

*THE
PHILIPPINE CRAFTSMAN*

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ment of Industrial Instruction in the Public
Schools of the Philippines.*

THE PHILIPPINE CRAFTSMAN, VOL. II.

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Mr. Frank R. White, former Director of Education, inaugurated THE PHILIPPINE CRAFTSMAN. He was its first editor-in-chief, and supervised the plans for this second volume. Mr. White died on August 17, 1913. (See page 191 of the September number, "Frank Russell White, In Memoriam.")

LIST OF LEADING ARTICLES.

	Page.
Bamboo and Rattan Furniture for Primary and Intermediate Grades.....	1
Vocational Guidance:	
Teaching as a Business.....	45
Nursing as a Vocation.....	84
Surveying	165
Opportunities for Clerical Employees.....	253
The Need of Fences.....	54
Industrial Conferences and Classes, Baguio Teachers' Assembly, 1913	59
Primitive Philippine Basketry.....	71
Notes on Household Industries in Switzerland and Italy.....	94
Some Statistical Studies of Industrial Work.....	108
Kilog	113
Historic Ornament with Application to Decorative Design in the Philippines	133
Review of the Reports of Division Industrial Supervisors.....	171, 672
Agricultural Activities in the Schools of Agusan.....	179
Paper-Pulp Dolls	183
Development of Industrial Instruction in the Philippines.....	186
Course in Hand Weaving of Pliable Fibers.....	211
Nurseries	257
Abaca—The Sinamay and Pinolpog Industry.....	281
Results of the 1912 Corn Campaign.....	297
Handicraft Work in the Philippines.....	310
The Vegetable Exhibit of the Bureau of Education.....	321
Output of Philippine Public Schools.....	328
Lace and Lace Making.....	353
Primitive Looms and Weaving in the Philippines.....	376
Yacal	398
Relations between Owners and Tenants.....	403
The Baqui-Baqui, School Bag.....	409
Industrial Work and Character Building.....	416
Results from Domestic Science.....	441
School-Ground Improvements	469
Some Commercial Notes on Baskets.....	485
School Furniture	506
Photographs for Publication Purposes.....	521
Spain's Contribution to Philippine Agriculture.....	535
What the Philippine Public Schools Are Doing in Agriculture.....	538
School and Home Gardening.....	545
The Villar Settlement Farm School.....	553
The Lumbayao Settlement Farm School.....	560

LIST OF LEADING ARTICLES

	Page.
The Mailag Agricultural School.....	565
The Indang Farm School.....	572
The Central Luzon Agricultural School.....	580
Food Campaigns	601
The College of Agriculture.....	609
Notes on the Work of the Bureau of Agriculture.....	620
The 1914 Basketry Exhibit.....	645
Abaca Slippers	657
Industrial Museums	669
Notes on the 1914 Industrial and Sales Exhibition.....	678

CONTRIBUTORS OF LEADING ARTICLES.

	Page.
Anderson, Carrie E.....	211, 416
Bachelor, W. K.....	620
Cain, A. W.....	45
Caulkins, Glenn W.....	94, 171, 672
Cocannouer, Joseph A.....	1, 572
Copeland, Dr. E. B.....	609
Craig, Prof. Austin.....	186, 328, 535
Cudoba, John C.....	183
Cushman, W. J.....	553
Falconer, Dr. B. L.....	253
Foreman, North H.....	179, 297, 321, 545, 601
Hofstetter, George.....	506
Hulse, S. W.....	165
Johnson, Miss Susan C.....	133
Kindley, George C.....	560
McCloskey, Miss E. P.....	84
McLeod, R. G.....	113
Miller, Hugo H.....	485
Minier, John F.....	281
Moe, Kilmer O.....	54, 469, 580
Murdoch, Miss Estella M.....	353
Parker, Luther.....	71, 108, 376, 645
Sage, Raymond R.....	409, 657, 669
Sawyer, Leroy R.....	159
Schneider, E. E.....	398
Scott, J. C.....	565
Wardall, R. H.....	253
Whiting, George.....	257



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No. 1

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CONTENTS

	Page
Bamboo and Rattan Furniture for Primary and Intermediate Grades. By Joseph A. Cocannouer and Leroy R. Sawyer -	1
Vocational Guidance—Teaching as a Business. By A. W. Cain -	45
The Need of Fences. By Kilmer O. Moe -	54
The Industrial Conferences and Classes, Baguio Teachers' Assembly, 1913. By Leroy R. Sawyer -	59
Editorial -	63
Industrial Notes -	67

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The highest faculty of mind is the constructive faculty—the faculty that builds. A man who builds an industry must be a strong man. The man who builds is not to be feared. He is helping to organize the world for our benefit, and he is keeping our building faculties in practice.

—Anon.

The Philippine Craftsman

VOL. II

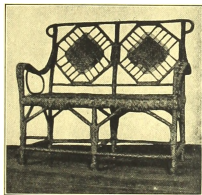
JULY, 1913

No. 1

BAMBOO AND RATTAN FURNITURE FOR PRIMARY AND INTERMEDIATE GRADES.¹

By JOSEPH A. COUANNOKER and LEROY R. SAWYER.

UNDER the existing course of study, work in bamboo and rattan has a recognized place as one of the optional industrial subjects in the third and fourth grades of the primary course and in the fifth grade of the General Course and Course for Teaching. Up to the present time it has not been developed as rapidly as could be expected, nor has it been given the attention in these grades that the character of this work and its bearing upon the home conditions of the Filipino people would appear to necessitate. This may be, and probably is, due in part to the fact that a manual suitable for instruction purposes on the subject has only been recently available. This is in the form of a short course in bamboo and rattan work, presented in the October number of Volume I of *THE PHILIPPINE CRAFTSMAN*, wherein materials and working directions for the construction of a few of the simpler and plainer pieces of furniture for Filipino homes are given.



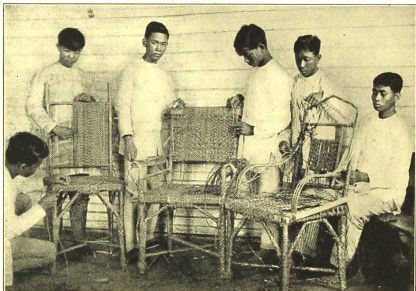
Bamboo-lanpis settee, model No. 4-a.

The present article is largely a continuation of the work outlined in that number of *THE PHILIPPINE CRAFTSMAN*, and contains not only added information on the subject of materials, but also complete instructions for making some of the more ornamental and finished types of bamboo and rattan furniture that have been perfected both in and outside of school shops. The

¹ See No. 4 of Volume I of *THE PHILIPPINE CRAFTSMAN* for a more elementary presentation of this same subject.

nomenclature applied to these different types in this article is indicative of the locality in which they have been developed and is used mainly for the purpose of clearly identifying them, though, secondarily, such designations serve to reflect credit upon the localities where these various types of furniture have been originated and, it is hoped, may contribute to stimulate other localities to original endeavor along this line.

At the industrial conferences held during May of 1913 at the Teachers' Vacation Assembly, Baguio, the matter of wood and bamboo work in municipal and provincial schools was the subject of a report by one of the committees, and the following extracts



Wrapping models Nos. 1, 2, 3, with lappis.

are here quoted for the information they offer and as being representative of the views of a considerable part of the teaching force:

1. That a moderate amount of well-being and comfort can be readily secured in the average Filipino home through the introduction of simple and appropriate wood, bamboo, and bamboo and rattan furniture in the industrial program of the public schools of the Philippines.

2. Shopwork in bamboo should be prescribed where this line of work will be of fundamental service in equipping Filipino homes frequently devoid of furniture; also, where, by reason of limited funds at the disposal of the municipality, the substitution of bamboo work in place of the woodworking course is to be recommended; and, finally, where the primary woodworking shop has already been established and home conditions of pupils are such that the introduction of suitable bamboo furniture should receive attention.

The relatively small cost of the necessary equipment for carrying on this line of industrial work and its evident advantages in giving the Filipino boy an elementary training in the handling of tools and consequently a fair knowledge of some of the essential processes of tool work warrant the introduction of instruction in this subject in a large number of primary and intermediate schools. Conservatively stated, it would appear that in at least a fourth of all third, fourth, and fifth grades of the general course and the course for teaching in each school division such instruction should be given.

To quote again from the report of the committee on wood and bamboo work with reference to the location and number of school shops to be opened in a division: "A factor which appears to be of prime importance in determining this is the need for maintaining a proper balance between the industrial courses in the primary grades, to secure which a proportionate number of shops should be established in every school division." It is believed that the committee has here enunciated a fundamental principle which should serve as a guide in the adjustment of the industrial program for all schools, and particularly for school shops in which work in bamboo and rattan should receive preferred attention.

In this, as in the previous article on bamboo and rattan work, photographs, working drawings, and directions have been given in such detail that a teacher who is familiar with tools, or who has had training at a provincial school shop or at a trade school, will be able to direct successfully this line of industrial work. A number of teachers who have been receiving definite instruction in this subject at the past vacation assembly of the Philippine Normal School will also now be available in the various divisions as capable instructors in this work.

DESCRIPTION OF THE VARIOUS MATERIALS EMPLOYED.

RATTANS.

There are several varieties of rattan found in the Philippines, but the one which is of special interest in this connection is the genus *Daemonorops*, which is especially suited to furniture construction.

This variety of rattan is a long, slender, climbing palm found in the dense tropical and subtropical forests. Ordinarily, the plants produce one long slender stem without branches, but if the growing point is injured, branches are formed. Rattans usually produce leaves with spines, which makes it quite easy to distinguish them from other palms.

As with most plants found in the Philippines, the genus *Dae-monorops* generally bears a different dialect name for each locality in which it is found. The principal dialect appellations are samulig, lacaon, ouay babae, ouay na binabae, palasan, parasan, sumulig, tikol, bogbog, gatasan, and labnig.

Rattans suitable for making furniture are found in nearly all parts of the Philippine Archipelago. According to a report issued by the Bureau of Forestry for the year 1912, the following provinces produce furniture rattan in more or less abundance: Agusan, Albay (also Catanduanes), Ambos Camarines, Sorsogon, Antique, Bataan, Bulacan, Cagayan, Capiz, Ilocos Sur, Isabela, Laguna, Leyte, Mindoro, Misamis, Moro, Mountain Province, Occidental Negros, Oriental Negros, Nueva Ecija, Palawan,



A stack of rattan direct from the mountains.

Pangasinan, Rizal, Samar, Surigao, Tarlac, Tayabas, and Zamboales.

It should be noted here that schools which purchase native rattan in any quantity from a local dealer should secure a statement from him showing that he has paid all charges required by the Bureau of Forestry, which alone gives him permission to sell the product. Rattan is a taxable material, and cannot be cut in commercial quantities except by permission of that Bureau.

BAMBOOS.

It can probably be said without fear of contradiction that as material for home use, bamboo holds first place among all plants found in the Philippines.

The varieties most suitable for the construction of furniture are not numerous, but one or more of these may be found in almost every part of the Islands. The one most widely known is the common spiny bamboo,¹ and since this is the only variety possessing spines it may be easily recognized.

Another variety of bamboo suitable for the construction of furniture is the one commonly called *kawayan kiling*, or simply *kiling*. This plant is a large arborescent shrub with a bright green stem, and is shiny and polished in appearance. It often reaches a height of 17 meters and a diameter of 15 centimeters, and is devoid of spines.

Kiling grows in thickets and is found in almost all parts of the Archipelago. The different dialect names by which it is usually known are *kawayan kiling*, *bolinao*, *borirao*, *butong*, *kaboloan*, *kawayan bayuguin*, *kawayan habero*, *kawayan figa dalusa*, *lunas*, *sinabang*, *kawayan sa China*, *taywanac*.

It is probable that the most valuable variety of bamboo for the construction of furniture is the *usiu*.² It is quite possible that this bamboo is found in more parts of the Islands than have thus far been reported. Since this species is usually found in the highlands, it is not so likely to be discovered as it would be were it found in more thickly populated sections.

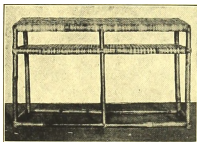
A close relative of this bamboo has been seen growing in the lowlands, and no doubt this could also be used in the construction of furniture if proper attention were given to it. Some of the common dialect appellations for this variety are *bikal babai*, *bikal*, *bikal baboy*, *bikal machui*, *loob*, *usio*, and *usiu*.

In connection with the use of this material there are here given some data recently received from the Bureau of Forestry on the cutting, handling, and growth of bamboo.

1. The best time for cutting bamboo in central Luzon is during the months of December and January. Information on this point was not available for the rest of the Archipelago.

¹ Refer to section on Cagayan Furniture for dialect nomenclature of this bamboo.

² Refer to section of this article on Indang Furniture for description of plant.



A substitute for the wooden desk in barrio schools.

2. Bamboo can be protected from insect attack by soaking in crude oil. In Burmah, the bamboo is often soaked in water for a few weeks before being immersed in the oil. It is said that bamboo, first soaked in water and then in crude oil, will last for a number of years longer than will untreated material.

3. No exact statistics can be furnished of the mean number of culms produced per year by any bamboo. The number will vary from few to many and will be influenced by the age of the clump, the character of the soil, the climatic conditions, and the amount and method of harvesting.

4. Information concerning the average life of any of our bamboos is not available. It is supposed that large bamboos like *Bambusa blumeana* (spiny bamboo) may fruit once in a lifetime of 30 to 50 years. Individual culms have a life of 2 to 3 years.

5. The rate of growth of bamboo seems to be very intimately connected with the moisture conditions. *Bambusa blumeana*, and probably most other bamboos, make their most rapid growth in the rainy season. During the period of most rapid growth a culm may make a daily average increase in height of 30 to 40 centimeters or more; and a height growth of 80 to 100 centimeters or more in a single day is not unusual.

LAPNIS.

Wherever abaca grows lapnis¹ may be found. This is not a material for the framework of chairs, but a covering material. The value of lapnis (lupis) as an industrial material is thus far little appreciated. Not only may it be used as a wrapping for different pieces of furniture, but baskets, bags, hats, and mats may also be made from it.

BANANA SHEATH.

Some varieties of the banana plant have an outer sheath which resembles the lapnis, and which may be employed very much for the same purpose as the latter material is used. The splits secured from the banana sheath are usually shorter than those obtained from the lapnis, but in the absence of the lapnis the banana will be found to make a fair substitute.

SUPPLEMENTARY MATERIAL.

