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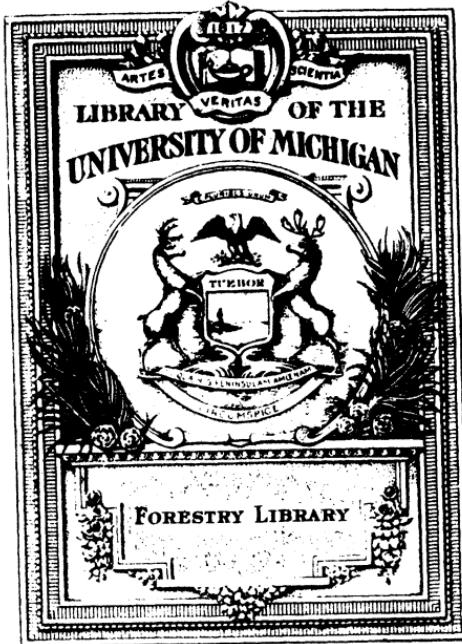
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ANNUAL REPORT  
OF THE  
**DIRECTOR OF FORESTRY**  
OF THE  
**PHILIPPINE ISLANDS**  
FOR THE PERIOD  
**JULY 1, 1909, TO JUNE 30, 1910**



MAJOR GEORGE P. AHERN  
DIRECTOR OF FORESTRY

MANILA  
BUREAU OF PRINTING  
1910



Philippine Islands. Bureau of forestry.

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# ANNUAL REPORT OF THE DIRECTOR OF FORESTRY, FISCAL YEAR 1909-10.

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MANILA, P. I., *June 30, 1910.*

SIR: I have the honor to submit herewith a report of the work of the Bureau of Forestry for the period July 1, 1909, to June 30, 1910.

## LEGISLATION.

The only change in legislation noted during the year was the extension of the free-use privilege for another five years; this privilege included also the free use under license of first-group woods. The free-use privilege is a great boon to many in the Islands, but, in the inspection of the work of licensed cutters, the violations of cutting rules are usually laid at the doors of those taking advantage of free-use privileges.

The present appropriation bill contained authorization for this Bureau to maintain twenty students in a school of forestry. The plan of work for this school will be taken up later in this report.

## PUBLICATIONS FOR SALE.

The former publications of this Bureau have been called for to such an extent that the editions were soon exhausted. In view of the fact that many persons called for copies for which they had no special use and requested them because they were issued gratis, it was decided to make a small charge for certain publications, which would merely cover the actual cost of the same. The following publications of the Bureau of Forestry are salable documents:

*Bulletin No. 8.*—The Forests of Mindoro; price, ₱1.60.

Forest Map of Mindoro; price, ₱1.00.

(These may be obtained by addressing the Director of Printing, Manila.)

*Bulletin No. 9.*—A Philippine Substitute for Lignum Vitæ; price, ₱0.20.

(This may be obtained by addressing the Director of Forestry, Manila.)

*Bulletin No. 10.*—The Forests of the Philippines, in two parts; price will be furnished later.

Several other publications will be issued during the coming year.

## FOREST EXHIBITS.

An extensive collection of forest products was made during the past fiscal year. This collection is scientifically arranged in a large room in the Museum Building on Calle Anloague. Here it is proposed to make

as comprehensive and as instructive a display of forest products as our appropriation will permit. Each article will be so labeled as to convey information concerning its origin, uses, value, quantity, sizes, etc. An attempt will be made during the coming year to get together a collection of forest products for display in neighboring countries where expositions are being held. Such a collection would awaken much interest. At present expositions are being held at Nanking, Singapore, and in Japan.

The display of forest products at the last Carnival awakened much interest. Foresters and other employees were constantly on hand to answer questions; popular, illustrated lectures were delivered; and it was apparent to all that the time, money, and labor were well spent. The preparation of this exhibit has brought out the fact that the finishing of our woods has been carried on in a very haphazard way. Woods with beautiful grain have been spoiled by fillers and varnishes that hide the grain and appear more or less like a hideous paint. We are now doing our own work in this line, and are gradually accomplishing interesting and satisfactory results.

#### PRESS BULLETINS.

Nineteen press bulletins and about fifty other news notes were issued during the year to newspapers throughout the Islands. It was the intention to publish a larger number of press bulletins, but the foresters were so taken up with more urgent work that this very necessary method of educating the people in things forestry was curtailed. The undersigned believes that laws and regulations are of little avail unless public sentiment approves, and there is so much to be done in our line that this propaganda work will be continued as energetically as our limited means permit.

It was very interesting to note the fact brought out during the various inspections by the Secretary of the Interior in Lepanto-Bontoc region that the wild tribes in that locality practice a successful system of forest protection.

#### PERSONNEL.

Three American foresters were added to the force during the year. Two Filipino students of forestry also joined, after completing their studies in the United States. Several other Filipinos are taking up this work in the United States, and these, with the graduates of our forest school, will provide an intelligent force of Filipino forest officers, capable of aiding in much of the technical work now being carried on by a few American foresters. There are at present in the service ten American foresters, one Spanish topographer, three Filipino assistant foresters, thirty-two Filipino rangers, three Filipino draftsmen, one wood expert, one forest nurseryman, and four American and eleven Filipino clerks.

### AT THE SUMMER CAPITAL—BAGUIO.

In accordance with instructions, the Manila office of this Bureau moved to Baguio on March 21, and remained there until May 17. The quarters assigned were inadequate, but it is hoped that additional space will be provided during the next season.

The delightfully cool climate of Baguio is very bracing and provides a very necessary tonic for the residents of the lowlands. Some employees seemed dissatisfied with the accommodations, but this will undoubtedly be remedied during the coming season. Some dislike to leave their families for such a long period; others are engaged in private study; others have little "negocios" to look after, etc.; but it has been well established that a sojourn at Baguio means a distinct and necessary gain in healthful vigor. It means a greater efficiency in work, and fewer changes in personnel due to ill health. It is a permanent feature of our official life, and employees should make their arrangements accordingly. It will be far more satisfactory, however, when Baguio can be reached by rail, and when the families of employees can accompany them.

