most concerned with the distribution of seeds.

The Bureau of Education has taken active steps to encourage the production of native vegetables by insisting that native vegetable seeds be grown in all school gardens. The general points of seed selection, seed preservation, and improvement of plant type are taught in connection with the garden work of the schools in order that the habit of saving seeds may be formed by the people. Existing varieties are improved and comparatively new varieties are developed by observing the essential

points of proper plant selection and cultivation.

The need for giving emphasis to this work has been impressed upon those in actual charge of the garden work. In response to a request that information be supplied regarding the kinds of seeds available for distribution to other divisions a number of favorable replies were received, from which the following compilation has been made:

Batangas: Squash, radish, lettuce, okra, eggplant, tomato, pepper, beans, corn, sincamas, patola.  
 Bulacan: Roselle.  
 Camarines: Corn, pechay.  
 Cavite: Lettuce, eggplant.  
 Cebu: Sweet potato, corn, lettuce, liñga, squash.



Ubi—a native yam.

Ilocos Norte: Pechay, radish, mustard, pepper, native beans, papaya, squash.  
 Ilocos Sur: Tomato, eggplant, pechay, lettuce.  
 Laguna: Lettuce, squash, corn, tomato, pechay.  
 Mindoro: Lettuce, eggplant, cucumber, gourd.  
 Mountain: Papaya.  
 Nueva Ecija: Eggplant, lettuce, corn.  
 Nueva Vizcaya: Mustard, squash, beans, pepper, tomato, eggplant, cabbage, pechay, ginger.  
 Pangasinan: Mustard, pechay, eggplant, native beans, squash, tomato, condol, lettuce, amargoso, okra.  
 Samar: Amargoso (apari).

Sorsogon: Lettuce, corn.

Tarlac: Cabbage, lettuce, mustard, pechay, okra, radish.

Union: Roselle, lettuce, mustard, pechay, eggplant, native beans, pepper, tomato, radish.

Letters requesting seeds of these plants should be sent direct to the division superintendent and not through the Director of Education. (N. H. F.)

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#### TURNING ABORIGINAL DESIGNS TO COMMERCIAL ACCOUNT.

In the employment of aboriginal design in our industrial work and the turning of aboriginal craft to commercial account, certain unique articles in native wood craft offer suggestions which should prove of value. The spoons and forks with ornamental handles, carved by the Ifugaos about Banaue, would serve as excellent models for salad spoons and forks, mayonnaise spoons, etc. These would have the double attraction of being typically Philippine and of having unusual merit in design. The shapes are beautiful in line and proportion and should be reproduced with exactness even though the size of model were changed to suit any demand made by the special use for which the article was intended.

This same conventional treatment of the human figure should also prove a prolific source of suggestion for other applications to decorative carving.

Bolos would be of value as models for paper knives if reproduced in miniature.

Bolo handles mounted upon a suitable base would serve for paper weights and incised bamboo lime tubes, combs and arrow shafts offer many beautiful suggestions for carved bamboo flower holders. These could be planned either to stand or

to hang after the fashion of the Japanese flower tube. (See illustrations on pp. 148, 155, and 156, THE PHILIPPINE CRAFTSMAN, Vol. II, No. 3).

Sections of the incised tubes, increased to proper size and mounted upon a suitable base, could be utilized as book ends, and motifs from these designs would have greater merit for the decoration of carved picture frames, boxes, etc., than those used heretofore. Moro ornament also offers many valuable suggestions for these latter applications. (See p. 157 and tailpiece on p. 164 of THE PHILIPPINE CRAFTSMAN, Vol. II, No. 3.)

Specimens of the articles mentioned can be found in the Philippine Museum, photos of which may be obtained through the Bureau of Science. Blue-print designs for complete adaptations will be issued by the Bureau of Education. (S. C. J.)

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#### THE DEPARTMENT OF VEGETABLE GARDENING ORGANIZED AT CORNELL UNIVERSITY.

The State College of Agriculture of Cornell, New York, has recently opened a department of vegetable gardening. The announcement distributed opens with the following statement:

"Few persons know that the vegetable products of the farms and commercial gardens in New York State are of greater value than all other horticultural products combined. Not considering potatoes—the production of which is valued at \$20,000,000—the other vegetables represent a value of \$16,000,000, against \$17,000,000 of tree fruits. This includes no account of the large amount of produce that is yielded by home gardens in town and country."

It also calls attention to the need

for college-trained men who can qualify as leaders in the advancement of vegetable interests and emphasizes the necessity for instructional work of this nature. The following courses are included for the present in the department: (1) Home gardening, (2) commercial vegetable gardening, (3) vegetable forcing, (4) systematic vegetable crops. In addition to the regular courses of the department, short winter courses of twelve weeks are offered, covering the same lines of work as do the regular courses.