In almost every locality of the Philippines there are different kinds of vines which make excellent material for wrapping chair frames. Most of the materials used in basketry will serve for this purpose. Some of the strong flexible vines are not inferior to rattan in weaving the seats and backs, and in some cases the

¹ Refer to section on Indang Furniture for description of product and methods of preparation.

color effect is very pleasing. Teachers should make a careful study of all vines found in their locality suitable for furniture work. A strong effort should be made to secure all such materials locally, and only when necessary, by purchase.

EQUIPMENT FOR WORKING BAMBOO AND RATTAN.

One of the leading arguments in favor of bamboo and rattan furniture work for school shops is the small amount and cost of equipment necessary to work these materials. A typical equipment is here given, though some of the items noted, as chisels and bolos, may be slightly reduced in number if it is necessary to keep the expense of purchasing the initial equipment at the lowest cost. It will also be found that many boys possess their own bolos and that they can borrow some of the other tools, as saws and chisels, from their parents and friends, while a part of the equipment can be made by the boys themselves. A few more will be required if rattan alone is used; but a way will usually be found by which all parts of the rattan frame may be worked out without going to any great expense. Since the real object, after all, is to create a desire among the Filipino boys to make articles of furniture for their own homes, it is quite important to teach them to construct as much of the necessary equipment as possible.

Equipment for making bamboo and rattan furniture, suitable for a class of 20 boys.

Kind.	Total needed.	Unit cost.	Total.
Chisels, assorted.....	10	P0.62	P6.22
Saw, 14-inch, turning (16 blades*).....	1	1.925	1.93
Braces, plain.....	2	1.76	3.52
With set of bits and drills (sizes $\frac{1}{16}$ to 1 inch)			4.00
Pieces (secure 20 feet) of wire about $\frac{1}{16}$ inch in diameter, each about 1 foot long (used for burning holes in bamboo)	20		.30
Small wooden mallets.....	10	(b)	(b)
Bolos, assorted.....	10	1.00	10.00
Knives, sloyd, 3-inch blade.....	5	.50	2.50
Wood for 3 benches, 1 by 4 meters, each to be fitted with 2 vises on each side.....		(c)	(c)
Planes:			
2 block, No. 18 Stanley.....	4	2.035	4.07
2 jack, No. 5 Stanley.....	4	4.40	8.80
Claw hammers.....	4	1.12	4.48
Pieces wood, 2 by 6 inches by 10 feet, with auger holes of various sizes bored through at suitable places; used for bending the bamboo.	5	(c)	(c)
Drawknives.....	3	1.74	5.22
Bench screws for wooden vises.....	6	1.44	8.64
Total			59.68

NOTE.—Prices noted above are prevailing Manila quotations for articles specified.

* With these extra blades an equal number of turning saws can be made by the pupils, using the saw frame already purchased as a model.

^b Should be made at station.

^c Purchase locally.

CAGAYAN FURNITURE.¹

RATTAN CHAIR.

The teacher should first study the drawing in order to familiarize himself with every detail. He should not undertake to teach boys to construct a model till he himself knows all about it.

Materials.

- 1 piece (a), 1.88 meters by 2 centimeters in diameter.
- 1 piece (b), 2.10 meters by 2.5 centimeters in diameter.
- 1 piece (c), 1.28 meters by 2 centimeters in diameter.
- 2 pieces for front legs, 46 by 2.5 centimeters in diameter.
- 1 piece for arch brace, 1.70 meters by 2 centimeters in diameter.
- 3 pieces for arch braces, 1.06 meters by 2 centimeters in diameter.
- 2 pieces for seat frame, 1.55 meters by 2 centimeters in diameter.
- 2 pieces for leg cross braces, 54 by 2.5 centimeters in diameter.
- 2 pieces for leg cross braces, 48 by 2 centimeters in diameter.
- 1 piece for leg cross brace, 55 by 2 centimeters in diameter.
- 1 piece for leg cross brace, 44 by 2 centimeters in diameter.
- 2 pieces for seat braces (e), 55 by 2.5 centimeters in diameter.
- Weavers for seat, 7 by 0.5 millimeters.
- Weavers for back, 2.5 by 0.5 millimeters.

NOTE.—These measurements are longer than those required in framework of chair. Refer to Plate I for actual measurements.

CONSTRUCTION.

1. Bend piece (b) so that the ends cross each other; after the desired curve has been acquired, tie the ends in their proper position. The bending should be done so that the rattan will curve uniformly. Let the piece (b) stand over night to fix the bend.

2. Select two straight pieces and cut the front legs.

3. Cut the two pieces for the seat frame. In joining the latter pieces, the joints should be placed so as to fall on opposite sides of the frame. Fit the seat pieces to (b) and to the front legs, making notches to fit. *Verify measurements.* Fasten at the four corners, using the "mat-weave" tie.

4. Cut and fit the two seat braces (e) to the lower seat frame and peg.

5. Fit the leg cross brace, the center (f) first, then, after the arch braces have been pegged into place, the other four pieces (g).

6. To measure the arch braces, always begin measuring from the center, marked with a point. Make notches to allow the

¹ The two chair models here discussed were taken from the outline of industrial work given in the provincial normal for the Province of Isabela during the school year 1912-13.

desired angles, taking care not to make notches so large as to leave spaces when bent. Secure and then peg them to the legs, making temporary tie at the tops.

7. Weave seat.

8. Fit the back brace (d) and tie it to the piece (b). A piece of rattan 65 centimeters by 5 by 2 millimeters is placed lengthwise of piece (d) so as to inclose this piece as well as piece (b) at points where the two pieces join, and then a binder 5 millimeters wide and 1 millimeter thick is wound close together so as to cover the brace.

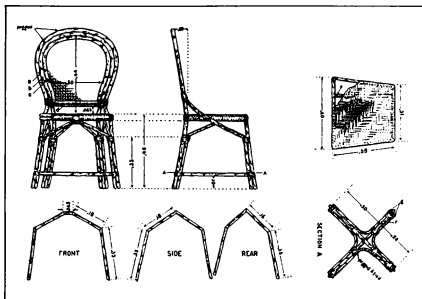


Plate I.

9. Fit piece (c), but before fixing it see that the distance from center of piece (b) to the seat is retained.

10. Find the center of piece (a) at the points marked, and then proceed pegging down the two sides. The ends of the piece (a) should taper to a point where they reach the front corner of the side arch braces, to which they will also be pegged and then wound with the rattan binder. (See Plate I.) Before pegging piece (a) to the sides of the seat and to the arches, see that the back of chair has the proper inclination. The top of the back is 9 centimeters from the perpendicular touching the back brace (d) at its center point.

11. The holes on piece (c) should be located as follows: Find

the center of the bottom piece and mark it; from the mark divide each half into 9 equal parts. See that there are 17 marks in all. Find the center of the upper piece and mark it; from this point divide each half into 27 equal parts, making two or three of the marks at the place most bent, on both sides, a little wider apart than the others, so that the weaving at the bend will not be cramped. See that there are 53 marks in all. Bore holes at the marks and then begin to weave.

BAMBOO CHAIR.

Materials.

- 2 pieces for back legs each 90 centimeters long and 3 centimeters in diameter (bayug).
- 2 pieces for front legs, each 45 centimeters long and 3 centimeters in diameter (bayug).
- 1 seat piece (rectangular), 44 by 3 by 2 centimeters (bayug).
- 2 seat pieces (rectangular), each 37.5 by 3 by 2 centimeters (bayug).
- 1 seat piece (rectangular), 34 by 3 by 2 centimeters (bayug).
- 8 braces (rectangular), each (study drawing for lengths) 3 by 2 centimeters (pasingan).
- 1 piece for lower back (rectangular) 38 by 2.5 by 2 centimeters (pasingan).
- 3 upright back pieces (rectangular), each 35 by 2 by 1.5 centimeters (pasingan).
- 7 cross pieces for seat (rectangular), each 37.5 by 2 by 2 centimeters (bayug).
- 1 piece for top back (rectangular), 39.5 by 5 by 2 centimeters (bayug).

NOTE.—The bamboo called *pasingan* used in the framework of this chair is the common spiny variety found in nearly all parts of the Philippines. It bears many names, such as *aono-o* in Capiz; *baguin* in Pampanga; *batakan* in Surigao; *bayug* in Nueva Vizcaya; *bayog* in Zambales, Laguna, Tarlac; *duguan*, *kabugaoan*, *marurugui*, *rugian*, in Albay and Sorsogon; *kawayan* in Antique, Bataan, Bohol, Bulacan, Cavite, Cebu, Mindoro, Occidental Negros, Pampanga, Rizal, Sorsogon, Surigao, Tarlac, and Zamboanga; *kawayan guid* in Iloilo; *kawayan matinic* in Laguna and Tayabas; *kawayan nga bulilao* in Occidental Negros; *kawayan seitan* in Union; and *pasingan* in Cagayan.

The bamboo referred to as "bayug" is the variety commonly known as "kiling" or "kawayan." Refer to section of this article on "Bamboos" for nomenclature and description of plant.

As an aid in distinguishing these two varieties of bamboo it may be noted that "*pasingan*" is the only variety in the Philippines which possesses spines, while "*bayug*," in common with other varieties, is devoid of them.

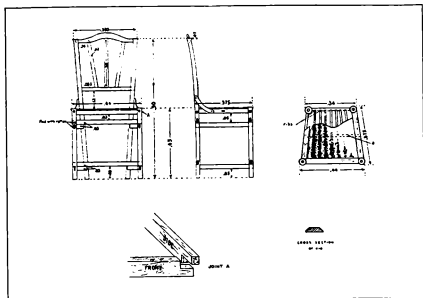


Plate II.

CONSTRUCTION.

1. Cut the four pieces for the legs, the upper ends of which must coincide with the nodes of the bamboo, thus leaving no holes to be seen. The two front legs must be straight. The back legs should curve 7 centimeters from the perpendicular at the center of the back edge of the seat.

NOTE.—To bend the back, on a board at least 15 centimeters wide and 1 meter long draw a plan of the back leg. Then bore holes 1.2 centimeters in diameter along the outside of lines. Make good strong pegs to fit into these holes. Heat the bamboo, place between the pegs, and bend to fit the form. Let the bamboo stay in this form one night.

2. Cut all the other pieces and scrape off the outer skin.
3. Scrape off the outer skin of the four legs.
4. Measure on the back legs from the bottom up to where the mortises are to be placed.
5. Care must be taken that the mortises are not cut at right angles to the back legs, for the back legs diverge, and the back braces must be parallel to the seat. In order to get the mortises correctly placed, lay the pieces in a position so that they are 39.5 centimeters apart at the top (outside dimension) and 34 centimeters apart at the place where the seat frame is going

to be. Now mark off for the mortises, keeping in mind that the braces are to be parallel to the seat. Do not make all the mortises at once; complete one pair at a time and fit in their corresponding tenons. Study the joints of the seat frame in the drawing. The tenons of the back seat frame are under the tenons of the side seat frames as shown in Plate II, joint A. All the mortises for the braces between the seat frames and the lower leg braces are to be worked out after the brace pieces have been prepared and tied together.

6. All of the eight leg braces must be driven clear through the leg pieces, wedged, and neatly smoothed down on the outside.

7. Fit the front legs to the seat frame and also to the bottom brace.

8. Fix the side seat frames and the lower side braces, joining the two front legs with back legs. Remember that the front of the chair is wider than the back, consequently the mortises for the side braces are not at right angles to the front and back pieces.

9. Fit the single crosspiece supporting the ribs of the seat (a, Plate II) to the two side seat frames. Its ends are housed through the frames.

10. Fix the seven ribs, each 37.5 by 2 by 2.5 centimeters, making notches in the front and back seat frames to hold them. These pieces are beveled on each side. (See illustration in Plate II.) Tie each of them to the crosspiece. These ribs must be of very strong pieces of bayug so that they can bear strain without bending. It is well to fasten them temporarily at the back while weaving.

11. All of the joints should be tightly pegged and tied with split pieces of rattan. Small holes should be made in the pieces where the tie is desired.

12. For the seat bottom, prepare the small splits for weaving, the bottom. The weavers should be made from a long joint of bamboo (pasingan) so that the seat will be smooth.

13. After the weaving is done cut all ends which protrude beyond the seat, and then fix the four pieces that hide the ends of the ribs and splits. (See Plate II.) These four pieces should be firmly tied into place with split pieces of rattan, or pegged.

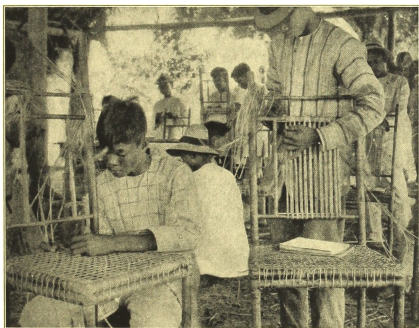
14. Make holes for the remaining braces, fit into place, and wedge and tie firmly.

15. Prepare and fasten the side braces.

16. Clean all rough joints with a knife and sandpaper.

INDANG BAMBOO-LAPNIS FURNITURE.

The Indang furniture had its origin in the shop of the Indang Farm School, Indang, Cavite. At first only chairs of the crudest sort were constructed, but the course has been developed till at present many complex designs are turned out. The principal aim is to train the boys to build suitable pieces of furniture for their own homes. During the past year every boy in the school made for home use one article or more of good quality.



Chairs in process of caning.

MATERIALS.

The materials used in the construction of Indang furniture are usiu, rattan, and lapnis.

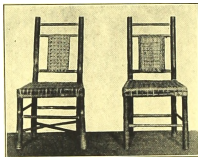
USIU.

Description.—The usiu is a variety of upland bamboo resembling that used by the Chinese in furniture construction. Its habitat is generally along steep hillsides and it is often found mounting to a great height upon trees and perpendicular cliffs. The plant rather prefers the "thicket habit," and when this occurs the stalk is generally shorter than when growing alone.

It is not uncommon to see stems climbing to a height of 20 meters or more. The internodes are quite regular and average about 40 centimeters in length. The nodes are usually rough and support whorls of branchlets which bear long, sharp-pointed leaves. The plant is sparingly branched, but when branches do shoot out they grow and develop much the same as the mother plant. It is not uncommon to find branches larger and longer than the parent itself.

This species very rarely exceeds 5 centimeters in diameter, and the size has nothing to do with the age. Stems are often found extremely small but several years old.

Preparation for use.—The first step to master in the preparation of materials is a knowledge of what kind of plants to cut. Above all, be sure the stalk is an old one. Young plants may be distinguished from the old by means of the sheaths around the nodes and by their light green color; also by the fact that the young plants usually support shoots. Old stems are very dark green in color, and are commonly covered with moss and lichens.



Samples of chair, model No. 1-a.

The reasons for avoiding the young stems are quite obvious. These stalks are much more liable to attack from insects, and it is difficult to dry them before they shrivel up. If the

old stalks are used and the cutting done at the proper season as hereinafter noted, there will be little danger from insects.