### PRIVATE WOODLANDS.

During the year, four parcels of private woodlands were registered in this office in accordance with section 24 of the Forest Act. One of these parcels contained 5,123 hectares. Up to date, 183 parcels have been registered, comprising an area of 290,536 hectares.

### DIVISION OF ADMINISTRATION.

A number of forest officers in this division assisted the division of investigation for several months in organizing the work in the special forests of Bataan and northern Negros. The division of administration has charge, outside of the special forests, of the inspection of the work of licensees, homestead areas, communal forests, trail notes, map work, and, when possible, coöperate with the Bureau of Internal Revenue in the collection of taxes on forest products. The four American and eighteen Filipino forest officers in this division inspected 1,731 parcels of public land desired for homesteads, purchase, etc., 297 of which were deemed more valuable for forest purposes and not granted to the applicants; inspected 172 cutting areas; located, studied, and mapped 64 communal forests; made 2,000 kilometers of trail notes; collected botanical material; and arrested and prosecuted makers of caiñgins: this in addition to attending to much correspondence, reports, etc. About 2,000 applications for licenses passed through their hands for remark and recommendation. Fully four times the present force is necessary to properly care for the public forests under the present scale of exploitation. The money loss of timber due to caiñgins alone runs into the millions. The

cessation of this form of forest destruction in Bataan and Negros shows what a few men can accomplish when on the ground. The promulgation of laws and regulations never reaches the caiñgin maker far back in the woods, but the visit of a forest officer once in every quarter has a very salutary effect.

#### CAIÑGINS.

The greatest problem that confronts the Bureau of Forestry is the preventing of the further destruction of the virgin forests by caiñgins. It is estimated that 57 per cent of the land area of the Philippines is in grass and second-growth forest. That this condition is mainly due to the shifting system of farming known as the caiñgin system there can be no doubt. Within the northern Negros and Bataan forests efforts have been made to induce caiñgin makers to take out homesteads. In the great majority of cases, the caiñgin makers are aided and abetted by influential men in the neighboring towns. These influential men, or caciques, obtain a large portion of the crop, and in a few years, even after the land has been abandoned, will lay claim to the deforested portion of the land on the ground that it has been cultivated. As soon as the land is desired as a part of a civil or military reservation, for homestead or for other purposes, then these claims are presented. In some instances, systematic attempts are made to obtain large areas of land in this way. Small caiñgin villages are made on the border of the forest. Year by year, as the forest line is pushed further back, these villages move with it. It is of but little avail to punish the retainers. To obtain evidence against the caciques backing them will be exceedingly difficult and will entail great expense. The Bureau of Forestry has neither men nor money to carry on this important work. It was thought that by inducing the caiñgin makers to take homesteads it would correct the evil; yet the caciques, in a few cases, are backing the homesteaders in the same way, obtain a portion of their crops, and will no doubt eventually get their homesteads. Enlarging the unit of the homestead from 16 to 50 hectares will only multiply many times the evils above mentioned.

The average Filipino homesteader cultivates from 2 to 3 hectares of land. As a rule, he does not live on the land, and has no intention of doing so. It will be interesting to note the number of homesteads patented during the next few years. Almost 9,000 applications have been granted, and although the first homesteads were taken out more than six years ago, but one (American) has been presented for patent.

The only way to stop the making of caiñgins is by the presence of guards and forest officers. In parts of the Islands where but one Filipino forest officer has to look after two or three provinces it is impossible to stop the practice. Many men are arrested and fined, but

only a small fraction of 1 per cent of the people making caiñgins are apprehended. The following are specimens of the letters and reports received at this office concerning caiñgins:

*October 6, 1906, from Deputy Treasurer, San Carlos, Negros Occidental.*—It has been the custom for the president to grant such permits, but it has never been done in the proper form. The permits granted by the president have always been verbal, and not in writing; nor does he ever visit the places to be burnt off. In this way, there has been much good timber of the first group destroyed by fire. If a move is made to find the party, you will find that he has been informed to leave, as the Government officials are looking for him, and he is obliged to leave. As there are no papers to show who the party is, you are unable to find the right party. There have been at least fifty caiñgins in this municipality in the past year, and three or four arrests; but they are always found not guilty. Many of these caiñgins are owned by the town officials, and not by the poor people who made them. They claim that they bought them from the owners, but I fail to see how these lands can be sold when they have never been solicited by the parties in the proper form. These caiñgins are being made almost every week, and timber is being destroyed right and left. There are parties who have held as many as six different caiñgins.

*February, 1907.*—Internal revenue agent at Capiz telegraphed that the timber in Maayon Mountains was being destroyed by caiñgins. The matter was investigated by Head Ranger Barredo, who made out complaints against several people and also reported that the municipal police were patrolling the region for the purpose of preventing the making of caiñgins.

*April, 1908.*—Executive Secretary forwarded an extract from a report of the provincial governor of Mindoro for 1907-8:

"The native of Mindoro has made his caiñgin for centuries—here to-day and there to-morrow. The caiñgin in the public forest is forbidden by law, but, with one forestry official to three provinces, and presidents and councilors who probably furnish the seed (for which they get no less than half the crop), the enforcement of the law is another matter."

*December, 1908.*—A resident of Arayat, Pampanga, reported many destructive caiñgins on the slopes of Mount Arayat. The matter was investigated, and a number of complaints forwarded to the fiscal of Pampanga.