Emphasis is given the extension of the work into the homes. A member of the staff devotes his entire time to this extension work in gardening. Instruction is given in schools, at fairs, and at meetings of various kinds. Home interests receive as careful attention as commercial interests. This emphasizing of home interest and the value of gardening to the home are in direct line with the policy of the Bureau of Education as carried out in the Philippine public schools for the past four years. (N. H. F.)

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#### CLASSIFICATION OF PHILIPPINE INDUSTRIAL MATERIALS.

The need of some definite scheme for the classification of industrial fibrous materials of the Philippines has become insistent. This need arises from the fact that the same fiber has been assigned to different classes by various writers and as a result references to, and orders for materials are frequently misunderstood. To overcome this difficulty, an outline has been drawn up in which an attempt is made to assign each of the important industrial materials to a definite class. The outline is given below. The class names thus established will hereafter be used by this Bureau.

The classification which is here

made is no doubt, like other classifications, more or less arbitrary. However, this outline is based primarily upon what is believed to be the most important consideration; namely, the use of the industrial material. Its appearance and derivation are considered as of secondary importance.

All available authorities have been consulted in drawing up this outline, in order that usage in the Philippines may conform as closely as possible to that of systems established elsewhere.

**I. Straws.**—The whole round stalks of grasses, sedges, rushes, and the like which are pliable enough to be platted, or the same when split but curled round like whole stalks:

1. Grass straws—
  - (a) Rice straw.
  - (b) Wheat straw.
  - (c) Cobboot straw.
  - (d) Bacuit straw.
2. Sedge and rush straws—
  - (a) Tikug straw.
  - (b) Balangot straw.
  - (c) Tiker straw.
  - (d) Chinese matting straw.
  - (e) Japanese matting straw.
  - (f) Cat-tail straw.
  - (g) Alinang straw.
  - (h) Tayoc-tayoc straw.

**II. Stalks.**—The whole stalks of grasses, sedges, palms, and the like, which are not pliable enough to be platted:

1. Grass stalks—
  - (a) Vetiver stalks.
  - (b) Cogon stalks.
  - (c) Tambo stalks.
  - (d) Talahib stalks.
  - (e) Bigao stalks.
  - (f) Bamboo stalks.
2. Other stalks—
  - (a) Tiquio stalks.
  - (b) Rattan stalks.
  - (c) Agas stalks.

**III. Splints.**—Fairly coarse, stiff, fibrous pieces split off from stalks, stems, and other parts of plants and used as ribs or coarse weavers in baskets and the like:

1. Splints from stalks—
  - (a) Bamboo splints.
  - (b) Cogon splints.
  - (c) Vetiver splints.
  - (d) Tambo splints.
  - (e) Talahib splints.
  - (f) Banban splints.
  - (g) Rattan splints.

- III. *Splints*.—Continued.
2. Splints from palm petioles—
    - (a) Dumayaca splints.
    - (b) Sugar palm splints.
    - (c) Buri palm splints.
    - (d) Saguise splints.
    - (e) Coconut splints.
    - (f) Nipa splints.
    - (g) Pugahan splints.
  3. Midrib splints—
    - (a) Buri midrib splints.
  4. Splints from stems and roots—
    - (a) Nito splints.
    - (b) Kilok splints.
    - (c) Air-root splints.
- IV. *Strips*.—Rather thin, supple, soft, more or less flat strips taken from any stalk, petiole, etc., or from a thin leaf blade:
1. Leaf strips—
    - (a) Buri strips.
    - (b) Pandan strips.
      1. Sabutan strips.
      2. Karagumoy strips.
      3. Common pandan strips.
      4. Majajjay pandan strips.
      5. Bariu strips.
    - (c) Coconut strips.
  2. Strips from splints, midribs, roots, and stems—
    - (a) Bamboo strips.
    - (b) Calasiao strips.
    - (c) Irao strips.
    - (d) Rattan strips.
    - (e) Nito strips.
    - (f) Air-root strips.
  3. Strips from straws—Split straws.
  4. Bast strips—
    - (a) Lusuban strips.
    - (b) Jute strips.
    - (c) Anilao strips.
    - (d) Gomamela strips.
    - (e) Takling-baca strips.
    - (f) Anabo strips.
    - (g) Tanag strips.
  5. Lupis strips—
    - (a) Abaca lupis strips.
    - (b) Banana lupis strips.
- V. *Raffia*.—The thin skin of leaves:
- (a) Buri raffia.
  - (b) Pandan raffia.
- VI. *Fibers*.—The extracted or naked fibers of any parts of plants:
1. Structural fibers—
    - (a) Abaca fiber.
    - (b) Piña fiber.
    - (c) Maguey fiber.
    - (d) Buntal fiber.
    - (e) Bowstring hemp fiber.
    - (f) Vegetable sponge.
  2. Surface fibers—
    - (a) Coir fiber.
    - (b) Cotton fiber.
    - (c) Kapok fiber.
    - (d) Cabonegro fiber.
    - (e) Pugahan (kittal) fiber.