When the bamboo has been properly selected and taken from the thicket, it is then ready for the bending process. This is done by heating the part where the bend is desired, placing it in a vise or some similar arrangement, and then gradually bending to the desired condition. The part is quickly cooled by rubbing it with a cloth dipped in cold water. Care must be taken not to crush the stalk.

For furniture work it is important that usiu be cut only during certain months of the year, owing to the insects which attack this variety of bamboo. If the stalks are old ones the cutting may be done with comparative safety any time from December to April. It will be found necessary to cut and store the stalks for use during the other months. Dry bamboo is not so easily bent as the green, but if the parts where the bend is desired are

sufficiently oiled before heating, or even thoroughly moistened in advance, little trouble will be met in preparing the different parts. If the first method is followed, coconut oil will serve for the purpose.

LAPNIS.

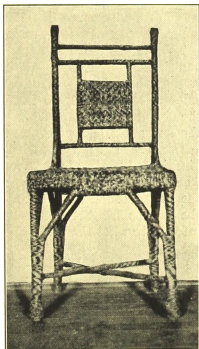
Lapnis is the dried outer sheath of the abaca stalk. This material is considered a waste by the farmer, but as a wrapping for wicker furniture it ranks very high. The color ranges from a light gray to black, with all the browns intervening. The color combinations are many, and the beauty and variety of designs possible will depend entirely upon the skill and ingenuity of the chair builder.

The abaca sheath, called lapnis, is made up of two distinct parts—an inner or spongy layer which makes an excellent filling for seats and backs of various articles of furniture, if such is desired, and an outer epidermis composed of coarse fibers. It is the latter which is used for wrapping.

The two layers are separated from each other in the following manner: Place the sheath in water for a few minutes—till well saturated—then, by means of a sharp knife, cut through the outer layer at butt end of sheath about 6 or 8 centimeters from the end, leaving only sufficient room for a hand hold; using the knife, carefully start the separation of the two layers, taking care that none of the spongy tissue clings to the epidermis; grasp a layer in each hand and slowly pull them apart. If the start has been properly made the layers will separate easily.

When the layers have been separated, the spongy layer is discarded and the epidermis is split into narrow strips, the width depending upon the size of rope or braid desired.

There are three methods of preparing lapnis for wrapping, namely, by braiding the splits into an ordinary three-strand braid, starting with the splits of unequal lengths so as to have



Bamboo chair, model No. 1, covered with lapnis.

only one split run out at a time; by splitting the epidermis into very narrow strips, tying them together, and then twisting into an ordinary cord; the third is similar to the second method, excepting only that twist is prepared instead of a cord. In the last two methods the splits should be quite small so as to avoid large knots where the former are joined together.

For beauty of color combinations and designs, the braid greatly surpasses the twist, yet it has two defects which practically put it out of the question; one is the time necessary to prepare the braid, and the other is the impossibility of being able to make a tight wrapping with materials prepared in this way. The braid will loosen in spite of all that may be done, excepting where a weave is made, as in the seat and back.

The cord is stronger than the twist, yet the latter possesses a sufficient amount of strength and can be prepared a little more rapidly than can the cord. It is impossible to get the beautiful color effects from these two methods, as previously stated, yet the time saved in preparing materials seems to make the use of the cord and twist preferable to the braid.

It has been found that where first-class work is desired, a combination of the braid and cord or twist gives excellent results. The braid may be used where special designs are desired, as in the back, around the seat frame, and on the legs and arms. If the designs are carefully worked out, the final effect will be little inferior to what the braid alone will produce.

RATTAN.

It is scarcely possible to build a piece of wicker furniture without the use of a certain amount of rattan. Where sharp bends or curves are desired, bamboo cannot be used. The arms of chairs are usually made of rattan, and the braces are much more satisfactorily made of this material than of the small bamboo stalks. For simple frames bamboo may be used for all parts, but the more elaborate the frame the more rattan will be needed. The seat should always be reinforced with split pieces of rattan to keep the lapnis chair bottom from sagging.

CONSTRUCTION.

CHAIR, MODEL No. 1.

Teachers should familiarize themselves with every detail of the drawing before beginning work on the model. Master the measurements and follow them closely.

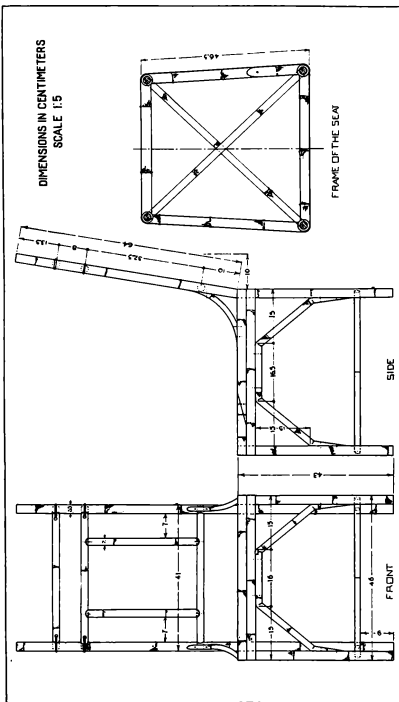


Plate III. Indang bamboo-lapanis chair, model No. 1.

DIMENSIONS IN CENTIMETERS
SCALE 1:5

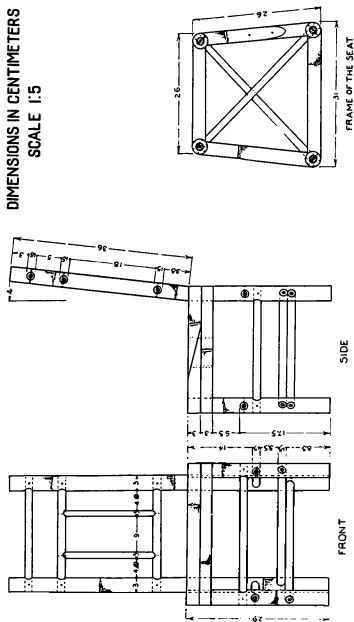


Plate IV. Indang bamboo-lapis child's chair, model No. 1-A.

Materials—bamboo (usiu).

- 2 straight pieces (a), each 107 centimeters long and 3 centimeters in diameter.
- 2 straight pieces (b), each 43 centimeters long and 3 centimeters in diameter.
- 2 straight pieces (c), each 200 centimeters long and 2.5 centimeters in diameter.
- 2 straight pieces (d), each 78 centimeters long and 1.2 centimeters in diameter.
- 1 straight piece (e), 78 centimeters long and 1.2 centimeters in diameter.
- 1 straight piece (f), 76 centimeters long and 1.2 centimeters in diameter.
- 2 straight pieces (g), each 62 centimeters long and 1.2 centimeters in diameter.
- 3 straight pieces (h), each 41 centimeters long and 1.2 centimeters in diameter.
- 2 straight pieces (i), each 32.5 centimeters long and 1.2 centimeters in diameter.
- 2 straight pieces (j), (rattan) 30 centimeters long and 2 centimeters in diameter.

The two pieces marked (a) are for the hind legs and back; (b), the front legs; (c), the seat pieces; (d), the arch braces for the sides; (e), the arch brace for the front; (f), the arch brace for the back; (g), the "x" brace for the legs; (h), the three cross rounds for the back; (i), the two upright rounds for the back; (j), the two braces on each side of seat.

DIRECTIONS.

1. Take the two pieces marked (a), dress down the joints by means of a bolo, file, or rasp, and sandpaper till all parts are perfectly smooth.

2. Heat and bend according to instructions previously given, and take great care to see that both pieces have exactly the same bend.

3. Dress down the front legs.

4. Tie the four legs together and lay them aside till the two seat pieces have been prepared.

5. See that the two seat pieces are perfectly straight and well smoothed down at the joints.

6. Mark off, by means of a ruler, the seat pieces into the proper divisions, taking great care that all measurements are exact. When laying off these divisions, allow 10 centimeters at each end for the lap joint. (Refer to Plate III for model 1, side view.)

7. Cut the elbows (the corners into which the legs fit) of the proper size. Before starting to cut the elbow, carefully study figures 3 and 4 of the "Details." (Plate XIII.) The notch in the elbow should be started smaller than what it will eventually

be, and then gradually enlarged till a very snug fit around the legs is secured. A sharp chisel is the best tool for cutting out the elbows.

8. By means of a plane, work down the ends of the seat pieces so that they will lap smoothly over each other.

9. Set up the frame, fitting the legs into their proper elbows. The elbows should be soaked in water or well oiled before the frame is set up, in order to prevent their cracking.

10. Temporarily tie the parts of the frame in place.

11. By means of a brace and bit, make holes in the legs for the "x" brace and fit the pieces into their proper positions. (Study Plate III, model No. 1, for measurements.)

12. Study the same plate for plan and measurements of arch brace. After mastering these details cut out the arches and temporarily fit them into their proper places. Avoid leaving any large cracks at the places where the bends in the arches are made.

13. Permanently fasten the ends of the seat pieces together at the lap joints. This should be done by burning two or three small holes through the lap and then driving wooden pegs in very tightly.

14. Permanently fasten the arch braces into place in the same manner as the seat pieces were fastened.

15. Study the same plate for measurements, and bore the holes in the back for the cross rounds, fitting the rounds snugly into place.

16. Notch the ends of the upright rounds, fit them into place, and fasten with wooden pegs.

17. Dress down the rattan braces for the back and seat and fasten with either screws or pegs.

NOTE.—The instructions given above are for the frame which is to be wrapped. In case an unwrapped frame is desired, it will be better to place a piece of bamboo around the base of the legs exactly the same as the seat frame. The arch branches should then be discarded, and the seat frame supported by means of a small peg placed just below each elbow. The holes for the "x" brace and cross rounds should be bored clear through if the frame is not to be wrapped, and then tightly wedged into place from the outside.

Pupils should master the different styles of weaving as illustrated in figures 7, 8, 9 of the "Details" before beginning to weave the bottom and back. Figure 7 is the most complex, but any one of the three designs may be used.

Before starting to bore a hole in a piece of bamboo with a brace and bit, always cut a small notch with the knife, or the bamboo will split. (Refer to fig. 5, Plate XIII.)

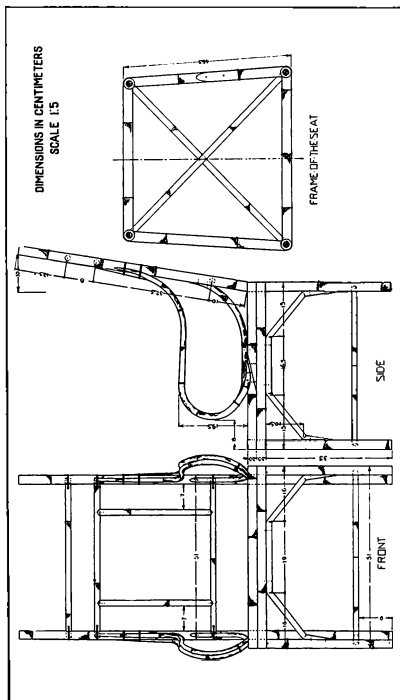


Plate V. Indang bamboo-lapis chair, model No. 2.

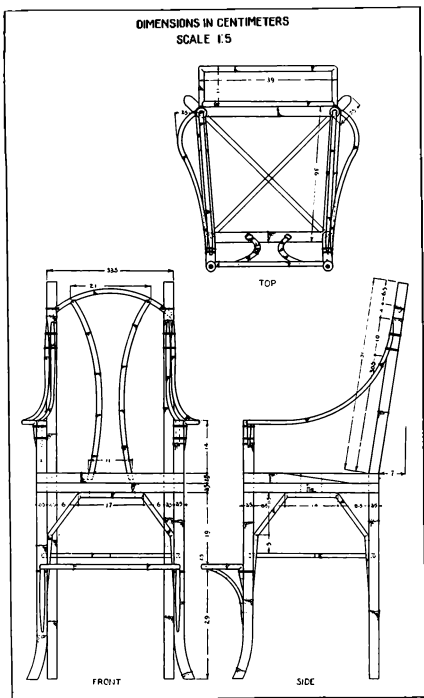


Plate VI. Indang bamboo-lapis child's high chair, model No. 2-a.

MODEL No. 1-A.

Model No. 1-A is a child's chair designed especially for the use of pupils in the first grade. It is simple in construction and can be readily built by third and fourth grade boys.

Materials (usu).

- 2 pieces (a), each 65 centimeters long and 3 centimeters in diameter.
- 2 pieces (b), each 29 centimeters long and 3 centimeters in diameter.
- 2 pieces (c), each 125 centimeters long and 3 centimeters in diameter.
- 2 pieces (d), each 37 centimeters long and 1.5 centimeters in diameter.
- 2 pieces (e), each 31 centimeters long and 1.5 centimeters in diameter.
- 9 pieces (f), each 26 centimeters long and 1.5 centimeters in diameter.
- 2 pieces (g), each 19 centimeters long and 1.5 centimeters in diameter.

(a), Hind legs and back; (b), front legs; (c), seat pieces; (d), "x" braces; (e), rounds for front legs; (f), rounds for side and hind legs and cross rounds for back; (g), upright rounds for back.

DIRECTIONS.

Prepare materials according to directions given for model No. 1. Study Plate IV for measurements. The framework of model No. 1-A differs from model No. 1 only in size, the absence of certain parts, and the addition of the extra rounds in the legs. For setting up the frame follow instructions given for model No. 1.

NOTE.—Model No. 1-A may be built any size desired simply by proportionally enlarging all parts with the exception of given diameters, which should be retained.

MODEL No. 2.

Model No. 2 differs from model No. 1 only in measurements and the addition of the arms. The arms are made of rattan and can be readily worked out by carefully studying the plate. Study the plate also for measurements.

MODEL No. 2-A.

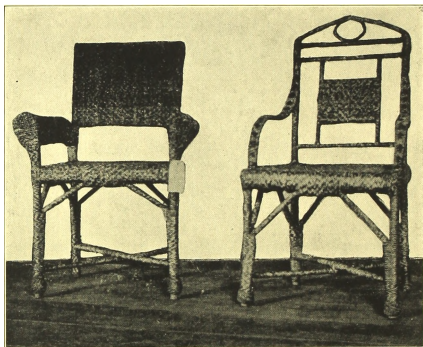
Model No. 2-A is a child's high chair, and the same general plan of construction should be followed in this as in model No. 1. The foot rest, the arms, and the three pieces in the back are made of rattan. A careful study of the plate will show just how these parts are built. The foot rest should be constructed separately and then firmly screwed to the front legs after the chair frame is completed. It will be noted that the arms are tied to their proper places, and this tying should be made with fine strips of rattan in case the frame is not to be wrapped. Carefully master all measurements before beginning to set up the frame.