*January, 1909.*—Provincial fiscal of Bohol states that the municipal president of Sierra-Bullones has complained with reference to caiñgins made in the public forests of his municipality, and requests that a forest officer be sent to assist in the investigation and prosecution of the caiñgin makers. Head Ranger Mariano was ordered to make the inspection, with the result that complaints were made out against five persons for unlawful making of caiñgins and the destruction of timber in the public forests to the amount of over ₱5,000.

*April, 1909.*—Director of Lands furnished this Bureau with copy of a report received from Transitman Harry Hulen, of his Bureau, with reference to the destruction of young trees on the Island of Guimaras, Iloilo. "Valuable young timber is being destroyed in a wholesale manner, upon public and private land alike, over the entire island, by felling or girdling the larger trees, and then burning over, for the sake of planting a few seeds of rice or a hemp plant here and there among the ruins. One old native had twenty-eight men at work destroying timber about 1½ kilometers south of Sably Sitio, on March 17."

*June, 1909.*—Maximino Mina, Delegate, Second District, Ilocos Sur, reports, with reference to caiñgins being made on public lands principally on hills cov-

ered with vegetation, where springs or fountains of water are found. He states that these springs or fountains only last as long as the hills are covered with vegetation or shrubs. The cultivation and clearing of these hills carry with it the disappearance of these fountains, as they become dry. He suggests that such portions of the public land be reserved and excluded from homestead entry.

*June, 1910.*—N. Juanson, of Himamaylan, Negros Occidental, reports with reference to the destruction of the public forests in that municipality by means of caiñgins, and states that if no remedy can be given by the Government the forests of that municipality will soon be covered with cogon grass, which is of no use to the community.

*June, 1910.*—Forester Zschokke reports that he has adopted an aggressive caiñgin policy in his district. "It is very difficult for a ranger to secure evidence regarding caiñgins, as the people abandon the caiñgins when they hear that the ranger is coming. This will be avoided by having the local officials secure the evidence, and then the forest officers can inspect the caiñgins and judge for themselves as to what should be done." Forwards a copy of a circular letter sent by him to all municipal presidents in his district, giving instructions with reference to caiñgins made without authority in their municipality.

#### COMMUNAL FORESTS.

In accordance with the provisions of the Communal Forest Act, forty-two communal forests have been established, twenty-one of which were set aside during the past fiscal year. Ninety-one applications for communal forests are pending. A number have been examined and are pending final approval. It takes quite a little time for a forest officer to find a suitable tract; a detailed examination and sketch map follows; and after examination and modification by the Manila office, a more detailed forest map is made in duplicate. One is sent with the description of the forest to the municipality, after approval by the Secretary of the Interior, and a duplicate is retained in the Manila office. In the special forests of Bataan, Negros, and Mount Maquiling, an effort is being made to set aside a communal forest for each municipality. When that is accomplished, the ordinary timber licensee in the regions mentioned will no longer be annoyed by people taking advantage of the free-use privilege, who often cut wastefully and in violation of cutting rules under which the ordinary licensee is operating. The forest officers will then be able to administer the forests in these provinces much more satisfactorily than at present.

#### FIRE WARDENS.

The four fire wardens in the pine region of Bontoc have done good work; three others were employed in Amburayan and two in Nueva Vizcaya. In these two latter districts their main duty was to suppress the making of caiñgins, in which they were fairly successful. It is intended to increase the number of fire wardens during the coming year.

**DIVISION OF INVESTIGATION.**

The work of this division has been concentrated along two lines, viz., the organization and administration of three forests, and purely investigation work.

**ORGANIZATION AND ADMINISTRATION OF SPECIAL FORESTS.**

As a result of a special appropriation to establish a more effective service in two provinces, special forests have been established to bring them under more intensive management, and, as additional funds become available, to gradually extend such management to include all the public forests of the Islands. During the year, three such forests were organized and placed under management. These are the northern Negros forest, the Bataan forest, and the Maquiling forest.

**THE NORTHERN NEGROS FOREST.**

*Situation and area.*—This forest is situated in the northern half of Negros, mostly within the Province of Negros Occidental, and a very small portion in Negros Oriental, comprising an area of about 400,000 hectares of land, about 160,000 hectares of which are covered by public forest.

*Organization.*—The work was inaugurated during the first part of the year, with one central station and two substations. As finally organized, the forest was placed in charge of one American, assisted by seven Filipino forest officers, three student laborers, three scalers, and ten forest guards. The American in charge, while well grounded in things forestry, was entirely new to the local conditions, having been in the Islands only a short time before he was assigned to the position. Of the remaining force, only two head rangers were trained officers, and one assistant ranger had less than one year's training as a student assistant. The rest were new men, and had to be trained in different lines of forestry work.

*Results.*—Besides the educational work carried on by the officers of this force, the following results have been obtained:

Mill scale study: A mill study was made of the operations of one large company. This company is allowed to manifest and pay for the material secured in the public forest in the form of manufactured lumber. The results of this study already show that the company is manifesting and paying forest charges on less than 50 per cent of the cubic contents of the round timber.

Section 7 of Act No. 1407, known as the Reorganization Act, reposes in the Collector of Internal Revenue the rules and regulations for the measurement of timber. This official, after submitting the law to the Attorney-General, decided (1) that the licensee has the choice of one of

the three measurements authorized by law, and (2) that the law does not authorize any deduction for rot and other defective timber. This places the Government in an anomalous position. The present method in vogue in the measurement of sawn timber is as follows: The timber is manifested in board feet, either when it is sold or used at the yard or when it is shipped from the yard to the market. It means that all rotten timber, waste in malmanufactured lumber, and loss in edging and trimming are not paid for at all. In other words, the present measurement authorized by the Government enables the licensee to escape the payment of charges on malmanufactured lumber and waste in edging and trimming.