VII. *Roots*.—

1. Air roots—Amlong.
2. Ground roots—
  - (a) Bamboo roots.
  - (b) Vetiver roots.
  - (c) Coconut roots.

VIII. *Stems*.—

1. Orchid stems.
2. Fern stems.
3. Pamago stems.

IX. *Midribs*.—Palm-leaf midribs.X. *Sheaths*.—

1. Bamboo sheaths.
2. Areca sheaths.
3. Coconut sheaths.

XI. *Panicles*.—

1. Tambo panicles.
2. Tiger-grass panicles.
3. Cogon panicles.
4. Talahib panicles.

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## GERMAN CONTINUATION SCHOOLS.

Germany does not allow her boys and girls to enter "blind-alley" employments if she can help it. The German continuation school system takes hold of the boy of 14 or 15 as soon as he finishes the elementary school and prepares him for some particular trade or business. What the work of these vocational schools means in the sum total of German industrial efficiency and social progress is well indicated in a bulletin on "Prussian Continuation Schools" just published by the United States Bureau of Education. The information was obtained from American consuls located in important German cities.

In Magdeburg, boys completing the common school are assisted by the school authorities in securing desirable situations, and are required to attend the continuation schools while employed. There are classes for bakers, butchers, barbers, waiters, painters, decorators, blacksmiths, tailors, cabinetmakers, and, in fact, for any other occupation in which it is practicable for a boy to engage. Even if the boy does not aspire to be a skilled workman, but is content to become a street cleaner, house servant, messenger, or to engage in any other form of unskilled labor,

he is nevertheless required to spend three years in the continuation school.

In Erfurt and other Prussian cities employers are compelled by law to excuse their employees for the lesson hours, without loss of pay, for four to six hours a week. Furthermore, the employers pay the tuition fees in these industrial schools, amounting to about \$1.50 per year for an apprentice or \$1 for unskilled workers. The main financial burden is met by the municipality, with some aid from the State. The State makes its appropriation contingent upon compulsory attendance, with the result that compulsory continuation schools are gradually replacing the optional type.

Barmen has a continuation school with an attendance of nearly 4,000. The pupils are divided into 131 classes. There are classes in textiles, lace making, machine-tool making, art forging, plumbing, electric installation, furniture and weaving-loom making, house carpentry, house painting and decorating, shoemaking, saddlery, upholstery, tailoring, gardening, printing, bookbinding and box making, lithography and engraving, baking and candy making, as well as for butchers, barbers, and wigmakers, messengers, and helpers.

Instruction in these continuation schools is by no means confined to technical branches. Besides definite vocational training, the pupils receive instruction in certain branches designed to aid them as citizens—civic affairs, trade history, and community welfare—in addition to composition and arithmetic based chiefly on the vocational work.

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#### SAFETY APPLIANCES FOR MACHINERY.

The attention of division superintendents has been again directed to the necessity of guarding against accidents by the construction of

safety appliances for all machinery in trade schools and provincial school shops.

No set rules can be laid down for the construction of machinery safety appliances. Points of danger are different and no matter how well a certain machine may be located, there are some points that should receive attention. Pupils should be constantly cautioned regarding working around machinery and all danger points should be indicated by means of a placard with the word "Danger" printed in large red letters upon a white background.

Division superintendents have been requested to take special note of the provisions that have been made to supply adequate machinery safety appliances. In any case where negligence is apparent the matter is to be brought promptly to the attention of the Director of Education.

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#### CORRELATION OF SCHOOL INDUSTRIAL WORK WITH THE HOME INDUSTRIES.

Following up the editorial appearing in *THE PHILIPPINE CRAFTSMAN* for September entitled "Concentration of Effort in Promoting the Household Industries" the division of Albay has undertaken to harmonize the industrial instruction in the public schools with the home industries already established in the province. Graduates of the School of Household Industries have organized working centers for the production of embroidery in the municipalities of Ligao, Legaspi, Albay, Guinobatan, and Oas, with a total of some 400 workers. The provincial treasurer has made arrangements with the Sales Agency for disposing of all well-made articles, thereby placing the centers upon a satisfactory commercial basis. Assurance is therefore given to the workers that a stable and permanent



market exists for the product of their labor.