MODEL No. 3.

Model No. 3 is a large chair with rolling arms. The general plan of construction is the same as that used in model No. 1. The shaded parts in the plate are all made of rattan. Study plate carefully for methods of construction. All parts which are tied to the frame should be fastened with fine pieces of rattan.

MODEL No. 3-A.

Model No. 3-A is exactly the same as model No. 3 with the exception of the back. Study Plate VIII for back of 3-A.



Bamboo-lanitis chairs, models Nos. 2 and 3.

MODEL No. 4.

Model No. 4 is a bamboo couch. The construction is simple, but care should be taken to secure bamboo sufficiently long so as to make a complete circumference. The lap joint should be long and strongly fastened. The "x" braces for the legs are each built of three pieces of rattan. Refer to Plate XIII, figures 10 and 11, as to method used in fastening the "x" brace to the end legs. Figures 12 and 13 of the plate show how the braces are fastened to the center legs. The headrest is built of rattan and bamboo (Plate IX, top view), but is no part of the frame and may be left out if so desired.

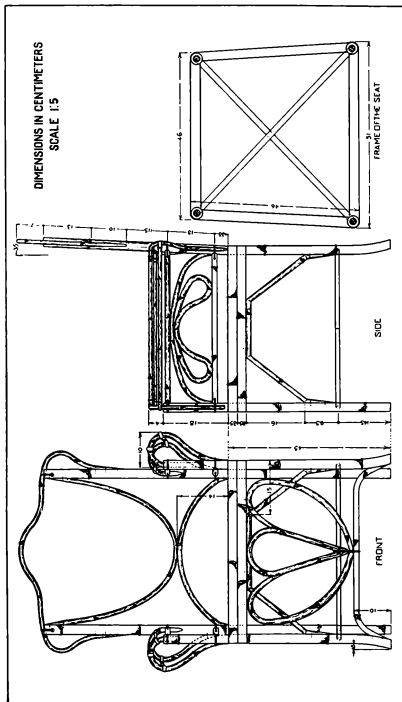
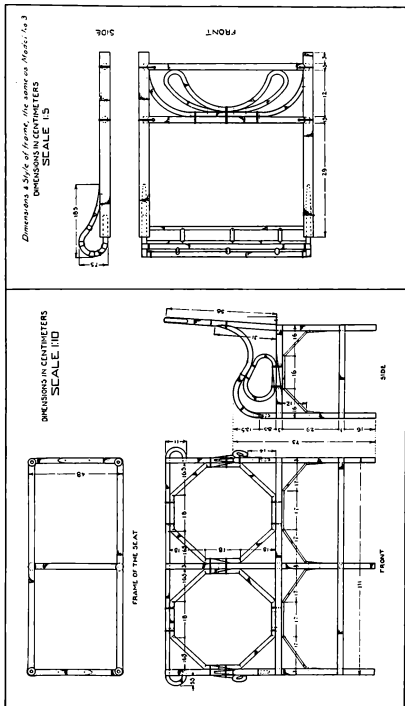


Plate VII. Indang bamboo-lapnis chair, model No. 3.



There is a cross brace of bamboo between the two center legs, joining the legs immediately where the lower rectangular frame piece is attached to them. (Study details 12 and 13, Plate XIII, as to method of fastening the cross brace.) The center legs should fit into notches in the rectangular frame piece, as illustrated in Plate IX, top view.

MODEL No. 4-A.

Model No. 4-A is a settee, and is built entirely of bamboo with the exception of the arms and the piece running across the top of the back, which are of rattan. In case it is so desired, two rectangular frame pieces may be used for the seat instead of one. There is a rectangular frame piece near the bottom of the legs which serves the purpose of a brace. Carefully study the plate for methods of construction and measurements.

MODEL No. 5.

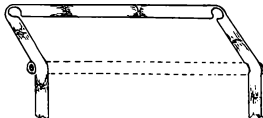
The only new feature in this design is the introduction of the rockers. The rockers are made from medium hard wood, though rattan may be used. Care should be taken to get a perfect balance to the chair. Master the drawings on the plate before beginning the work of construction.

MODEL No. 5-A.

Model No. 5-A is a child's rocker built entirely of rattan with the exception of the rockers, which are of medium hard wood. If so desired, the rockers may also be made from rattan. Study plate for measurements and methods of construction.

BAMBOO SCHOOL DESK.

This desk is to be used with the child's chair, model No. 1-A. As with the chair, the measurements may be changed if a larger desk is desired. It will be necessary to study the plate very carefully in order to understand the plan of construction. One single piece is used for the two front legs, the upper side pieces, and rail at the back of the top, as here shown. One straight piece of bamboo extends across the front, fitting into the elbows where the single piece before mentioned bends down to make the front legs. The back end legs are each single pieces.



The rectangular frame piece for the bookshelf and that at the bottom of the legs are built in the same way as for the settee and couch. Note the different pieces used for the center legs.

GENERAL INSTRUCTIONS.

(a) Always place the rectangular frame pieces so as to have the lap joints fall on opposite sides.

(b) Where small holes are to be made, always burn them through with a piece of large wire or iron pin the size desired.

(c) Before starting to bore a hole in bamboo with an auger or gimlet always cut a small notch with a knife in order to avoid splitting the material. (See Details, fig. 5, Plate XIII.)

(d) Avoid using nails in bamboo. Always tie with rattan or some other similar material.

(e) Always fasten the joints with wooden pegs; for extra strength, the joint should be neatly tied.

WRAPPING.

Whether a frame is to be wrapped with lapnis, rattan, or some other similar material, the same general scheme should be followed. Where fibers are used as a wrapping the material should be thoroughly dried before putting it on the frame. Wrap the lower part of the frame first, then weave the seat, and last wrap and weave the back. Designs may be woven in on the front legs, arms, back, and around the seat frame the same way as baskets are decorated. These designs are very attractive, and this manner of weaving prevents the wrapping from slipping. Carefully study details (figs. 7, 8, 9, Plate XIII) for styles to be used in weaving seat and back.

Explanation of details (Plate XIII).

- Fig. 1. Method of starting lapnis twist for wrapping.
 2. Method of starting lapnis braid for wrapping.
 3. How to start the elbow.
 4. The completed elbow.
 5. Method of cutting the notch before starting to bore a hole in a piece of bamboo with an auger or gimlet.
 6. Method of making a bend in a piece of bamboo or rattan for the arch brace.
 7. The common design used in caning chairs.
 8. A simple but strong design used for chair caning.
 9. The simple "under-and-over" weave used for chair backs.
 10. Method used in fastening the "x" braces to the corner legs of couch (top view).

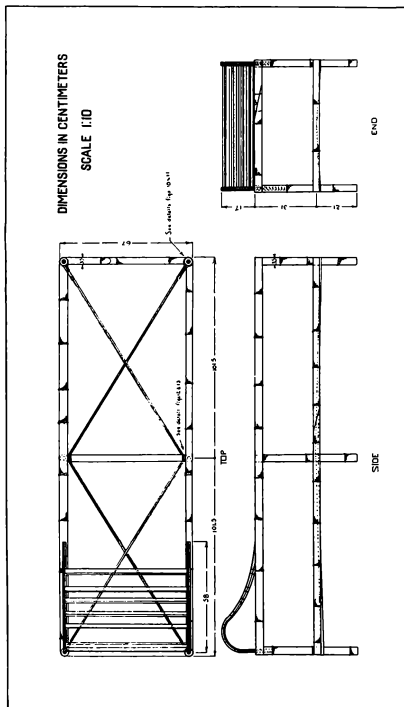


Plate IX. Indang bamboo-rattan couch, model No. 4.

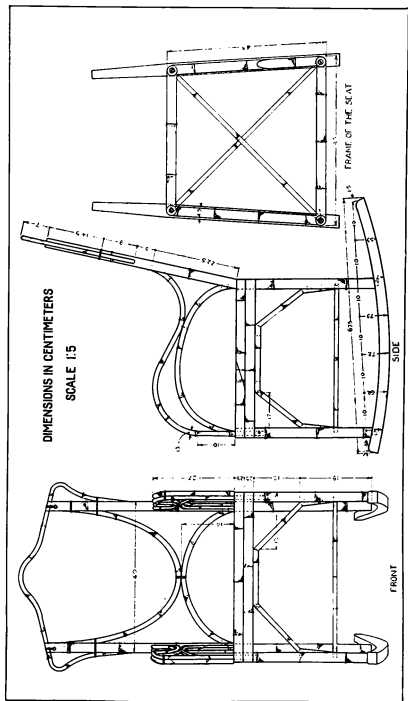


Plate X. Indang bamboo-lapnis rocker, model No. 5.

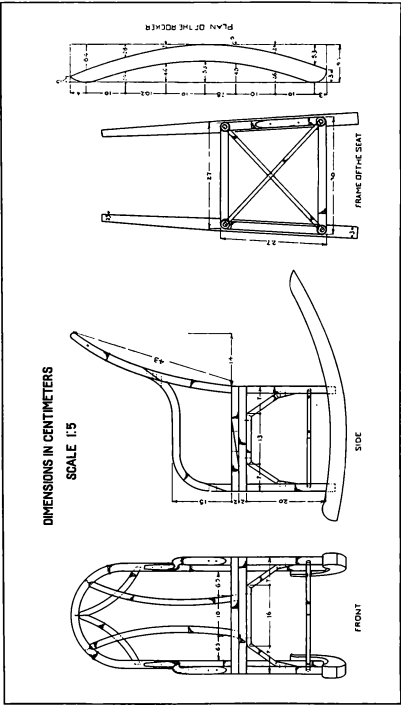


Plate XI. Indang bambu-lapisan ottid's rocker, model No. 5-A.

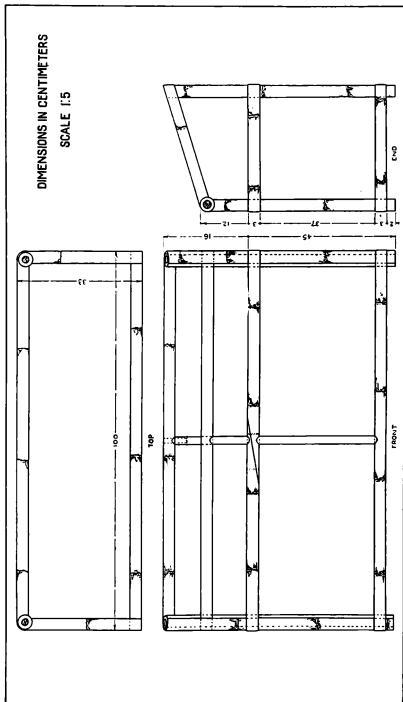


Plate XII. Indang bamboo-tapis desk.

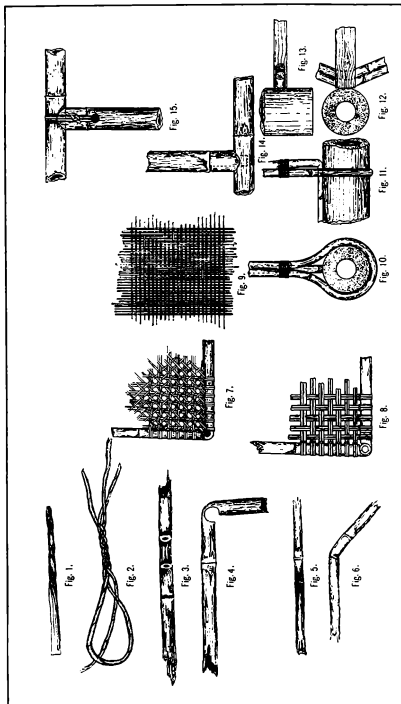


Plate XIII. Details of joints, seat, weavings, etc.

- Fig. 11. Showing side view of "x" brace joined to corner legs of couch.
12. Method used in joining "x" brace of couch to center legs (top view).
13. Showing side view of "x" brace of couch joined to center legs.
14. Method used in doweling upright rounds of chair, and other similar pieces, to framework.
15. Method of tying upright rounds of chair, and other similar pieces, to framework.

SAN MIGUEL FURNITURE.¹

The San Miguel rattan furniture had its origin under rather unique circumstances. During the insurrection days, just prior to the American occupation of the Philippines, a young Filipino in the Province of Bulacan conceived the idea of constructing



Samples of San Miguel de Mayumo rattan furniture.

crude beds and chairs for his soldier companions from the rattan which grew in abundance in that locality. When peace once more prevailed in his province, this young man decided to go into the furniture business on a commercial basis. He spent an entire year in developing machinery suitable for working the rattan, and models and designs were secured from different sources. Though possessing practically no business experience to begin with, he has subsequently developed his industry till it is now widely known and his furniture may be found in almost every part of the Philippine Islands.

Rattan is so widely distributed throughout the Philippines that there would seem to be few materials more suitable for

¹ Much of the information, and some of the drawings and pictures descriptive of San Miguel rattan furniture were supplied by Mr. Fred T. Lawrence, supervising teacher, San Miguel de Mayumo, Bulacan.

school industrial work for boys, both in its application to improving home conditions as well as its use in training for a line of work which can become a source of considerable revenue to them later on when the matter of a livelihood has to be faced. The statements here given, respecting not only the cost of the necessary equipment, but also the considerable demand for rattan furniture, would evidently justify a number of trade schools and provincial school shops in placing furniture construction with this material in their school programs. Prevailing conditions would probably not necessitate this line of industrial work to be carried on indefinitely in the schools before mentioned, for as soon as students possessed the necessary technical ex-



Assembling rattan furniture.

perience regarding this work and recognized its commercial possibilities it would probably happen that some of the students or their parents and friends in the locality would become sufficiently interested to open small factories which would later represent business enterprises of far-reaching importance.

At San Miguel middle-sized rattan is used in preference to other sizes, as it is generally more pliable and not so apt to splinter at the ends when cut and used in the different parts of furniture.

A few facts regarding the present output and methods of work in one factory at San Miguel may be of interest to readers of this article. The number of regular employees at this factory

consists of 2 machinists on salary; 4 benders who receive 6 centavos for each piece of furniture; 10 assemblers who receive 20 centavos for each piece of furniture; 47 weavers who receive 20 centavos, 30 centavos, and 40 centavos, according to the amount of weaving to be done on each piece of furniture. This force is employed daily throughout the dry season.

During the rainy season the force employed in caning chairs averages about 100 persons, mostly women. Many reasons explain this variation in the number of people employed. The two most important are the scarcity of heavy rattan in the dry season and the lack of people who desire employment at that period of the year.