If the interpretation of the law as given above is correct, two methods of measuring timber are left to those licensees who choose to measure their timber as sawn lumber:

(1) The timber can be measured after it leaves the first saw and before it is edged and trimmed. The law governing the measurement of sawn timber is practically the same as the old Spanish law, when whipsawing methods were in use. The small saw kerf, the practice of not trimming and edging, and the proverbial economy of the Chinaman in saving the smallest scraps of timber will make the loss in sawing much nearer the 15 per cent surcharge as provided by law than in the case of machine-sawn material. By whipsawing, the Chinaman is likely to get 9 or 10 board feet from every cubic foot, whereas the modern mill man is getting only 5, 6, or, at the most, 7 board feet for every cubic foot. A measurement after the first saw is analogous to the measurement of whipsawn timber.

(2) The timber can be measured after it is sawn, edged, and trimmed, provided that all the defective timber, slabs, edgings, trimmings, malmanufactured lumber, etc., are properly piled and manifested. To this the 15 per cent surcharge can be added for loss in sawing. It is believed that the Government can require the companies to pile up all their so-called waste (separating the different kinds) so that it can be easily measured.

If either of the above methods of measurement is adopted, it will have to be done by Government officials, as there could be no check on the measurements of the company. The first measurement is the more practical of the two. The second measurement is hardly practicable, as it would certainly entail hardships on the licensee.

The interpretation of the word "sawn" to mean "manufactured" is not in accordance with the original intention of the law, and the Government is open to criticism if it still continues to countenance the present system of measurement.

**Reproduction study:** A study has been made on the effect of a large scale operation on the reproduction of the forest. This study has shown

that although the stand left after severe cutting is fair, a much more satisfactory condition of the cutting would obtain if more care were taken by the logging crew. To secure this, it is proposed to mark systematically a number of trees as a nurse crop for the advancing young growth, and also to institute a permanent inspection of the logging operations with the intention of preventing all unnecessary cutting and injuring of undersized timber.

**Routine work:** Practically all the large timber concessions, including the two twenty-year concessions, have been inspected. A detailed statement of the number of licenses and those inspected is included in the annual report of the forester in charge.

During the first part of the year, the force in the forest was busy with the organization and educational work and the mill scale study. The period of most of the active routine work was confined to the latter part of the year. During the year about 30 kilometers of patrol trail were constructed, seventy homestead sites inspected, and a large number of caiñgin permits granted. During the last two months, the attention of the majority of the force was engaged in collecting revenue, with satisfactory results. The lack of men and money to establish adequate patrols has somewhat hampered the work of protecting the forest from caiñgin makers. Considering everything, the number of illegal caiñgins prevented is all that could be expected.

#### THE BATAAN FOREST.

**Situation and area.**—This forest comprises all the Province of Bataan, covering an area of about 140,000 hectares, about 73,000 hectares of which are in public forest.

**Organization.**—During the first half of the year the work of organization consumed the time of the forest officers. The district contains one central station and two substations. The work is in charge of one American forest officer, with eight Filipino assistants and eight guards. Like the Northern Negros forest, the American in charge, while well trained, had no previous knowledge of the forests and forest conditions in the Islands. Such also was the case with nearly all of his assistants. Consequently, a great deal of time was consumed in educational work.

**Results.**—Forest map: Data have been collected for a good forest map of the region. This map is a base map, and during the coming year the location of the principal trails not already plotted will be placed on it. It is the intention, also, to locate the cutting, homestead, and caiñgin areas on this map.

Bamboo: Studies on the reproduction of bamboo were started, but owing to the pressing demands of other work these studies were not continued. There is a large area of bamboo growing on the public lands in Bataan Province. In October last, Mr. Richmond, of the Bureau of

Science, assisted by forest officers, examined a sample plot (one-tenth hectare). The 1,075 bamboo which were cut weighed, when green,  $6\frac{1}{2}$  tons; the air-dry weight was  $3\frac{1}{2}$  tons. This means 35 tons of dry bamboo per hectare. As Mr. Richmond states in his report: "A pulp mill of moderate capacity, say 20 tons per day, will require 45 tons of air-dry bamboo per day, and would require approximately 1,000 hectares of such bamboo, working on a three-year rotation of two hundred and forty days per year." This bamboo was and can be gotten out at a low figure. Within a few weeks measurements will be made on this cut-over plot, showing rate of growth during the past year. During the coming year, the area of bamboo in Bataan will be mapped, and all necessary data, showing possibilities of the successful operation of a pulp mill will be compiled.

**Scaling logs:** An attempt was made to transfer the measurement from that of manufactured lumber to the logs in the woods, but as the Internal Revenue Bureau would not authorize such a change, the work was abandoned. One company is continuing to manifest its lumber in exactly the same way as the company in Negros.

**Routine work:** This work, because of the small area and absence of the time-consuming mill scale study, has progressed much faster in the Bataan than in the Northern Negros forest. One hundred kilometers of patrol trail were constructed; all of the 31 cutting areas were inspected at least once, and some of them more than once; 22 homesteads inspected; and 427 caiñgin permits granted. The work of establishing communal forests for all the municipalities will be completed during the first half of the fiscal year 1910-11.

#### ARAYAT FOREST.

During the latter part of the fiscal year, a preliminary survey was made of a detached piece of forest around Mount Arayat. This was annexed to the Bataan forest, and will be administered by the same officers.

#### MAQUILING FOREST.

This forest comprises the region of Mount Maquiling. It is situated in portions of the Provinces of Laguna and Batangas, and comprises an area of about 5,500 hectares. The forest has been in charge of an assistant ranger. At the close of the year the forest was put under the control of the American forester who has charge of the Forest School at Los Baños. The Maquiling forest has been surveyed by the Bureau of Lands. An application has been made to have this forest set aside as a forest reserve.

#### INVESTIGATION WORK.

As the main work of the division during the past year has been the organization and administration of special forests, the work of investiga-

tion has been incidental to that of administration. Nevertheless, considerable work has been done in nearly all classes outlined in last year's report, both in and out of the special forests, and new classes of work have been initiated.