It was proposed to organize the industrial work of the schools in these five towns so that they would be feeders for the industrial centers which have been established. To this end, embroidery was prescribed as the home industry work for the girls in these schools. It will thus be possible for the girls to find remunerative employment when they leave school.

The provincial government of Albay is also encouraging other local industries such as Irish crochet, coiled, Polangui, and karagumoy basketry; abaca work; the manufacture of slippers, bags, and articles of macramé, by providing a market

for the articles produced by adults and workers outside of school. Wherever a working center is organized industrial instruction is provided in the public schools for training workers in the industry of the locality. Provision is thereby made for the future development of the small industries and the working centers now in process of formation.

Further, the instruction in the household industries which is given in the provincial school is so arranged as to provide, in so far as is possible, instruction for each girl in the industry of her home town.

The household industry instruction approved for the schools of the division, so far as it has been worked out, is indicated below:

Municipality.	School.	Industries.
Albay	Legaspi	Embroidery; abaca slippers and macramé.
Do	Central	Embroidery; embroidery on abaca.
Do	Daraga	Embroidery.
Camalig	Central	Embroidery; abaca work.
Guinobatan	do	Do.
Ligao	do	Embroidery; coiled baskets.
Oas	do	Embroidery; coiled and Polangui baskets.
Polangui	do	Do.
Libon	do	Embroidery; coiled baskets.
Bacacay	do	Irish crochet; bamboo and rattan furniture.
Tabaco	do	Irish crochet.
Do	San Lorenzo	Karagumoy baskets.
Malinao	Central	Irish crochet.

#### REPORT ON VOCATIONAL EDUCATION.

Among educational associations there is probably none so well known nor with so large a membership as the National Education Association of the United States. It has been in existence for over fifty years and convenes annually in some important American city for the discussion of all phases of educational work. To it belong not only thousands of teachers in the United States, but many well-known educators from foreign countries as well. The various phases of industrial education have occupied the attention of its members for some years past and at the last convention held at Salt Lake

City there was presented an important report on vocational education and vocational guidance. The committee having the matter in charge included a number of the leading educators, business men, and industrial specialists of the United States.

Though the report is but a preliminary one, it will not be out of place here to give a brief résumé of its contents to our teachers. A few excerpts will first be given to indicate some significant portions of it, with a concise reference to other interesting parts.

The opening paragraph of the report reads as follows:

"One of the most insistent present-day demands of the public is that

the work in the field of education shall be efficient. The measure of efficiency is found in the ability or lack of ability to cope successfully with the problems which arise in a higher school, in a particular occupation, or in the ordinary routine of life. This measure is applied ruthlessly to all types of education. The wonder is that the difference between the standard and the result is no greater than that expressed by the critics of our public school system.

"This committee believes that the fundamental thought underlying this movement, whether it be a movement of educators, manufacturers, workers, or philanthropists, is the closer relation between theory and practice in education work."

Then follows a series of resolutions in which the association definitely commits itself to the policy of supporting and developing industrial and vocational education and unifying it with the public school system. In its report the committee considered: A suggestion of the field which might be covered in the final report of the committee; a series of questions and issues which might be discussed in the final report; and an outline indicating the scope and possibilities of the work involved in any comprehensive study of the questions of vocational education for persons between the ages of 14 and 18 years. In the scope of the final report it is proposed:

"That the report shall take the form of a handbook of information for the use of those who are interested in adopting some plan of vocational education and vocational guidance.

"That this report shall contain also a discussion and presentation of plans for certification and training of teachers for vocational education.

"That it shall include an acceptance of principles and policies already prepared upon vocational education

and vocational guidance, together with additional principles and policies in case such need arises.

"That it shall add warnings, as well as suggestions, concerning what needs to be done and what needs to be avoided to make the work successful in any given community."

Sections follow outlining the plan of work of the committee and the basis of vocational education under which appear the following fundamental factors in this connection: First, those which are of economic significance; second, those which are more distinctly social; third, those which may be termed educational. Each of these factors is in turn discussed in topical form and reasons clearly adduced to prove the necessity for this type of education.

Next the committee submits to the association for their consideration a series of vital questions bearing on the subject of industrial education. Then there is given a suggestive outline for a final report which contains an introduction upon such points as agencies at work, definition of terms, field to be covered in the report, also a presentation of the present status of vocational education under which appear legislation existing and proposed (state and national); summary of investigations by States and communities and private agencies in the United States; analysis of existing schools in that country; problems peculiar to each type of school; and, finally, a section devoted to the practical problems associated with vocational education, such as the discovery of the actual need for this work in a given community; the coöperation and united effort of all agencies within the community; source of revenue for the support of these schools; the selection or construction of buildings; equipment; selection of principals and teachers; securing of trained teachers; actual organization within the school;

courses of study; methods of instruction; disposal of products; methods to promote efficiency; and safeguards necessary for permanency and strength of the movement.