This factory receives more orders than it can fill, and at present



Splitting rattan.

many have to be refused as the owner has not the necessary capital to keep a large amount of heavy rattan on hand and pay the number of workers that it would be necessary to employ to complete his orders in a short space of time.

The following is a statement of the valuation of the output of this chair factory since 1910: 1910, ₱36,000; 1911, ₱30,000; 1912, ₱20,000. This falling off in the output in 1912 was largely due to the fact that the owner had established in connection with his factory during a considerable part of that year a cinematograph, which interfered with giving his entire time to the furniture business.

It is furthermore stated that another chair factory at San Miguel has had an output of furniture averaging ₱20,000 for

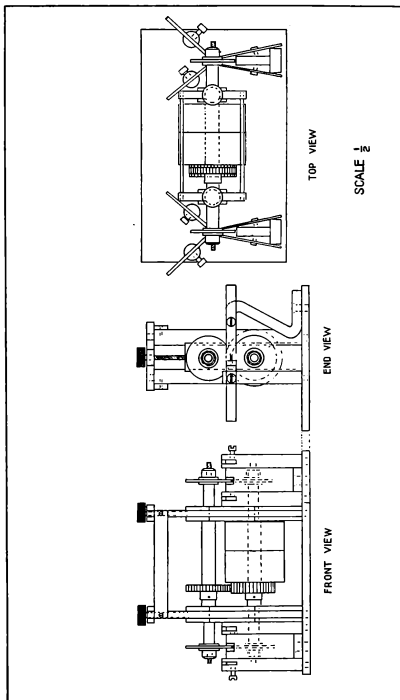


Plate XIV-A. Machine for producing the proper width of weaver.

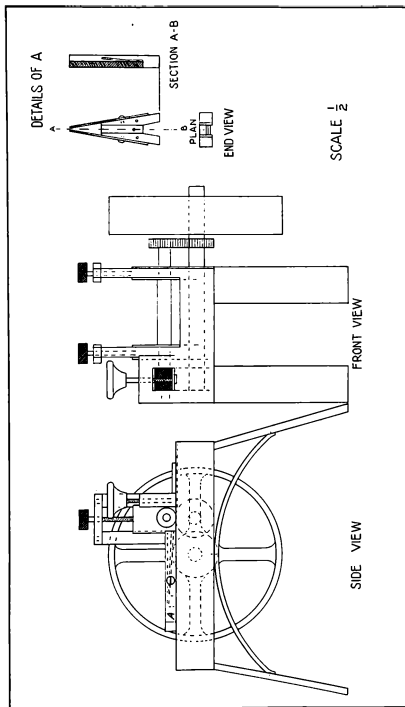


Plate XIV-B. Machine by which the proper thickness of weaver is produced.

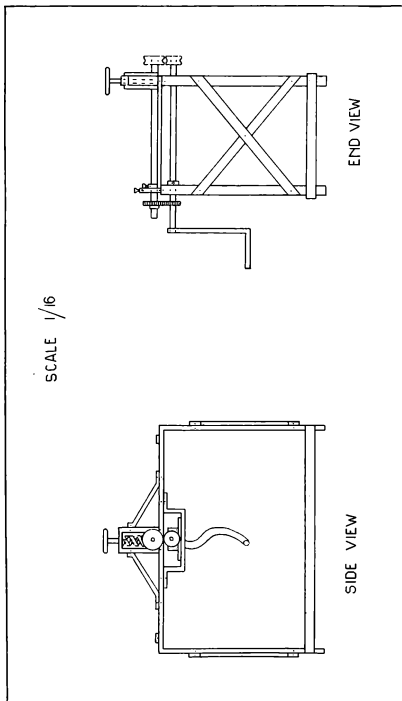
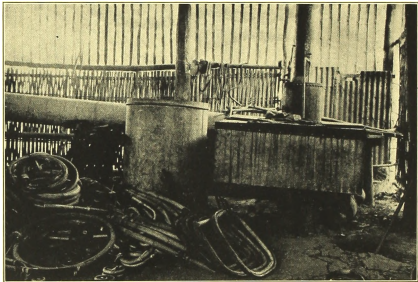


Plate XIV-C. Machine that forces the rattan onto the form.

each year since 1910. Of the two factories mentioned, the first produces largely the common ordinary chairs, which have a much larger sale, while the second manufactures easy chairs, hatracks, washstands, beds, tables, and similar pieces of a higher grade.

EQUIPMENT.

Various operations are necessary for properly handling rattan in the construction of furniture, such as steaming the pieces so that they may become pliable, then molding into the forms desired, and finally their proper drying. To effect these operations, an ordinary upright boiler is used, at the bottom of which



Apparatus for steaming and drying rattan.

is located a fire box used to heat the boiler and to supply hot air to the drying pipe attached to the fire box; also a cylinder, a few meters long and 2 or 3 decimeters in diameter, which is made of sheet iron tightly riveted together and into which the rattan is placed for steaming. This cylinder is connected by a small pipe to the boiler. After the rattan has been placed in the cylinder, it is then put through the steaming process by means of steam which enters from the boiler through a small pipe. The drying chest is a little over 1 meter long by 1 meter wide and somewhat less in depth. It is made of sheet iron, and one-half of the top is covered with a movable lid. The pipe previously mentioned as connected to the fire box furnishes

a forced draft of heated air to the drying chest which dries the rattan in about twenty minutes (refer to illustration on previous page for boiler, cylinder, and drying chest).

METHOD USED IN SHAPING THE FORMS.

After the rattan has been sufficiently steamed in the cylinder above described, it is then ready to be molded into the desired forms. In order to do this, a piece of V-shaped iron a few meters long is first heated red hot and then beaten on the anvil so as to conform in shape to the various pieces forming the



Forcing the rattan onto the V-shaped form.

framework of the chair or other article of furniture. Next the pliable piece of rattan is forced to take the shape of this iron mold by fitting it into the V-shaped groove. This is done by running the mold, together with the rattan, between two grooved wheels, as is shown in Plate XIV-D and illustration of this operation. When the rattan has been properly forced into shape on the form machine, it is placed for about twenty minutes in the drying chest formerly described.

When the rattan has been sufficiently dried in this chest, it is then removed and allowed to cool before taking it out of the mold. After it has cooled it is taken from the mold and is



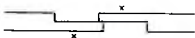
Fastening the ends of seat piece.

then ready for use as framework in the different pieces of furniture.

CONSTRUCTION.

When the rattan is taken from the mold, the parts used for the seat and back are ready for the joiner, as shown in the illustration. The joiner first fits the seat frame into an iron hoop of the desired shape,

and the ends are fastened together by a screw placed on each side. The following diagram shows the style of joint used: The "x" shows where the screw is placed.



When the seat piece has been properly fastened, it is taken to the drilling machine (see illustration), where the holes are bored around the entire piece 1 centimeter apart. These holes serve for fastening the split pieces of rattan used in caning the seat.

After the seat piece has been drilled it goes to the grooving machine, where a groove is made to conceal the rattan weave



Operator drilling seat piece.

beneath the seat frame. The seat form is now ready for the weaver as shown in illustration. The same operation of drilling and grooving is followed where the backs of chairs are caned.

Those who do the caning are usually girls and women who are paid by the piece.

Most of this work is done in the houses of the weavers.

The rattan used for weaving is received from the mountains either whole or split into four or six pieces. Upon reaching the factory, it is split into smaller pieces by means of knives and bolos, as shown in illustration. Then it goes to the machine shown in Plate XIV-B and illustration. This machine gives the rattan-splits a smooth appearance and a uniform thickness. The splits then go to another machine (see Plate XIV-A and illustration) where they are given the proper width. This process completes the preparation of the splits, and they are now ready to be turned over to the weavers.

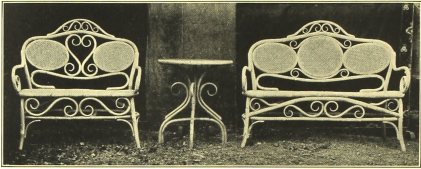
An accompanying illustration shows how the frames are set up. The tools used in



Caning seat pieces and backs.



Making rattan splits of uniform thickness.



Rattan settees and table.



Making rattan splits of uniform width.

this work are the gimlet, screwdriver, saw, hammer, and chisel. All braces are fastened with brass rivets, and all the other parts are fastened with screws. The proper shaping of the piece of furniture depends a great deal on the skill of the workman. It takes about a month for a beginner to learn how to do this work well.

When the frames have been put together they are sent to the finishing department, where they are sandpapered till perfectly smooth. No furniture is varnished, shellacked, or painted except on the request of a buyer.

Even in the Philippines progress is being made in coöperative educational work. The Philippine School of Arts and Trades announces that arrangements will be made by which manufacturers who wish to develop apprentices to the highest efficiency will be given an opportunity to send them to school for a half day and keep them at work under competent instructors during the other half of the day in their own shops. (From *The Furniture Manufacturer and Artisan.*)

VOCATIONAL GUIDANCE.

TEACHING AS A BUSINESS.

By A. W. CAIN, Acting Superintendent, Philippine Normal School.

I. QUALIFICATIONS REQUIRED.

VOLUMES have been written about teaching, and thousands of devoted men and women have spent their lives in exemplifying the best traditions of the race relative to the instruction of the young. In the brief space allotted to this article, nothing more than an outline of teaching as an occupation can be attempted. That which follows is applicable to the native teacher in the Philippine Islands.

THE BASIC EDUCATION OF THE TEACHER.

In all of the Islands there are now 29 teachers who have not passed the fourth grade. Some of these teachers are located at remote stations in the non-Christian provinces where the instruction required is of the most rudimentary character. But the greater part of the number are industrial teachers who possess skill in some particular line of work which is largely independent of general educational attainments. Of the remainder, 6,576 teachers have not graduated from the intermediate course—that is, they are still in the fifth, sixth, or seventh grade. How teachers of no higher attainments can render satisfactory service will be more apparent when it is remembered that more than half of the pupils enrolled in the public schools are still in the first grade, while upward of 93 per cent have not yet passed the primary course.

The standard of the teachers is increasing at a satisfactory rate. At present, 3,522, or 50 per cent of the total number, have passed the intermediate course. Of this number 180 are graduates of the normal school or other institutions offering secondary instruction. Speaking of the native teachers, the Director of Education in his last annual report says:

As a rule, these teachers are industrious, ambitious, and loyal to the purposes of the Bureau. In most school divisions many young men and women who have completed work of advanced grades are seeking employment, thereby creating a competition which makes it necessary for the older teachers to continually improve their attainments.

There is great dynamic force in education, regardless as to whether or not it is actually applied in one's daily work. As the

teachers become better educated they are able to meet more readily and with greater efficiency the responsibilities that devolve upon them in any line of work. It is hoped that the day is not far distant when primary teachers will be intermediate graduates, or have training equivalent to that of a graduate; when intermediate teachers will possess attainments equivalent to those of normal school graduates; and high-school teachers will be graduates of the university.

THE GENERAL CULTURE OF THE TEACHER.

Any teacher with a knowledge of textbooks only must necessarily possess a very limited vision. His ability to solve problems, diagram sentences, and answer difficult questions may win for him the respect of his pupils; but he cannot expect to exert any great influence in the community without a broader understanding. The teacher must read outside of his school books and form habits of assimilating and applying what he reads.

A noted English philosopher gives the following advice:

Read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider. Some books are to be read only in parts; others are to be read, but not curiously; and some few are to be read wholly and with diligence and attention.

In speaking of the effect of reading, the same writer goes on to say:

History makes men wise; poetry, witty; mathematics, subtle; natural philosophy, deep; moral philosophy, grave; logic and rhetoric, able to contend.

The teacher's reading should not be confined to books. That which concerns the world most has not yet been written in books. That is the great Present—the things that are happening every day. Has the teacher an accurate idea of what has recently taken place in China? Is he able to interpret the meaning of the recent political campaign in the United States? Does he know what is taking place relative to woman suffrage? Can he give an account of what happened in the Balkans and what was the cause of the trouble? If not, he is not well informed; there is something lacking in his general culture.

There is great culture value in travel. Every year hundreds of teachers attend the vacation assemblies in Manila. A number of visits to places of interest and excursions about the city are arranged for the teachers. It is a common saying among superintendents that the trip to Manila, together with the visits and excursions while there, is one of the greatest benefits that accrues to the teachers in connection with the vacation assemblies.

THE PROFESSIONAL TRAINING OF THE TEACHER.

Like all other skilled occupations, teaching is a business for which one must have special preparation. A general education is, of course, an essential part of the teacher's equipment, but he must have something more than this. To meet his special needs, intermediate training schools are organized throughout the Islands. These schools offer their students instruction in all of the academic branches belonging to the course; and, in addition thereto, lay particular stress upon such professional subjects as methods, practice teaching, industrial work, music, and drawing.

Every year hundreds of teachers and students preparing for teaching seek professional training of a secondary grade in the Philippine Normal School. Special short courses are provided for those teachers who can spend only a limited period of time in study. Students who enter the normal school with a view to preparing for the teaching service are given the full academic course, consisting of four years' work. In addition to this, they are required to take two years of pedagogy and practice teaching, at least two years of industrial work, and two years of music and drawing. Those who graduate from the normal school are well qualified to teach any of the primary and intermediate grades.

Teachers who are not permitted to pursue the professional studies offered in the special training schools may increase their attainments by the reading of professional books and school journals, attendance upon normal institutes and vacation assemblies, and the inspection and study of other schools.

Pedagogy has a new meaning in the school system of the Islands, resulting from the new significance of the public-school curriculum. It still considers educational problems and attempts their solution; but the problems are different. The proper method of weaving a mat is quite as important as the proper method of finding the least common multiple; teaching a girl how to bake a good biscuit is a more important matter than teaching her to parse abstract nouns; the pedagogy of growing a tomato, pushing a plane, weaving a basket, or catching a baseball is just as important as the pedagogy of cube root.

PHYSICAL AND PERSONAL REQUIREMENTS.

It is not necessary for the teacher to be an athlete, an acrobat, or a pugilist; but, on the other hand, it is essential that he be not a victim of tuberculosis or of any other malady which is calculated to sap his physical energies. The teacher must be in good health and enjoy physical comfort while in the schoolroom.

The teacher's personality is a large factor in his success or failure. It is not necessary for him to be handsome. In fact, his face may be a pattern of homeliness without affecting his work, provided intelligence and a genial nature radiate through the plain exterior. Few people have ever been as little embarrassed by beauty as was Abraham Lincoln. Still, his fine intelligent face was an inspiration to all who looked upon it.