#### EDUCATIONAL WORK.

As outlined in the last report, the policy of hiring a number of student assistants with the title of temporary rangers has been continued. While a number of excellent officers have thus been obtained, yet on the whole it has not been successful, simply because the inducements offered are not sufficiently attractive to obtain men with enough education to fill the positions of rangers and head rangers, and in many instances even that of assistant rangers. The best men that have been obtained in this way realize their lack of education and are anxious to enter the Forest School just established.

Realizing the partial ineffectiveness of supplying the needs of the Bureau with Filipino officers, a Forest School for rangers has been established. This is in connection with the Agricultural College of the University of the Philippines, and is located at Los Baños, Laguna Province. To offer inducements for students to enter this school, twenty scholarships have been authorized. Students accepting these scholarships are expected to enter the Government service for a time equal to that during which the scholarship is held. During their attendance at the school quarters are provided for them and each student is allowed ₱20 per month for his maintenance.

While the outlined course covers four years, the first two of which are the same as that offered to agricultural students, the scholarships are offered only to those who have completed two years' or more work in the various high schools of the Islands. Thus it is expected that they will complete the work offered in two years. It is hoped that the needs of the Bureau will be supplied by this school. The school opened June 13, 1910, and now has an enrollment of 24 pupils, 19 of whom are *pensionados*. The course of study is as follows:

Junior year.		Vacation.	Senior year.
Physiography and soils.	Physiography and climatology of the Philippines.	Lumbering.	Wood technology.
Geometry.	Trigonometry and surveying.	Forest mensuration.	Surveying; forest engineering.
Forest botany.	Silvics.	Horses, camps, and packing.	Silviculture.
Mapping; forest entomology.	Law and procedure.		Forest economy.

## NEW PUBLICATIONS.

A bulletin, entitled "The Forests of the Philippines: Part I, Forest Types and Products; Part II, The Principal Forest Trees," is nearly ready for the printer. This bulletin is intended to convey in a concise and simple form all data that have been collected concerning the forests and the principal forest trees of the Philippines. It will be well illustrated.

## MUSEUM.

The exhibition part of the museum has been removed to a special room on Calle Anloague. It consists of 77 planks and 373 log specimens, forest maps and statistics, besides a large number of manufactured articles and minor forest products. It is hoped that the latter articles can be attractively arranged in glass cases some time during the present year.

The working part of the museum remains in the office of the division of investigation, where it is constantly being used. There were added to this museum during the year 2,082 wood samples, making a total of 6,282 numbers now on hand, representing about 1,000 different kinds. During the year there were collected 1,607 herbarium specimens. These were turned over to the Bureau of Science herbarium. The Bureau of Forestry series of this herbarium now shows a total of 19,716 numbers. There were distributed during the year to individuals and to various museums and educational institutions in the Islands, the United States, and foreign countries 2,266 wood samples.

## DURABILITY TESTS.

Active work has been carried on to ascertain the comparative durability of a large number of native timbers. Two examinations, six months apart, have been made of the several hundred wood specimens in the testing grounds in Bataan, where they are exposed to attack by white ants, and where the moisture, soil, and shade conditions are conducive to rapid decay. Forty new specimens have been placed in the testing grounds. The results of the examinations have been correlated, and a tentative table of relative durability has been prepared. This will probably be altered as more complete information on some of the species becomes available.

A durability test of unusual importance has been inaugurated on the Island of Panay, in coöperation with the Philippine Railway Company, where 826 ties, representing eighteen species, have been placed in a selected portion of the track. Each tie was carefully identified and marked, so that reliable records can be secured of its subsequent behavior under practical conditions. A diagram and report of the work have

been prepared for the coöoperators. Seventy-two of the experimental ties were donated by the Insular Lumber Company.

Plans have been made for the examination of test timber installed in various parts of the Islands.

Practical methods for the preservative treatment of structural timbers have been studied. As a result of a detailed examination of the mines in Benguet, a complete report has been prepared, with recommendations for the preservatives, processes, and types of tanks best suited to local conditions. The Bureau is now in a position to give practical advice and assistance to all users of structural timber who wish to increase its durability.

There are a few tree species which abound throughout the Islands found growing to large sizes, but not popular in the market. These are the woods upon which much thought and energy will be expended. New uses must be found for them; economical preservatives must be tried in order to make these woods more durable; neighboring markets beyond the white-ant belt must be worked up for woods susceptible to attack, but otherwise very beautiful in grain, easily handled, and suitable for many purposes.

#### FOREST EXTENSION.

Forest nurseries have been established at Baguio, and in the northern Negros, Bataan, and Maquiling forests. These nurseries have been mostly experimental in nature. In the nurseries at Baguio a number of Japanese trees and bamboos have been planted and are doing well. In the other nurseries, as a rule, only native species are planted. It is hoped that these nurseries, or new ones established near them, will be the basis for raising trees for extensive forest plantings in the cut-over forests and in the grass areas. At present, the appropriation for the Bureau is not sufficient to prosecute this work on a satisfactory scale. A large number of seeds have been collected and distributed for exchanges with various forestry institutions in foreign tropical countries. About 90,000 plants, representing fifty different species, are ready for transplanting.

#### SPECIAL WORK.

Aside from the special work carried on by officers of the Negros and Bataan forests, preliminary investigations have been made of two large tracts. These were made in coöperation with representatives of companies who desire twenty-year license agreements for the exploitation of forest products.

The work of controlling cutting areas in such a way as to insure reproduction is one of the most serious problems confronting the Bureau of Forestry. It is not at all certain that the selection method now in use will do this. Mention has been made in a special report showing

the condition of a cut-over area as regards reproduction. What kind of a forest will obtain on such an area remains to be seen. The uninjured seedlings and small trees left standing after a heavy cutting will find serious competition in the jungle growth that rapidly gains possession of open places and it is believed will crowd out a considerable portion of the valuable species. The only reliable assurance that can be had that another forest equally good or better will take the place of the old is to resort to planting such areas.