Of modern countries, Germany has undoubtedly the best system of industrial education throughout its common and high schools. Numerous technical and mechanical high schools are to be found in the United States, and of late years increasing effort has been made and success obtained in introducing some form of industrial or prevocational work in the higher elementary grades. With the present movement so vigorously supported conditions now point to some form of vocational or industrial training being widely introduced into those grades of American schools of a similar standing to our intermediate courses in which for over five years different lines of industrial work have been given to all pupils. (L. R. S.)

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#### CHANGED VIEWPOINT WITH RESPECT TO LACES AND EMBROIDERY.

A condition worthy of consideration is the changed viewpoint with which the public of the United States buys and uses embroideries and laces.

Formerly, real laces and embroideries were bought as are jewelry and works of art and they were used as the occasion required and as the owner desired and were passed from mother to daughter as heirlooms. These exquisite pieces of embroideries and laces possessed and still have great value and were usually obtained during travels on the Continent. The class of people who purchased such laces and embroideries still exists but in diminishing numbers.

Nowadays, laces and embroideries are used not only by the rich but by people of all walks of society who care at all for "dress."

"Seasons" in embroideries.—This

popularizing of embroideries and laces has naturally led to the creation of "seasons" and fashions in them. A certain kind of work comes into fashion, everybody wants to wear it, and great demand results. People of little means buy the machine imitations. Those with more money to spend purchase the commercial hand-worked goods or the best machine goods, while the well-to-do who follow style, demand the real article in quality and quantity depending upon their respective purses and tastes.

*Organization of foreign hand-embroidery industries.*—That hand embroideries and laces can be made to follow the demands of fashion in such large quantities and in such short space of time, is a direct result of the organization of household industries in Europe. The workers have been brought into a system. Trade limitations have been overcome, unfair commissions and unnecessary middlemen have been eliminated, and the efforts of the workers turned into articles demanded in the United States.

While Europe has made the greatest strides in the organization of household industries, the movement is a world-wide one affecting Mexico, South America, China, and Japan. It is well for us in the Philippines to understand that semi-philanthropic organization of household industries is taking place in many other lands, as for instance, among the peasants of Russia by certain of the Russian nobility, and among the peasants of China and Syria by missionaries.

Wonderful results and very large production have been obtained by the commercial organization of household industries by merchants in Europe and Japan. The Philippines at present cuts very little figure in any household product and still remains a minor factor in seasonal trade. (H. H. M.)

## MACHINE EMBROIDERY.

Most of the embroidery used in the United States is done on machines in Europe. The list of machine-embroidered articles is practically identical with that of hand-embroidered articles and ranges from handkerchiefs to the heaviest linens.

Most of the machine embroidery imported into the United States comes from Switzerland, although a little is now being made within the States themselves. The method of production and sale is as follows: The large companies in Switzerland employ special artists who study ancient embroideries and designs and construct new designs to be executed on sample articles. These patterns are sent to the United States and from them orders are taken by commercial travelers on the road or by agents stationed in various cities. These orders are forwarded to Switzerland and are executed there. Thus, it will be seen that considerable time elapses between the giving of an order and its delivery to the wholesaler or retailer in the United States. For many of the patterns no orders are ever received.

Machinery has been so perfected that first-class machine embroidery is a very beautiful product and much of it can be distinguished from hand work only by experts. In a leading linen store in New York, I saw selling in the same pile, hand-embroidered handkerchiefs and machine-embroidered handkerchiefs and the handkerchief buyer assured me that the public either does not know or does not care whether a given handkerchief is hand or machine made. What it most demands is a dainty, effective design.

Machine embroidery is becoming a dangerous competitor and its effect upon the demand for and the price of handwork should receive careful consideration. At the present time

the best machine embroideries sell for about the same prices that hand embroideries bring. However, perfection in machinery may reduce the price of machine goods and this may have a marked effect on the demand for hand embroideries. I say "may," because we cannot be certain of the effect. The linotype machine resulted not in lower wages and fewer operatives in the printing trades, but in increased production and consumption of books, periodicals, and newspapers. The organization of the handicraft industries of Europe has resulted in increased output and demand. In like manner it is possible that the output of improved machines will be entirely consumed through a newly created demand and that hand embroidery will remain the embroidery of the classes. (H. H. M.)

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## A LETTER FROM SPAIN.