The teacher has no right to go before his class with a sour countenance and a harsh, snappish voice. If he is sick he should stay away from school until he gets well; if physically disabled he should resign; if suffering from some mental malady he should seek to eradicate the cause. His presence in the class should be sufficient assurance that he is cheerful and ready to offer ungrudgingly the best service of which he is capable.

The teacher should not dress like either a prince or a clown. It is said that the best-dressed person is the one whose clothes we do not notice—that is, his clothes become him just as well as his face or the color of his hair, and do not attract any more attention than these. Therefore the teacher's clothes should not be very poor or slouchy, neither should they be so fine that he cannot work for fear of soiling them.

THE AGE FOR ENTERING THE SERVICE.

The exact age at which one may enter the service as teacher is generally not a matter of great importance. Some teachers at 18 have more judgment and executive ability than are ever possessed by other teachers. The most suitable time for the average young man or young woman to take up his career as a teacher is about the age of 21. The difficult task in the training of teachers does not lie in the starting out of new teachers at any particular age, but in the attempt to remodel those who have acquired experience not in accord with the present needs of the service. It is only with great difficulty that these can be modernized, and then for a long time they are in danger of relapsing into former ways.

OPPORTUNITY FOR CONTINUATION OF ADVANCEMENT.

There is no reason why a teacher should remain where he enters the profession. The opportunities for advancement are great. In the field, industrial instruction is an ever-changing and growing movement. A teacher may identify himself with some particular phase of the work which will result in great good to the service and material advantage to himself. Like opportunities are open to those who turn their attention to games,

sports, and athletics. The beautifying of school grounds and the arousing of school spirit are other lines along which the teacher's professional activity may advance.

Those teachers who can leave their stations for a period of study may use their time to advantage in the provincial institutes, the vacation assemblies at Manila, the special courses offered by the Philippine Normal School and the Philippine School of Arts and Trades, and in certain colleges of the university.

II. THE OCCUPATION.

Teaching is essentially a mental process and is largely dependent upon the condition of mind of the teacher and the taught. No teacher can render good service if his mind is occupied in whole or in part with other matters. It differs little what the disturbing element may be as far as results are concerned. The teacher may cherish a grievance against his fellow teachers, against the school, the town, or the service generally; his thoughts may be preoccupied with political or religious sentiments; or he may be brooding over the difficulty of supporting his family upon his salary. In any case, the teaching suffers unless the mind is entirely free to do its work.

DIVISION OF THE WORK.

The work divides itself into many parts. As to subject matter there are two great divisions—academic and industrial. Academic work is again divided into four leading subjects—English, mathematics, science, and history. Industrial work falls into the following great departments: Embroidery, crocheting, lace-making, hat weaving, mat weaving, cloth weaving, slipper weaving, macramé work, woodwork, ironwork, gardening, sewing, and cooking. In addition to these are the special or professional subjects of music, drawing, morals, manners, physical training, athletics, school administration, and methods of teaching.

As to grades, the work is primary, intermediate, and secondary. Each of these divisions includes practically all the subjects enumerated in the preceding paragraph.

As to character, the work consists of classroom instruction, supervision, administration, or a combination of these functions. The teacher, whether primary, intermediate, or secondary, is concerned mainly with class instruction; special supervisors devote their time exclusively to this phase of the work; principals and supervising teachers combine the functions of teaching, supervision, and administration.

OPPORTUNITIES FOR CHANGE OF POSITION.

The work is so varied that a teacher who is good for anything may be readily assigned in the system. The management of the Bureau of Education is generally ready and anxious to place a teacher where he can do the most good. Transfers to other branches of the work may be obtained if desired, and promotion to higher positions in the same line of work may be expected with reasonable frequency.

STEADY EMPLOYMENT.

The teaching service in the Philippines offers exceptional opportunities for steady employment. The schools are in session for forty weeks during the year and all teachers are employed for this length of time. Moreover, the teachers who have fully demonstrated their capacity to do work and their devotion to the service have been appointed permanent teachers and receive their salaries every month of the year.

EFFECT OF THE WORK UPON THE WORKER.

The occupation of teaching is in general not a hazardous one. Supervising teachers occasionally encounter dangers from swollen streams and from squalls while at sea. In time of epidemics, there is some danger from contagious diseases; but epidemics are now so rare as to form a negligible quantity.

While the climate is always warm, it is seldom excessively hot. The vacation period falls at the hottest season; and when the schools are in session it is not necessary for the teacher to be exposed during the hottest part of the day. The modern school-houses are substantially built and resist heat remarkably well. Even the temporary nipa-roofed houses are a wonderful protection against the tropical sun. Cold does not enter into consideration; but for a portion of the year the heavy rains are a source of inconvenience rather than discomfort. For some two or three months during the school year the teacher regularly goes to school with pantaloons rolled up and shoes thrown across his shoulder. The pupils all being barefooted, rather enjoy wading the flooded roads and rice paddies. Taken all in all, less discomfort is suffered from the seasons and the weather than in temperate climates.

The work of the teacher is not especially hard. It is confining, and, if well done, consumes all of one's time, although only five hours daily are required in the schoolroom. Unlike many occupations, teaching is a ceaseless drain upon both the physical and mental energies. It never breaks one down, but may, and in fact will, gradually wear him away unless rational processes of

mental and physical recuperation are allowed to repair the damage done. The twelve weeks' vacation each year is badly needed by every teacher engaged in classroom instruction. This time does not necessarily need to be spent in idleness. Real leisure is opportunity to do some useful thing. Vacation periods may be spent in study; but such study should appeal to the interest of the teacher and not be exacted of him as a task.

Teaching may be the worst of monotony or it may be a genuine pleasure, depending upon the attitude of the teacher toward his work. If one is in the business simply to eke out a living, there is probably nothing that can furnish him greater vexation and less pleasure. The teacher who hates children, hates books, and watches the clock for fear that he will stay at school a minute longer than the law requires is a bore to himself and a useless expense to the community.

There is no standing still for the teacher; he must advance or he will retrograde. For his own protection, if for no other reason, he must get into his work, do his work well, continue to study and improve. Then monotony will take wings and the teacher will forget to stare at the clock.

FUTURE OF THE BUSINESS.

There is no danger of this industry's becoming extinct or diminishing in importance. On the other hand, it is a growing profession. Taking into consideration the whole of the Islands, less than one-half of the children of school age are now in school. When the remaining half a million or more, shall have matriculated, the demand for teachers will be greatly increased. The development of the school industries of the Islands will lead to greater complexity of work and demand higher skill on the part of the worker. The number of students who are seeking education of an intermediate or a secondary nature is constantly increasing. This creates a need for teachers of higher training in academic subjects. At present but few native teachers are qualified to give secondary instruction, and few others are preparing for this work. Practically all students who continue their work in the university have in view some profession or business other than teaching. The reason for this may be made clear in the succeeding paragraphs.

THE PAY OF TEACHERS.

The two principal classes of teachers are Insular and municipal, so called on account of the sources from which their salaries are derived. The Insular teacher is in general much better quali-

fied than the municipal teacher. He must have passed the civil-service examination unless he is a graduate from either the Philippine Normal School or Philippine School of Arts and Trades, in which case he is eligible for appointment as permanent teacher without examination. There is no uniform requirement for the qualifications of municipal teachers. Each school division fixes its own standard, which must necessarily be dependent upon the material available for appointments as teachers and upon the salaries paid. In some divisions superintendents give special examinations to aid them in the selection of teachers. In other divisions applicants are required to complete a certain grade in the public schools. All appointments are made probational, and a teacher who gets into the service must prove his right to remain there by his good work as a teacher and his record in the provincial normal institutes or the vacation assemblies in Manila.

As a rule, the Insular teachers hold much better positions than do the municipal teachers. They are the principals of central schools, intermediate teachers, and assistant supervising teachers. The municipal teachers are instructors in barrio schools and central schools, and hold a considerable number of the central school principalships.

Insular teachers usually enter the service upon salaries of ₱40 per month, or ₱480 a year. In some of the non-Christian provinces, where there are practically no municipal teachers, the entrance salaries of Insular teachers occasionally fall as low as ₱20 per month, while normal-school graduates enter upon salaries of ₱50 per month. The average salary of the Insular teachers is ₱45.15 per month and the maximum is ₱120 per month.

The salaries of municipal teachers are far below those of Insular teachers, the average throughout the Islands being ₱18.33 per month for men and ₱19.04 per month for women. The city of Manila pays its municipal teachers an average salary of ₱49.60 per month; but no province pays half this amount. The lowest salaries are paid in the Province of Nueva Vizcaya, where the average is only ₱13.85 per month.

The opportunities for promotion are reasonably good, relatively speaking. The municipal teacher who enters the service at ₱15 per month, remains a municipal teacher, and does good work may expect small promotions from time to time until he reaches about ₱25 per month. From five to ten years are ordinarily required for this degree of advancement. A similar proportion obtains in provinces where salaries are very small.

An Insular teacher's opportunities for promotion are somewhat greater than those of a municipal teacher. However, the number of Insular teachers is limited by the allotment of money for salaries. There are 1,158 Insular teachers receiving salaries as follows: Forty-one receive upward of ₱1,000 a year; 35 others receive over ₱900; 54 others, over ₱800; 87 others, over ₱700; 126 others receive ₱600 or more; of the remaining 815 Insular teachers, each receives less than ₱600 a year.

Promotions are based upon satisfactory service continued for a considerable length of time, and in the case of the higher positions, the service must be exceptional. Under the civil-service rules, one cannot be promoted oftener than once a year and one grade or class at a time. There is a difference of ₱120 between the several classes of positions, so a promotion usually means an addition of this amount to the annual salary. However satisfactory one's work may be, he cannot be promoted unless there is a vacancy above him. The vacating of one of the higher positions usually means promotions all along the line, and may affect a half dozen or more teachers.

The salaries of municipal teachers are pitifully low. But the startling figures submitted herein look less unsatisfactory when studied in the light of the labor statistics of the Islands. In no country can service be accurately measured by money, as money itself has a relative value. Possibly the best unit of measure is a day's work by an unskilled laborer. The average value of this kind of service in the rice fields of the Islands is about 40 centavos a day. The average daily salary of the municipal teacher is upward of 80 centavos a day. The laborer must often take barter in exchange for his services, while the teacher is paid in cash. The laborer has longer hours than the teacher. The laborer finds his services in demand only during a part of the year, while the teacher receives his salary all the year around.

III. STATISTICS.

There are in the service 5,760 municipal teachers. Of this number, 3,769 are male and 1,991 female. Of the 1,158 Insular teachers, 932 are male and 226 female.

The average monthly enrollment in the public schools is as follows: Primary, 298,494; intermediate, 26,847; secondary, 4,415; total, 329,756. The proportion of males to females is as 3 to 2.

NOTE.—All salary figures are for the school year 1911-12. Data for school year 1912-13, when complete, will show considerable advance over the figures here shown.

THE NEED OF FENCES.

By KILMER O. MOE, Superintendent, Central Luzon Agricultural School.

CONDITIONS in all provincial towns are such that fences are an absolute necessity on school grounds. It is useless to expend time, labor, and money in the improvement of school premises which are not properly protected against domestic animals. The lawn, the garden, and the playground, no matter how well cared for, will always have a neglected appearance if the hogs and goats which roam about the streets have free access. It is better to plan for the erection of a good fence before anything else is done toward improving the school premises, as it will only discourage pupils and teachers to have their work destroyed.

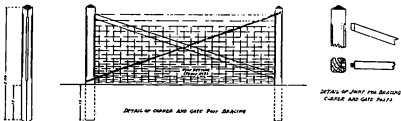
Municipal ordinances regarding stray animals cannot usually be enforced, and even where they can the mischief will have been done before appropriate action can be taken. There is but one effective way to keep out stray animals and that is to build fences high enough and strong enough so that these animals can neither jump over nor break through.

Fences suitable for construction on school premises are of two classes: (a) Permanent fences, (b) temporary fences. The intermediate kind, or mixed material fences, usually prove too costly and short-lived to be economical.

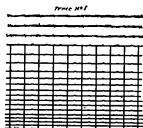
PERMANENT FENCES.

A permanent fence is one which is so constructed that it will withstand the effect of weathering and insect pests and which, if properly cared for, will last a long period of time. Perhaps the only fence that meets these requirements is one of woven wire with concrete posts. While wooden posts of first-group timber may be used in some places to good advantage, they generally prove almost as expensive as concrete posts. If the parts are of inferior timber they are too easily destroyed by ravaging insects. Where the material for concrete posts is exorbitant in cost wooden posts of first-group timber may be substituted.

This article deals solely with the construction of permanent fences on school grounds. It is believed that this task will be simplified if this class of fences be standardized in such a manner that requisitions for fence materials may be based upon

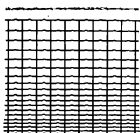


DETAIL OF PATTERN FENCE POST

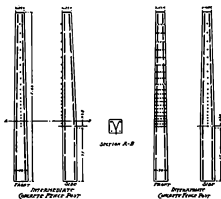


DETAIL OF FENCE WIRE NETTING, 12 IN. (30) HIGH

FENCE NO. 2

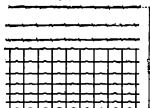


DETAIL OF FENCE WIRE NETTING, 14 IN. (35) HIGH

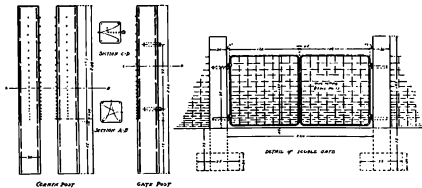


Should be made of concrete. Intermediate bars to be of No. 12 gauge wire. Spacing between bars to be of No. 12 gauge wire. Joints to be made as shown.

FENCE NO. 3



SPLIT RAIL FENCE



Standard school fence.

definite requirements, and that the construction be accomplished in accordance with definite standards. The General Office of the Bureau of Education has taken this matter in hand and has prepared plans and specifications for three types of woven-wire fences which are considered suitable for school grounds. Plans of reinforced concrete posts and of first-group timber posts have also been inserted.

Considerable difficulty has been encountered in the placing of requisitions for fence materials. This may, to a large extent, be avoided if the field representatives forward their requisitions through the Director's office. Fences should be ordered by number as indicated in the plans, and the requisition should state the number of meters of woven wire wanted, the number and kind of posts required, and the number and kind of gates. A statement of funds available for the work should also be submitted.

The cost of materials will vary slightly from time to time, but will not be over ₱0.30 per meter for the woven wire specified in any one of the standard fences, including Bureau of Supply surcharges.