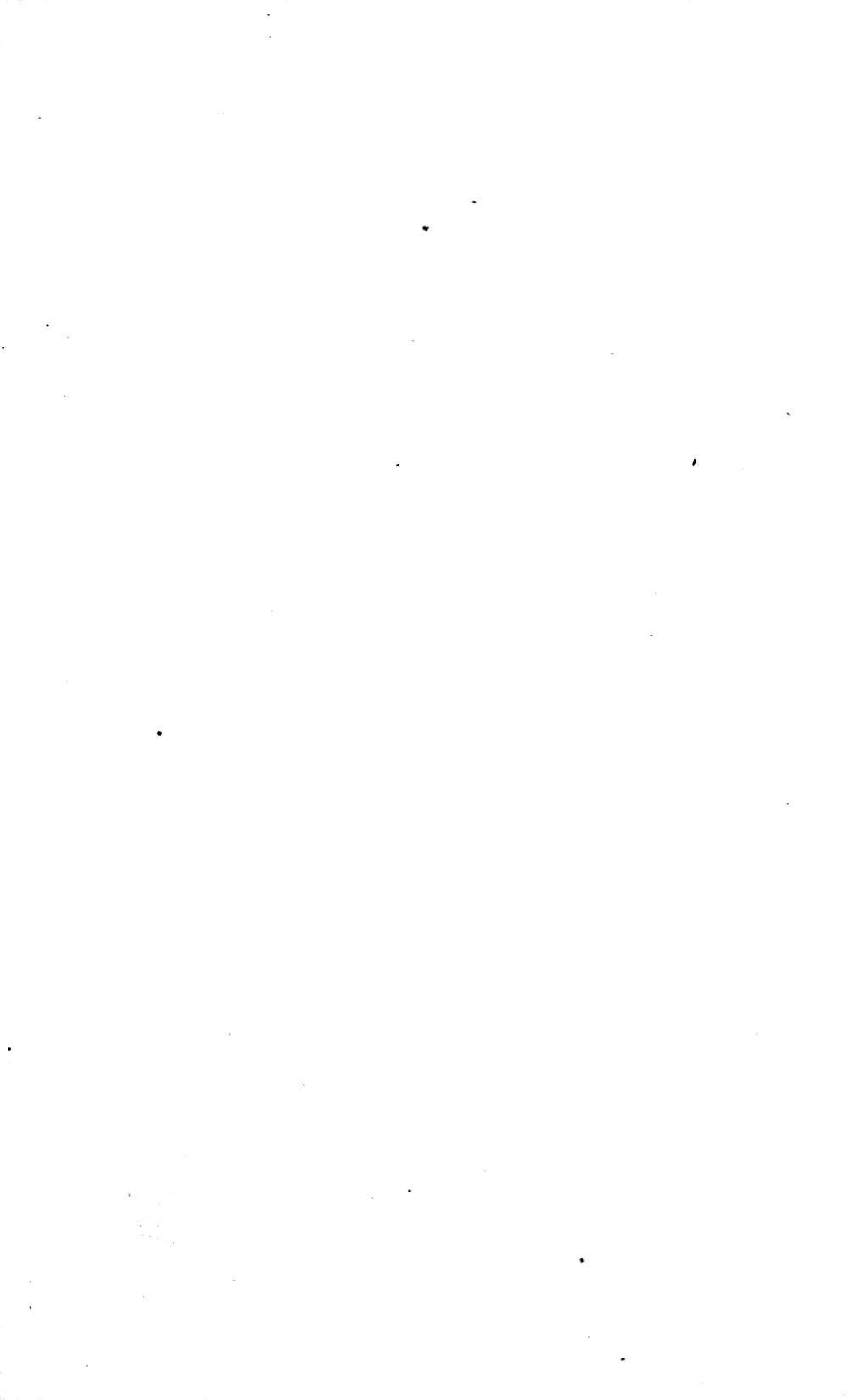
Thickly populated regions contain no forests. The people, in such cases, depend on distant parts of the Islands for timber, fuel, and other forest products. Idle, nonagricultural grass land lies within easy reach and are favorite breeding places for grasshoppers. The cultivation of the land suitable for agriculture and the reforestation of the non-agricultural lands of the much larger areas now in grass will do much to destroy the grasshopper pest. At the same time it will furnish timber and firewood within easy reach of the people. Much of this work could be done in coöperation with the private owners. It is recommended, therefore, that a special appropriation be asked for to begin this work. More imperative demands on the present appropriation leave the Bureau without funds to do more than partially replant the forest tracts cut over by a few of the larger operators.

GEORGE P. AHERN,  
*Director of Forestry.*

The SECRETARY OF THE INTERIOR,

*Manila, P. I.*

## APPENDIX.



# STATISTICS.

*Statement of applications for homestead, purchase, and lease of public lands, certified to Bureau of Lands as more valuable for agricultural or forest purposes.*

Fiscal year.	Homesteads.			Sale.			Lease.			Grand total.
	Agri-cultural.	Forest	Total.	Agri-cultural.	Forest.	Total.	Agri-cultural.	Forest.	Total.	
1905.....	80	6	86	8	-	8	-	-	-	94
1906.....	318	16	334	20	1	21	1	-	1	356
1907.....	881	19	900	23	-	23	12	-	12	985
1908.....	2,456	51	2,507	49	1	50	26	-	26	2,588
1909.....	1,523	187	1,710	26	8	29	27	-	27	1,766
1910.....	1,175	385	1,560	34	5	39	42	2	44	1,643
Total .....	6,438	664	7,097	160	10	170	108	2	110	7,877

NOTE.—Number of applications for homestead, purchase, or lease of public lands pending inspection and certification on June 30, 1910, 709.