An interesting letter has been received from Mr. Lewis S. Thomas, head teacher of Misamis. Mr. Thomas went home on leave some months ago and wrote concerning school conditions as he found them in Spain. At the time of his trip through Spain, schools were not in session, but Mr. Thomas examined buildings and equipment and made investigations at Barcelona, Tarragona, Granada, Sarragosa, Madrid, and other places. Mr. Thomas wrote in part as follows:

"During June there was held in Madrid a national exhibit of arts and trades in which the public schools, as represented by provincial schools of arts and trades, supplied the larger part of the exhibit. Excellent examples of decorative ceramics and ornamental ironwork were displayed from the schools. The cabinetwork did not equal the standards of the same kind of work in our trade schools. There were examples, how-

ever, of lace making and embroidery that would make many of our schools look to their laurels. None of the articles at the national exhibit were on sale.

"According to the owner of a machine shop in Malaga, beneficial results from the introduction of industrial work are quickly becoming apparent. This gentleman said that within a year from the introduction of free-hand drawing in the municipal schools, the workmen in his shop showed more knowledge and better understanding of the plans laid before them than ever before. He attributed this improvement to the fact that the children learned their lessons in school and then taught them to their parents."

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#### DYEING ABACA.

The results obtained in the past in the dyeing of abaca and other materials have been of rather a haphazard nature. This is due, perhaps, to various reasons, but primarily to the fact that this important work is left in the charge of teachers who possess an inadequate knowledge of the subject. Heretofore the cheap Chinese dyes, available throughout the Philippine Islands, have been used almost exclusively. These, too, have been the source of much unsatisfactory work.

At the present time there is available in Manila at Behn, Meyer & Co., and Viegelmann & Co. (as per information contained in circular letters from the Director of Education to all divisions under dates of August 6 and September 20, 1913), a substantial quantity of strong aniline dyes specially prepared in Germany for use on Philippine raw materials and fibers. The Philippine Education Company have also at the present time a quantity of the well-known "Easy Dyes."

Both of these classes of dyes, if used in the proper proportion, give excellent results on all fibers.

It must be remembered that these dyes are much stronger than the ordinary Chinese dyes; therefore care should be exercised in making the various dye baths, in order that the proper proportion of dyestuffs is used. It has been found by experiments conducted by the General Office that 1 to 2 tablespoonfuls of aniline dye are sufficient for 5 gallons of water. However, when materials other than abaca are dyed, this amount should be doubled in order to produce suitable results. The above statement does not pertain to "Easy Dyes." The directions accompanying each tube of "Easy Dyes" should be followed.

It has been found that the dyeing of materials is often done in small basins or containers holding 4 liters or less. By this process it is impossible to dye enough material for a finished article which will have the same color tone throughout. Sufficient raw materials should be dyed at one time for fabricating the article for which the material is intended. If this is done, the color tone throughout will be uniform and the time consumed in the rematching of colors, which is generally a difficult operation for one who is inexperienced, will be saved.

The color chart on the harmony of colors appearing opposite page 162, Volume I, No. 3, of THE PHILIPPINE CRAFTSMAN, gives material aid in determining the exact tone of color desired. In using this chart it should be remembered that two colors connected by straight lines are complementary and that one will tone the other if it is used in the proper proportion. But a small quantity of a complementary color is necessary in toning. Should too much of the complementary color be

used the result obtained will be of a grayish nature.

Close observance of the following suggestions may aid in obtaining good results in the matter of dyeing:

(a) All aniline dyes should be dissolved thoroughly in boiling water.

(b) Generally the color depends upon the time the material is left in the dye bath. A light tone or shade may be obtained by dipping.

(c) The use of soft water is recommended. In case hard water is used, common salt or sulphate of soda should be added.

(d) Excellent results will be obtained by soaking the material before dyeing in water in which a small portion of washing soda has been dissolved.

(e) Attention should be given to the quantity of the aniline dye used. As before stated, these dyes are exceptionally strong and but a small quantity of dye is necessary to obtain the proper bath. Poor results are generally caused from a strong dye bath rather than from one too weak.

(f) After dyeing, care should be taken in the manner in which the materials are washed. They should be washed in running water until thoroughly clean after which they should be hung in the shade to dry.

(g) For dyeing raffia, tikug, balangot, and similar materials a double-strength dye bath is necessary.

(h) Dyeing is often done in receptacles or containers that are too small. A 5-gallon petroleum can may be easily obtained and it will serve the purpose nicely. For convenience, the tablespoon may be used as the unit of measure.

(i) Dyeing should be taught as a feature of industrial instruction just as other industrial subjects are taught. Bright and flashy colors should be discontinued and in their stead soft and pleasing tones should be substituted. (R. R. S.)