This of course does not include barbed wire, fence posts, or gates. Material for concrete posts will cost an average of ₱1 apiece for gate posts, and ₱0.70 for intermediate posts, not including cost of sand, gravel, or local labor. Wooden posts can usually be provided in the locality where the fence is constructed. These vary in cost in proportion to the difficulties encountered in securing the timber and in doing the work. If purchased from Manila, first-group wooden posts will cost almost as much as concrete. Upon the receipt of the requisition in the General Office, a bill of material will be attached and forwarded to the Bureau of Supply, or will be returned to the local representative if the materials are to be secured in the local market.

Following is a sample of the items placed on the requisition for a woven-wire fence with concrete posts for an ordinary school yard:

400 meters (two double rolls) woven wire for standard fence No. 1.
Materials for two (2) gate posts, concrete, with wire loops; and eighty (80) intermediate posts, concrete, with wire loops, as per bill attached.
2 gates, standard, with hinges, as per plan.
800 meters barbed wire.

NOTE.—Woven wire is purchased in rolls either single or double. A single roll contains 20 rods or about 100 meters; a double roll contains 40 rods or about 200 meters. Dealers usually object to selling less than a roll and an estimate should be made for the purchase of entire rolls rather than an exact number of meters.

The principal requirements of permanent fences may be enumerated as follows:

1. The posts to be preferably of reinforced concrete.
2. The fence proper to be of wire netting—wire not less than No. 13 gauge.
3. One or more strands of heavy wire to be stretched above the wire netting; not smaller than No. 12 gauge.
4. Gates wherever possible to be of iron.
5. Mesh of fence to be so closely woven that young pigs and chickens can not enter.
6. Concrete posts to be set in the ground to a depth of not less than 0.75 meter.
7. Woven wire and heavy wire both to be tightly stretched.
8. Corner and gate posts to be heavier than intermediate posts.
9. Loops for attaching the wire netting and heavy wire to be fastened to the reinforcement.
10. Corner and gate posts to be firmly embedded in concrete.
11. Posts either of concrete or of first-group timber should be placed not less than 3.5 meters nor more than 5 meters apart.
12. Corner and gate posts, if of wood, must be braced as shown on detail drawings.
13. Barbed wire, while an additional protection against large animals, has no place on small, central, or primary school grounds because of the possible danger of serious injury to children. The available playground space in such places is necessarily restricted if barbed wire is used, and athletic equipment is often destroyed or rendered temporarily useless. Under such conditions No. 8 gauge smooth wire should be substituted.

The plans herewith submitted are based on the above requirements. Fences constructed in accordance with these plans are neat and durable and will add materially to the general appearance of the school premises. To facilitate their construction, these plans have been blue printed and sent out to the field. Specifications have also been furnished so that all the information necessary to have the work done either by contract or by administration may be available. These plans and specifications may be secured upon request from any division superintendent of schools.

WOODEN FENCE POSTS.

In localities where concrete cannot be used to advantage, wooden fence posts of first-group timber, free from large or unsound knots, shakes, or other defects, may be substituted. Ordinary or intermediate posts shall not be smaller than 0.10 by 0.10 meter (4 by 4 inches) in size, and may be made as shown on plan. Corner and gate posts shall be made greater in size than ordinary or intermediate posts, not less than 0.125 by 0.125 meter (5 by 5 inches), and should be braced as shown on plan, so as to withstand the strain caused by the pulling of

the wires. Posts shall be set in the ground to a depth of not less than 0.7 meter (2 feet 4 inches), and they shall be spaced not less than 3.5 meters (11 feet 6 inches) nor more than 5 meters (16 feet 5 inches) on center.

Wooden posts shall be preferably of ipil, molave, dungon, yacal, or sasalit.

The barbed wires and wire netting shall be properly attached to wooden posts by means of galvanized-wire staples.

The wooden gates must have suitable framing and shall be properly hung or hinged to the gate posts.

NOTES FROM SOUTH AFRICA.

TRANSVAAL.

The percentage of the total population enrolled in the public schools is 13.1 per cent. The total amount of money spent on education from all sources in this province for the year 1909-10 was approximately ₣9,000,000. Special attention is being given to industrial instruction by the encouragement of manual training in the public schools, by the payment of subsidies to an industrial school at which trades are taught to orphans, and by the maintenance of two trade schools. The boys who come from the industrial school appear to have no difficulty in finding good employment at reasonable wages in the trades for which they have been prepared. The trade schools are of too recent origin for an estimate to be formed of their success.

ORANGE FREE STATE.

The percentage of the total population enrolled in the public schools is 11.9 per cent. The under secretary for education writes that industrial education is still in its infancy in this province, but rapid extension is anticipated within a year or two. Woodwork, cooking, and needlework departments are being added to the ordinary primary and secondary schools, while in a small number of cases special industrial schools have been started independent of the public schools and have included a large number of subjects in their curricula. Spinning and weaving schools are organized by a special board appointed by the Government and subject to the control of the educational department. There is one school for lace making which stands directly under the educational department. The results obtained in the special industrial schools are generally better than those in ordinary schools, but the pupils are at a great disadvantage in respect to ordinary school education.

THE INDUSTRIAL CONFERENCES AND CLASSES, BAGUIO TEACHERS' ASSEMBLY, 1913.

By LEROY R. SAWYER.

WITH Mr. C. H. Magee, Second Assistant Director, presiding, there were held during the week May 5-10 the annual industrial conferences of the Bureau of Education which have become an established feature at Teachers' Camp. This well-known rendezvous for the teaching force at the mountain capital of the Philippines is now not only a scenic but also an "industrial" center, and because of its natural advantages and attractions probably offers better opportunities for recreation and professional interchange of opinions than those enjoyed by any other group of teachers in the Far East. A larger number of American and Filipino teachers were present than at any time previously to consider the many subjects and matters affecting the program of industrial work of the public schools. According to the procedure followed, these subjects were first referred to special committees of teachers and office employees for consideration, and their reports on them were later presented to the assembled teachers for discussion and action.

It will not be possible in this article to give a detailed account of all the matters considered and the conclusions reached, since the reports of the various committees and discussions thereon comprise more than 125 sheets of manuscript. Very brief mention, therefore, will here be made of the principal topics brought out in the conferences as well as some of the more pertinent points which were formulated in this connection.

The committee on the question of school lunches was unanimously of the belief that the school lunch is an excellent feature and should be introduced into all schools where there is one session; also, that it should be encouraged not as a means of making money, but primarily for humanitarian purposes where school children seem to be underfed. The subject of sanitation with relation to both the school and home and school-ground improvement was very thoroughly covered and many definite and helpful suggestions offered with respect to needed improvement along the lines of sanitation and improvements of grounds. Some of these suggestions will later be issued to the field, as the present building program of the Bureau of Education has brought about

the need for increasing attention to these particulars. To a considerable degree, the school industrial work of the past few years has tended to emphasize the commercial possibilities of Philippine industrial materials, and the industrial training of pupils has accordingly been influenced to a marked extent; the report of the committee on housekeeping, cooking, and plain sewing has made it strongly apparent that equal attention needs to be given to the matter of improving home conditions of pupils and the Filipino people at large through the medium of the preceding subjects properly taught in the schools. Many useful suggestions and ideas respecting methods for improving the work in embroidery, lace making, basketry, and hand and loom weaving were offered by the committee on those subjects. The need for a definite system of municipal accounting for materials purchased for school industrial work and for articles fabricated therefrom and sold has been seriously felt for a number of years, and, drawing in part upon previous reports on the subject, a committee drafted an accounting system for municipal operations which it is believed will meet existing needs in a satisfactory manner and be effectively placed in operation during the present school year. While primary woodworking shops are an essential and important part of the school industrial system, in some respects this work has not proved as successful as it should be. If the recommendations of this committee are followed, more attention will be given hereafter to the making of suitable furniture for home use from bamboo and rattan and the necessary measures for providing a manual in the subject taken. The present provincial trade school accounting system was also considered by the committee and certain changes suggested based upon the experience gained during the past two years it has been in operation. Since the industrial exhibit for 1914 and its bearing upon the Panama-Pacific International Exposition of 1915 are of special significance and importance in relation to plans of industrial work for the coming year, these matters received particular attention. The report of this committee will accordingly be utilized very largely in drafting instructions to the field regarding plans of work and submission of articles. Both for the sake of uniformity and convenience, it has been apparent for some time that there should be a very definite understanding as to the meaning and use of terms applied to industrial work, as the names of different types of industrial schools, forms of industrial training, and industrial processes, and on this matter a summary report was offered which will be later amplified and sent to the field for its information. Material for Bulletin No. 31, School

and Home Gardening, was reviewed by a committee, its scope and content determined upon, and the bulletin practically put in shape for publication. The industrial publications sent to the field by the General Office, as well as *THE PHILIPPINE CRAFTSMAN*, have an important bearing upon the progress of industrial work in general, and it was recommended that the General Office continue to furnish these various publications. The committee also offered numerous suggestions for the betterment of the industrial magazine of the Bureau, *THE PHILIPPINE CRAFTSMAN*, and many of these suggestions are expected to materialize in the present volume.

In connection with these conferences there was given a series of talks by the Sales Agent on the work of the Sales Agency, its proposed scope of activity, and other pertinent information on the introduction of household industries into the homes of the Filipino people, industrial materials, and numerous technical considerations with regard to character and quality of products of Philippine manufacture. Two employees of the General Office also gave a number of talks on the subject of foreign and local industrial materials. The situation and industrial conditions prevailing in certain embroidery and lace centers of Europe, as in St. Gall, Switzerland, and in Venice, were entertainingly described by Mr. G. W. Caulkins of the General Office, who has made them the subject of special study quite recently for the Bureau of Education.

Concerning these conferences, it may be stated that their value and interest to the teaching force are growing rapidly each year, for they not only serve as a clearing house for ideas with respect to most phases of school industrial work but they also are perhaps one of the most effective means at the disposal of the Bureau of Education for informing itself of the success or failure of the different industrial features which it is promoting.

In addition to the conferences, courses of instruction in different branches of industrial work were also offered throughout the duration of the assembly from April 14 to May 17, and some eleven qualified American and Filipino instructors were called to Baguio for the purpose. The making of standard articles in embroidery and bobbin lace, baskets of various types and designs, macramé work, embroidered raffia and pinolpog cushions, hand-woven mats, and other handicraft articles were given special emphasis. A prominent feature of these classes was the course in cooking and plain sewing, in connection with which there were materials and equipment adapted to the needs and conditions prevailing in the average Filipino home, in order that teachers

might become better acquainted with the correct methods for the efficient teaching of these subjects. A course which has not heretofore been given at the assembly was that in applied design, the purpose of which was to direct the attention of teachers more forcibly and effectively to making handicraft work more distinctive of the Philippines. Numerous designs from aboriginal sources were considered and discussed and the development of suitable designs therefrom and their application to various lines of handicraft work explained.

AN INTERNATIONAL CONGRESS ON SCHOOL HYGIENE.

All the leading nations, every State in the Union, every college and university of note in this country, and various other leading educational, scientific, medical, and hygienic institutions and organizations, as well as various women's organizations, will be represented at the Fourth International Congress on School Hygiene, in Buffalo, August 25 to 30, according to a preliminary statement just issued by Dr. Thomas A. Storey of the College of the City of New York, secretary-general of the congress.

It is the aim of the organizing committee in charge to bring together at Buffalo the leading men and women interested in improving the health and efficiency of school children, and to make this congress—the first of its kind ever held in America—one of direct benefit to each individual community. A programme of papers and discussions is now being arranged covering the entire field of school hygiene. There will be scientific exhibits representing the best that is being done in school hygiene, and also commercial exhibits of educational value.

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Under the direction of Mr. F. W. Robbins, superintendent of schools of Lebanon, Pa., a movement is on foot to transform the vacant lots in and about that city into flourishing gardens during the summer months through the aid of schoolboys. Suitable lots throughout the city will be selected. A competent supervisor will be appointed to have charge of the work and the parents of the boys will be requested to cooperate with the board in having the children attend regularly to their gardening as directed by the supervisor. Before the children can be enrolled it is required that they secure the consent of their parents. One hundred and eighty-nine boys between the ages of 8 and 14 years have expressed a desire to become gardeners during the summer.

EDITORIAL.

The measure of success for **THE PHILIPPINE CRAFTSMAN** is the measure of its value to the industrial field. In so far as it fails to carry inspiration, suggestion, or instruction to those directly engaged in the industrial work of the Bureau, just so far does it fail of its purpose. In order most fully to attain its announced end, "The advancement of industrial instruction in the public schools of the Philippines," it is necessary for it to secure the hearty coöperation of all industrial teachers. This involves not only the use of its printed pages in the classroom and in the school shop, but requires as well the assistance of the field in the preparation of articles and in the offering of suggestions which may be worked up into material that will be of real interest and value to the industrial force.

Contributions from
the Field.

Contributions of suitable material are earnestly requested from every source. No better medium of spreading valuable ideas on methods of work or use of industrial material can be found than through the columns of this publication. The heavy burden of work which always rests upon the teaching force deters many from assuming the additional obligations of making contributions to this magazine. In many cases teachers do not have time to put available ideas into suitable shape for publication. The editors of **THE PHILIPPINE CRAFTSMAN**, however, desire to invite the submission of material, whether or not it is ready for publication. Any necessary revision, excisions, or additions will be made by the editorial staff. It has been decided to increase the list of contributing editors for 1914-15 by the addition of the names of those two members of the Bureau whose contributions during the present year shall be considered of the greatest value. It is hoped that this recognition of meritorious articles will be a sufficient incentive to induce a large number of contributors to make additional efforts in the preparation of appropriate contributions.

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It has been evident for some time that while the trade schools of the Islands have been fairly well developed along the line of cabinetmaking, more attention should henceforth be paid to bamboo and rattan work and to building construction.

Bamboo and
Rattan Work.

In many parts of the Philippines lumber is difficult to obtain and frequently very expensive, thus making the use of high-grade furniture in the house of the average Filipino out of the question. In practically

all sections of the Islands, however, there is an abundance of bamboo and rattan, both of which lend themselves readily to the construction of a cheap but serviceable type of furniture. Work of this character has been carried on with a considerable degree of success in a number of schools in Batangas and Pangasinan Provinces, at the Indang Farm School, Cavite, as well as in private establishments in Bulacan and other provinces.

The leading article for this month contains in convenient form a résumé of what has been done in these places, together with clear and specific directions as to the methods of making some of the more common and useful types of furniture from these materials. The attention of all teachers interested in this line of work is directed to this article, which offers many practical suggestions for bettering through this means the home conditions of the Filipino people.

Not the least to be said in favor of placing greater stress on this phase of industrial work is the fact that thousands of pesos worth of raw materials for such furniture as well as large quantities of the fabricated articles themselves are annually imported into the Philippines from Japan and the China coast. As soon as sufficient attention is paid to such work in this country and its people become better acquainted with the manipulation of bamboo and rattan and their wider utilization, not only will these Islands be benefited in direct ratio to the money so retained for local use, but also marked improvement in the state of well-being of a large percentage of the Filipino people will be secured.