*Report of the utilization of forest products from public and private forests, July 1, 1909, to June 30, 1910.*

Province.	Timber.			Minor products.	
	First group.	Lower groups.	Total.	Firewood.	Charcoal.
Agusan.....	Cu. meters.	Cu. meters.	Cu. meters.	Cu. meters.	Cu. meters.
Albay.....	17	5	22	84	-
Ambos Camarines.....	801	591	892	1,166	-
Antique.....	720	2,414	8,184	3,686	-
Bataan.....	26	28,622	28,648	25,441	84
Batangas.....	138	1,303	1,441	5,920	-
Benguet.....	67	8,837	8,904	180	-
Bohol.....	272	1,568	1,880	2,679	68
Bulacan.....	114	6,404	6,518	2,526	188
Cagayan.....	2,817	1,982	4,799	1,825	88
Capiz.....	100	1,128	1,226	18,835	5
Cavite.....	5	85	90	4,142	711
Cebu.....	156	219	375	2,765	629
Ilocos Norte.....	156	49	205	79	-
Ilocos Sur.....	293	754	1,037	789	-
Iloilo.....	317	834	651	15,193	189
Isabela.....	862	832	1,694	-	-
La Laguna.....	-	1,988	1,983	1,824	4
La Union.....	171	109	280	850	-
Lepanto-Bontoc.....	179	1,341	1,520	-	-
Leyte.....	280	1,568	1,848	8,878	-
Misamis.....	204	320	524	-	-
Mindoro.....	1,451	8,098	9,549	8,695	-
Moro.....	6,516	11,674	18,190	447	1
Negros Occidental.....	862	21,489	22,851	19,525	-
Negros Oriental.....	573	91	664	247	-
Nueva Ecija.....	670	1,702	2,372	2,136	-
Nueva Vizcaya.....	24	41	65	-	-
Palawan.....	7,105	301	7,406	955	-
Pampanga.....	4	2,714	2,718	39,502	1,483
Pangasinan.....	784	1,686	2,420	5,490	106
Rizal.....	126	588	714	22,010	69
Samar.....	869	543	912	3,547	-
Sorsogon.....	4,048	2,865	6,408	8,812	-
Surigao.....	59	22	81	28	-
Tarlac.....	201	1,175	1,876	16,845	-
Tayabas.....	1,773	8,749	10,522	28,887	122
Zambales.....	217	5,082	5,299	3,106	727
Total .....	31,962	121,656	158,618	246,776	4,816

*Report of the utilization of forest products from public and private forests, July 1, 1909, to June 30, 1910—Continued.*

Province.	Minor products.				
	Tan bark.	Dye bark.	Wood oils.	Almaciga.	Bejuco.
	<i>Kilos.</i>	<i>Kilos.</i>	<i>Liters.</i>	<i>Kilos.</i>	<i>Kilos.</i>
Agusan	2,760				51,288
Albay	47,185			4,660	99,927
Ambos Camarines	2,500			59,228	769,278
Antique	3,130	465			5,987
Bataan				5,833	46,895
Batangas					2,100
Benguet					950
Bohol	20,388	20	1,000		3,756
Bulacan	1,120				66,145
Cagayan	18,496			164	124,000
Capiz	5,406	2,294	5,515	20,851	4,516
Cavite					
Cebu	50,905	10,101			179
Ilocos Norte					
Ilocos Sur					1,400
Iloilo	4,150				6,127
Isabela					2,820
La Laguna					2,291
La Union					
Lepanto-Bontoc					
Leyte	11,189		70,795	19,894	65,578
Misamis		800			15,153
Mindoro	268,039	20,064			218,404
Moro	2,184,879			866,545	7,638
Negros Occidental	4,509	668	45,731		847,188
Negros Oriental	75,468	742	7,186	5,800	144,974
Nueva Ecija	49,494	99			48,955
Nueva Vizcaya					
Palawan	303,661	59,112	180	77,358	25,763
Pampanga	128				699
Pangasinan	2,942	322			4,979
Rizal				525	35,616
Samar	85,741				92,253
Sorsogon	78,901	860			607,951
Surigao	11,574		40		9,591
Tarlac				190	15,322
Tayabas	105,499	3,435		31,450	154,928
Zambales					97,116
Total	8,302,939	98,482	131,377	1,092,398	8,069,212

Gutta percha		kilos...	96,169
Dyewood	do.....	1,154,814	
Pitch	do.....	57,829	
Stone, etc	pieces...	6,420	
Earth, etc	ollas...	6,646	

*Statement showing amounts of important timbers (by species) cut and invoiced in the Philippine Islands during the fiscal year 1910, according to invoices received by the Bureau of Internal Revenue.*

Species.	Amount cut.	Species.	Amount cut.
	<i>Cu. meters.</i>		<i>Cu. meters.</i>
Lauan	18,439	Tindalo	954
Apitong	20,764	Acle	809
Guijo	14,107	Macaasin	705
Ipil	13,717	Betis	257
Molave	8,923	Malugay	154
Yacal	8,225	Other species:	
Narra	5,744	First group	317
Calantas	3,174	Second group	4,900
Dungon	2,453	Third group	7,277
Tanguile	2,106	Fourth group	36,632
Supa	1,062	Total	176,758
Amuguis	1,089		

*Statement of timber cut and manifested, by provinces, during fiscal year 1910.*

[Taken from individual licensees' accounts of Bureau of Internal Revenue.]