#### MAKING FURNITURE TO BE SENT TO THE UNITED STATES.

A large part of the fine furniture purchased by Americans in the Philippines is eventually shipped to the United States. Therefore, in the making of such furniture, additional precautions should be taken that would not be necessary were it to remain in the Philippines. With the 1914 exposition near at hand and the Panama-Pacific Exposition looming up in the background, it behooves every trade-school man to study up on this subject.

It is an established fact that cheaply made furniture imported from America will not stand up in these Islands; this being true, it is altogether probable that the rule works both ways and that poorly made Philippine furniture will depreciate in the United States. The reason is obvious. There is no lumber, however well seasoned, that will not shrink slightly when the surrounding dryness is increased, and likewise swell when the surrounding moisture is increased. Wood that is as dry as we can make it in the Philippines, when placed in one of the heated houses throughout the northern part of the United States, will dry still more.

Wood coming to the Philippines from the United States absorbs moisture and swells. A few scattered reports on furniture shipped from the Philippines to the United States show that the trouble is caused by shrinkage. No furniture maker has the right to guarantee that his products will remain in perfect condition if shipped away from the Islands. He can, however, by taking the proper precautions, guarantee that nothing will go radically wrong. A few of these precautions are given herewith.

Avoid combinations of different wood in the same surface. This re-

fers especially to the inlaying of camagon or molave in narra, or the placing of a camagon border around a narra top. Different woods do not expand and contract alike. Table tops with mitered corners, even of the same kind of wood, are a risky type of construction.

Follow the "one piece" idea throughout. When a single piece cannot be obtained for the making of a wide panel, a table top, or any wide, single surface, explain to the customer what is likely to happen. Make every panel out of a single piece and groove deeply to allow for shrinkage. If one piece cannot be obtained, alter the plans and put in two panels in place of one.

Use dovetail joints whenever practicable. Fasten all joints which cannot be made secure in themselves with screws as well as glue. Do not depend altogether on glue to hold the work together.

To guard against warping of table tops, make rims and hidden reinforcements just as heavy as the design will stand. Dovetail the hidden crosspieces into the rims and fasten with the largest possible screws, not more than 6 inches apart, all around and across the center. Make the head of each screw tight in proper sized hole, the rest of the screw working in an open slot so as to allow for play in case of shrinkage or expansion.

Fasten the tops of sideboards, small tables, chair arms, etc., with iron plates, with screws up into the top and down into the frame. In making picture frames, use the half-lap miter joint, or some other joint that is as secure, fastening with screws as well as glue. In no case depend upon a miter joint which is not reinforced.

Apply a coat of filler, varnish, shellac, or paint to every raw surface, whether exposed or not. A raw

surface will absorb moisture or give off moisture faster than a finished surface, thus causing the piece to warp. (F. W. C.)

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#### REGULATIONS FOR NAUTICAL SCHOOLS IN ENGLAND AND WALES.

The curriculum of a school recognized under these regulations must provide for the continuance in a modified form of the education given in public elementary schools, including physical training. Provision must also be made for practical instruction of a progressive character in all suitable branches of seamanship.

A course of nautical training must be organized to cover not less than one and not more than two years, to occupy not less than forty weeks in each year.

With the consent of the board a period of practical experience on a seagoing tender under conditions of instruction approved by the board may be accepted as part of a course of training under these regulations.

The age limits for the admission of pupils must be such as the board may approve for each course; but schools should normally be planned to provide either a two-year course for pupils aged between 13 and 14 on admission, or a shorter course of at least one year's duration with a corresponding later age of admission. It is advisable that the board should be consulted upon all proposals for courses of less normal types at an early stage.

No pupil may be admitted unless a certificate is given by his parent or guardian that he is intended for the sea. An indenture of apprenticeship will be accepted as equivalent to a certificate.

No pupil may be admitted to the course unless a certificate has been given by the medical officer of the school in a form approved by the

board that he is physically fit for employment at sea.

A record must be kept of the employment of pupils during a period of three years after leaving the school. The board may withdraw recognition from a school if they are not satisfied that a reasonable proportion of the pupils go to sea and continue in that employment for a satisfactory period.

A reasonable proportion of the members of the teaching staff must have had practical experience of employment at sea.

Suitable facilities must be provided for recreation and physical exercises.

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#### THE MONEY VALUE OF EDUCATION.

Mr. J. M. Dodge of Philadelphia, in a noteworthy paper entitled "The Money Value of Technical Training," has computed the capital value of four classes of employees, each according to the amount of preliminary instruction which they have received. The first group he calls the unskilled labor group, the second the shop trained or apprentice group, the third the group trained in trade schools, and the fourth, the group educated in the higher technical schools. The unskilled laborer, with but primitive training, works under the immediate supervision of a boss and earns at the age of twenty-two \$10.20 per week. This amount represents \$530.40 a year, or capitalized at 5 per cent \$10,608. This sum, then, \$10,608, is the capital value of the unskilled laborer; in other words, it represents the amount which he is worth to himself, and also to the community.