Last year's corn campaign was, undoubtedly, the most important and most striking feature of the industrial work for the school year 1912-13. The campaign was carried on with enthusiasm. It received hearty coöperation from all branches of the Government, and favorable comment from the press and the general public. To

1913 Corn Campaign.

drop the work of increasing the cultivation of corn and its use as a human food at this juncture, would result in losing the greater amount of advancement which has been made. In order to retain, make permanent, and enlarge the results of last year's campaign, steady, insistent future work along this same line is absolutely essential. The attention of the field will continue to be directed upon this important phase of our school work, and the principal features of the 1912 corn campaign will be maintained throughout the present school year in a still larger and more practical manner and with more attention to

the educational side of the movement. The lessons derived from past experience will be utilized and will result in making this year's work more effective and of greater extent and permanency than that of last year.

This work is not an innovation so far as other countries are concerned. In the United States there are thousands of corn clubs and other organizations devoted to the same end. In many cases the work is not conducted by the schools, but is carried on through the schools by other associations. Our work along this line is not a marked indication of superiority in educational effort, but is simply a token of our keeping abreast with current educational progress.

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A number of primary woodworking shops throughout the provinces have not been developed to the desired stage of usefulness and efficiency. The causes for not coming up to the standard expected are found partly in the lack of suitable buildings, partly in the insufficiency of equipment due to inadequate municipal appropriations, and partly in the scarcity of Filipino teachers of sufficient experience and training to carry on the work and keep it up to the ideal standard of proficiency. The principal reason for the absence of a uniformly high grade of work throughout the Islands is due, however, mainly to the lack of proper supervision.

**Primary Wood-
working Shops.**

The partial causes leading up to the unsatisfactory condition of some of the shops should have been overcome in the past by the following out of the instructions of the General Office to the effect that no primary shop should be established unless suitable space, equipment, and instructors were available. It is planned to overcome the difficulties caused by lack of experienced supervision by directing that all primary woodworking shops be supervised and inspected at regular intervals by the principals of the trade schools. It has been felt that the problems connected with these shops have been of such a nature as to render them difficult of solution on the part of the division superintendent, the industrial supervisor, or the supervising teacher. Several provinces have already placed their shops under the supervision of the most experienced woodworker in the province, and a marked improvement has been promptly noted. In some of the provinces where transportation is difficult, supervision cannot be exercised to as great a degree as in other provinces where the question of transportation presents no great difficulties, but even a half loaf is better than none and a moderate amount of experienced supervision will improve the present system. Hearty coöperation with

superintendents, industrial supervisors, and supervising teachers on the part of the trade-school principals will, undoubtedly, solve most of the problems connected with this important feature of our work, and will tend materially to raise the standards of the primary shops.

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The conferences held at Baguio last summer indicated some diversity of opinion as to the value of **THE PHILIPPINE CRAFTSMAN** for Filipino teachers. A close analysis of the discussions and reports upon this matter clearly discloses the fact that wherever the principal or supervising teacher uses the magazine in his teachers' classes, in the same manner that he uses other material furnished by the Bureau, the Filipino teachers become interested in it and derive a great store of valuable information from the study of its contents. A great number of instances were cited in which articles were used intelligently by Filipino teachers of intermediate grades. On the other hand, however, in most of the cases where the principal or supervising teacher does not endeavor to arouse the interest of his teachers in the publication by instructing them as to its proper use, little or no service is obtained by the lower grade of Filipino teachers from their subscriptions to the magazine.

**The Use of the
Philippine Crafts-
man in Teachers'
Classes.**

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The editorial staff for the second volume of **THE PHILIPPINE CRAFTSMAN** will be practically the same as that for the first volume. Owing to the great amount of work connected with the chief clerk's position, it has become necessary to relieve the former managing editor of a part of his duties in connection with this publication. Mr. Potter will continue in charge of the business end of the magazine. His services on the editorial staff have been keenly appreciated, and it is hoped that he will still find time to make frequent contributions to our columns.

**Changes in
the Staff.**

An index for Volume I of **THE PHILIPPINE CRAFTSMAN** has been prepared and sent to the printer. Copies of the index may be secured free upon application to the Business Manager, by all who received the first volume.

INDUSTRIAL NOTES.

THE MAKING OF YLANG-YLANG BEADS.

"The making of beads from rose petals has been revived in Denver, Colo. Since medieval times this art has lingered in a few convents of both France and Italy but was lost to the world in general until it was discovered in a Roman convent by Mrs. William W. Hall, of Denver, who learned the process and introduced it in the United States.

"The crusaders brought back from the Orient the secret of making attar of roses. A manufactory of the perfume was established near a convent in Italy—so runs the tradition. After the perfume was made the rose pulp was thrown out as worthless. This was gathered up by nuns, who, by experiment, developed the art of making rosaries from it."

Such, in brief, has been the history of making beads from rose petals, and now a process of making rosary beads from the fragrant ylang-ylang flowers (*Cananga odorata* H. and Th.) has been introduced in the Philippines by Mrs. Adam C. Derkum, principal of the Bulacan Intermediate School. She has been successful in carrying out this work, and has contributed the following notes on the manufacture of the beads:

Only the petals are used in making these beads. They are reduced to pulp by being ground in a meat chopper, care being taken to save the juice that accumulates. The juice is added to the mass, and the whole is placed in an iron vessel. Daily for at least two weeks the pulp is taken from the vessel and reground. The mixture is allowed

to remain in the vessel until it turns jet black from contact with the iron, and during this time it should be stirred at least twice in every twenty-four hours. If it becomes dry, a small amount of water should be added. As soon as the mass is sufficiently blackened, it is ready to be molded into beads.

In making beads of the average size a thimble full of pulp is used. If the mass becomes too dry to be easily worked, the tips of the fingers should be moistened with olive oil and applied to the beads until they become round and smooth. As soon as they are properly molded, they are placed on oiled plates until a hundred or more are made, after which they are pierced, strung on a fine copper wire, and allowed to dry for three or four days until they become hardened.

After the drying process the beads are coated with a small amount of vaseline, are put into a soft bag, and polished by being rubbed together within the bag. If a more brilliant polish is desired, each bead is rubbed with a piece of flannel cloth. In case it is desired to decorate the beads, the work may be done with a sharp-pointed instrument.

During the rainy season the beads sometimes become moldy if they are not kept in constant use. When this happens, the mold is easily removed by applying a small amount of vaseline or olive oil and then polishing with a soft cloth. After the beads have been in use for a long time the odor can be renewed by storing them in a closed box for a few days.

THE IFUGAO CORN DEMONSTRATION.

The Ifugaos are a wild warlike tribe which for centuries has inhabited the mountains of northern Luzon. One of the most satisfactory achievements of the American régime in the Philippine Islands has been the making of trails and opening up of this mountain country. From warlike tribes whose idea of law consists of ample protection from their enemies by means of the headaxe and spear, they have become peaceful citizens, recognizing their neighbors as more than a group of fighters ready to pounce upon them at the first show of physical weakness.

For no telling how many generations corn has been regarded by the Ifugaos as a poor man's food. Above almost everything else the Ifugaos despise poverty. Corn as a food has been associated with poverty and has consequently been despised. For these reasons, the success of the Ifugao corn demonstration could not be safely predicted in advance.

The demonstration was given on the occasion of the visit of Vice-Governor Newton W. Gilbert and party on March 10, 1913, to Kiangan. The corn was prepared in such simple styles as the Ifugaos' limited facilities for cooking will admit. Boiled cracked corn, hominy, and fried mush were served.

The Kiangan cadets, the military organization of the Kiangan Industrial School, armed with wooden guns, were stationed about the table which was laden with the dishes of corn food about to be served. This was a wise but an ineffective precaution, as will be seen later. The reason for such preparations was that the Ifugaos, unrestrained by conventionality, like nothing so well as a scramble, free-for-all rush for food.

Vice-Governor Gilbert came soon after the opening of the demonstration. He gave a talk which was

interpreted by Mr. Roy F. Barton, the supervising teacher. He said that he had traveled over a goodly portion of this world and had noticed that the largest, the most intellectual, and the wealthiest people were corn raisers and corn eaters. This was very convincing to the Ifugaos and they seemed to lose all their former prejudice against corn and at once raised an open clamor for that article of food.

The little mill which the Bureau of Education has introduced was shown at work. Four or five *rancherías* ordered mills which will probably be secured through the provincial exchange.

While the distinguished visitors were present, the Ifugaos were fairly quiet and dignified from motives of respect and deference, but as soon as the Vice-Governor and his party had left they rushed the table from which the food was being served. They even snatched the mush that was being fried in the skillets. The Kiangan cadets resisted strenuously, but they would have needed real guns to have withstood the rush.

The Ifugaos meant no disrespect whatever. They were merely following a custom whereby they make a very interesting game out of food distribution at their feasts. Doubtless the food obtained in such a manner tastes as much better to them over that handed out on a plate as the green apples and watermelons from a neighbor's field do to the healthy American boy over those bought at a store.

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OLD BASKETS MODIFIED.

A course in common basketry was offered at the last Teachers' Assembly in Baguio, and several very interesting modifications of the ordinary basketry of the country were worked out. The rice-winning basket was woven in three colors with a weave giving the effect of

mosaic work. Small trinket baskets were made with a modification of the Tigbauan basket weave. Enough work was done to demonstrate that this is a large and interesting field for experimentation.

Fifty-five baskets of bamboo and rattan, collected from all over the Islands, were on display and were studied by several progressive teachers. Practical results will undoubtedly follow such efforts of the Bureau to interest the field in the development of a form of basketry typical of the country.

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The roots of the "ungrateful" bali tree are used in the Tolosa schools of Leyte instead of rattan for rims and handles on Polangui baskets. The larger roots make good baseball bats.

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INDUSTRIAL EDUCATION SHOULD APPROACH SELF-SUPPORT.

It has consistently been the aim of the Bureau of Education to have all industrial instruction approach self-support—partially, if not completely. This object is more nearly realized in the trade schools, where the concrete requirements of ordinary business are applied to a greater extent, than in other schools of this Bureau. These serve to a certain extent to test the efficiency of the teaching and the teachers. This plan is not being followed with the idea of regarding each pupil as a profit maker, but to teach him that his time is worth something—by making serviceable articles and those having a commercial value. Industrial instruction is to teach skill and not speed. The main interest is in the producer rather than in the product; the trained child is the product of the schools and the articles he makes in school are a part of his training, not the end.—*Circular letter, Bureau of Education.*

PRACTICAL CARPENTRY AT SANTA CRUZ.

A number of changes were required in the primary school building at Santa Cruz, Tayabas. In order to do the necessary work with as little expenditure of public funds as possible, Mr. Peña, the woodworking teacher, took charge of the work with the aid of eight of his woodworking pupils. For a little less than ₱100 they removed the old staircase, erected two new ones, leveled the floor, changed the partition in the lower story, and put up temporary partitions in the upper.

During the coming school year they plan to use the same methods in siding and flooring the woodworking school, in building partitions in the lower part of the intermediate school, and in making a number of school desks.

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INDUSTRIAL ACCOUNTING IN PUBLIC SCHOOLS.

It has been felt for some time that a standard system of industrial accounting should be adopted for the use of all of the public schools in the Islands. The need, scope, and purpose of such a system were discussed in a letter of the Director of Education, dated May 10, 1913, to the Insular Auditor. Copies of forms and instructions were transmitted with this letter and were approved by the Auditor on May 15, 1913. The following extracts cover the most important features of the new accounting system which went into effect at the beginning of the present school year:

"In many schools, some system of accounting is already in operation; but with the rapid growth of industrial instruction and the production of a considerable quantity of school-made articles of a commercial value the need for a standard approved system has become urgent. The systems now in use have not had the sanction of this office nor of

the Bureau of Audits. The system transmitted herewith has been prepared in this office with a view to secure with a minimum of labor an accurate accounting for money received from sales, a reasonable check on materials used, the protection of the interests of the pupil and of the teacher by providing suitable forms for keeping permanent records, and to furnish statistics. Due consideration has been given to the fact that accounting requirements will demand considerable attention on the part of teachers.

"The primary purpose of this system is statistical, but it is also intended to provide for a complete accounting for money received from the sale of fabricated articles. By reason of the lack of municipal funds, much of the material used in industrial instruction is now furnished by the pupils themselves or by the school through pupils' funds. As a rule, the cost of the materials in school-made articles represents only a small share of the selling value of the finished product. The Government share in the receipts from sales is, therefore, comparatively small.

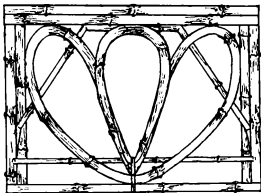
"The proposed system authorizes the principal and the teacher of the class in which articles are made to determine the selling price of articles, subject to change by the supervising teacher or division superintendent of schools. It further provides that the accounting to the treasurer for manufactured articles will include only those articles made from materials furnished by the local government and then only after they have been sold. By this arrangement a considerable amount of extra receipting and accounting for thousands of small articles of doubtful value will be avoided.

"One of the most important points that has been kept in view in preparing the system submitted is the teaching of certain business fundamentals to the pupils of the Philippine public schools.

"This new system does not apply to Insular schools, provincial trade schools, or provincial school shops which already have adequate and satisfactory systems, but is now the prescribed standard for all other public schools. Some of the differences between the new system and those formerly in use are as follows:

"Provincial Division Circular No. 93, Bureau of Audits, authorizes the advance to division superintendents by provincial treasurers of not to exceed ₱100, at any one time, and by municipal treasurers to the division superintendent or a representative especially designated by him, of a sum not to exceed ₱40 at a time, for the purchase of industrial materials and supplies locally. This authority as included in the accompanying system, has been changed so as to empower treasurers to make such advances without the approval of the provincial board or municipal council, and to permit the provincial treasurer to advance funds direct to the division superintendent or teacher designated by him.

"A record of all salable articles made from materials furnished by the local government will be kept by the school principal or person designated by him, in the Industrial Record Book, Bureau of Education Form No. 151. The Government share in the selling price of such articles shall be the cost of materials consumed in making the articles, plus 10 per cent. At least once each quarter and at the close of the school year the municipal or provincial share of the selling price of articles sold during such period shall be paid to the treasurer, accompanied by a list of tag numbers of articles, for deposit to the credit of school industrial operation account No. 27. The school industrial records will be audited monthly by responsible teachers of the Bureau of Education and will be open to inspection by representatives of the Bureau of Audits at all times."



No. 1.—Back Cover Design.