The apprentice starts in at \$3 per week, and is worth about \$3,000 at the outset. At the age of twenty, he is earning \$9 per week, and his worth amounts to \$9,000. From the age of twenty to twenty-one and a

half his pay is increased to \$13.20 and his potential value to \$13,200. At the age of twenty-four, he earns \$15.80 per week and his value is \$15,800. In other words, in eight years, the capital value of the shop-trained apprentice has increased \$12,800.

The third group is composed of those young men who enter a trade school at sixteen years of age, and devote the next three years to acquiring a trade under competent instruction. At the age of nineteen, a trade-school man enters the machine shop, and he can command \$12 per week, equal to the apprentice at twenty-one years of age. The three years at school have increased his value from \$3,000 to \$12,000, a gain of \$9,000; thus he has caught up to the apprentice entering the shop at sixteen and who has been working for five years. Continuing the comparison, at the age of twenty-four the trade-school graduate is earning \$20 per week, with a potential value of \$20,000 or \$4,200 greater than that of the shop-trained man. He increases his earnings up to \$22 per week, a potential value of \$22,000, and he does not, as a rule, go much farther. The members of the third group are worth, therefore, on the average \$6,200 more to themselves than the members of the apprentice group, solely as a result of their more thorough preliminary training.

The fourth group is represented by a boy of sixteen who studies in a high school until his eighteenth year, preparing for admission to some technical institution, such as the Massachusetts Institute of Technology, Stevens Institute, or Cornell. Here, after four years of training, he is graduated at the age of twenty-two, ready to begin practical work. His wages at starting are \$13 per week, or the same amount earned by the apprentice at the age of twenty-



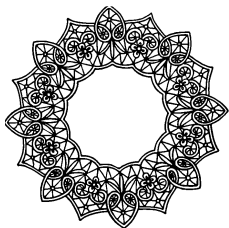
one and a half and by the trade-school group at nineteen and a half. He has apparently lost by his six years of preparatory study, being six months behind the apprentice, and two and a half years behind the trade-school graduate. The graduate of the technical school, however, increases his earnings very rapidly. Within six months his wages rise to \$14 per week, and he reaches \$15.80 per week nearly one year before the regular apprentice. In three years' time, the technical graduate earns \$22 per week, surpassing the members of the trade-school group, and his earnings continue to increase until at the age of thirty-two, ten years after entering upon his practical work, the technical-school graduate earns \$43 per week and his potential value is \$43,000. Six years of preparation have enabled him to far outstrip the shop group and the trade-school group. (Extract from "Modern Business," Vol. I, p. 41. Published by Alexander Hamilton Institute, New York.)

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#### SOME QUESTIONS FOR PUPILS IN TRADE SCHOOLS.

The Manual Training Magazine for June contains a short article stating the things which a pupil who has had two years of manual training should know. From this article the following questions have been prepared as a test for our own trade-school pupils:

1. How is sandpaper graded?
2. What is the correct method of tearing sandpaper?
3. When should the block be used in sanding?
4. Of what kind of wood should a sandpaper block be?
5. What use can be made of worn sandpaper?
6. What is the difference between an auger bit and a drill?
7. What does the figure 9 on a bit mean?
8. What is the difference between a brace and an auger?
9. In how many ways does a file cut?
10. What is the effect of grinding without water?
11. What is the difference between sharpening and grinding?
12. Should the flat side of a plane blade or chisel ever be ground?
13. How should the flat side of a plane blade or chisel be held when sharpening?
14. How should a plane be laid on a bench?
15. How does the rip saw differ from the crosscut saw?
16. What does the number of the saw indicate?
17. For what work should a back-saw be used?
18. When using a mallet, what part of the chisel should be watched?
19. When using the mallet or hammer, where should it be held?
20. What is the difference between a bevel and a miter square?
21. In using a gauge, how far should the gauge point project?
22. How do you sharpen a screw driver?
23. How do you determine the size of a nail or screw?
24. How do you read "12d.?"
25. How long is a "12d." nail?
26. What is "toenailing?"
27. What is the difference between a nail set and a punch?
28. What is the difference between a hand screw and a clamp?
29. Which is stronger, a loose joint with much glue or a tight one with less glue?
30. How long does it take shellac to set?
31. How long does it take to dry?
32. How should shellac be applied?
33. Why should "sawdust and glue" be avoided?



No. 6.—Back Cover Design.