Province.	Amount.	Province.	Amount.
	Cu. meter.		Cu. meter.
Bataan	21,342	Laguna	565
Negros Occidental	19,060	Albay	352
Moro Province	15,698	Rizal	347
Tayabas	10,709	Tarlac	305
Mindoro	9,163	Negros Oriental	301
Palawan	6,701	Bohol	242
Bulacan	6,426	Iloilo	117
Zambales	5,741	Cebu	112
Sorsogon	4,628	La Union	89
Cagayan	4,421	Misamis	67
Benguet	3,758	Nueva Vizcaya	38
Pampanga	2,789	Surigao	32
Ambos Camarines	2,171	Lepanto-Bontoc	31
Pangasinan	1,747	Batangas	20
Nueva Ecija	1,677	Cavite	7
Isabela	1,237	Agusan	5
Leyte	1,080	Ilocos Norte	2
Samar	711	Total	122,908
Ilocos Sur	698		
Capiz	579		

*Imports and exports of lumber in the Philippine Islands.*

IMPORTS.

Fiscal year.	From United States.			From other countries.	Total.	
	Commer-	For United States Army.				
		Oregon pine.	Redwood.	Other woods.		
1907	Feet B. M.	Feet B. M.	Feet B. M.	Feet B. M.	Feet B. M.	
1907	10,734,000	8,008,000		68,000	16,816,000	
1908	5,791,198	5,008,897	19,100		18,765,828	
1909	5,420,520	8,010,228	10,000		1,179,756	
1910	7,076,100	12,185,862	46,000	39,874	14,620,498	
					999,600	
					20,816,286	

EXPORTS.

Fiscal year.	To the United States.	To other countries.	Total.
	Feet B. M.	Feet B. M.	Feet B. M.
1907	181,000	71,000	252,000
1908	615,000	310,000	925,000
1909	578,600	120,900	694,500
1910	940,800	485,600	1,376,400

*Other forest products.*

IMPORTS.

From—	Charcoal.	Rubber.	Other gums and resins.
	Kilos.	Kilos.	Kilos.
United States	5,721	102,512	71,024
Other countries	44,817	55,219	151,078
Total	50,538	157,731	222,097

*Other forest products—Continued.*

## EXPORTS.

To—	Almaciga.	Gutta-percha.	Other gums and resins.	Sapwood.
United States .....	Kilos. 399,779 575,611	Kilos. 95,082	Kilos. 100 34,266	Cu. meters. 3,899
Other countries .....				
Total .....	975,890	95,082	34,366	3,899

*Revenue from sale of forest products, fiscal year 1910.*

Province.	Amount.	Province.	Amount.
Agusan .....	₱172.70	Mindoro .....	₱5,297.84
Albay .....	8,734.78	Misamis .....	914.87
Ambos Camarines .....	8,678.34	Moro .....	30,210.22
Antique .....	857.80	Mountain .....	3,429.43
Bataan .....	5,723.67	Negros Occidental .....	8,624.33
Batanes .....	6.36	Negros Oriental .....	1,859.37
Batangas .....	2,034.40	Nueva Ecija .....	5,638.43
Bohol .....	2,217.16	Nueva Vizcaya .....	97.38
Bulacan .....	5,315.59	Palawan .....	2,124.56
Cagayan .....	7,976.03	Pampanga .....	2,762.89
Capiz .....	2,561.24	Pangasinan .....	5,050.41
Cavite .....	853.11	Rizal .....	2,580.91
Cebu .....	7,693.39	Samar .....	8,528.82
Ilocos Norte .....	804.52	Sorsogon .....	10,559.91
Ilocos Sur .....	1,894.47	Surigao .....	771.53
Iloilo .....	22,885.44	Tarlac .....	1,535.68
Isabela .....	3,755.21	Tayabas .....	5,961.16
La Laguna .....	947.40	Zambales .....	1,428.43
La Union .....	1,047.88	Total .....	271,581.74
Leyte .....	4,837.28		
Manila .....	95,259.35		

*Expenditures of Bureau of Forestry, July 1, 1909, to June 30, 1910.*

Equipment and supplies, unexpendable .....	₱4,654.85
Salaries and wages .....	95,794.13
Labor hire of field parties, etc .....	12,389.51
Per diem allowances in lieu of traveling expenses, subsistence, quarters, etc .....	8,694.39
Transportation of employees on official business .....	5,595.71
Cargadore and guide hire .....	1,820.37
Traveling expenses of employees outside the Philippine Islands .....	1,769.50
Transfer of funds to the Bureau of Public Works for construction of buildings at Baguio .....	4,500.00
Baguio quarters and subsistence expenses .....	1,333.75
Freight: transportation of supplies .....	607.62
Postage and telegrams .....	1,449.02
Printing and binding .....	2,630.56
Manila transportation .....	620.20
Office supplies, expendable .....	2,637.79
Maintenance of Manila and Baguio office quarters .....	1,689.65
Miscellaneous office expenses .....	6.74
Rental of provincial stations .....	569.60
Other administrative supplies, expendable .....	2,363.11
Supplies and specimen forest products for forestry exhibit .....	1,249.17
Miscellaneous administrative expenses .....	1,084.33
Repair and maintenance of equipment .....	92.97
Obligations of prior fiscal years .....	608.36
Total .....	152,161.33

## RECAPITULATION.

General appropriation for fiscal year 1910.....	₱143,000.00
Appropriation for forest service in the Mountain Province, etc.....	2,000.00
Carried forward for payment of outstanding obligations of prior fiscal years .....	400.47
Balance carried forward from fiscal year 1909 appropriation.....	4,285.60
Receipts from sales of equipment .....	467.60
Receipts from operation .....	3,596.05
 Total amount available .....	 153,749.72
Total expenditure, fiscal year 1910 .....	<u>152,161.33</u>
 Unexpended, June 30, 1910.....	 1,588.30
Outstanding obligations, June 30, 1910.....	<u>564.11</u>
 Balance, June 30, 1910.....	 <u>1,024.28</u>

*Distribution of expenditures by divisions and projects.*

## Office and miscellaneous:

Salaries and wages .....	₱27,673.75
Other expenses .....	22,662.02
	<u>₱50,335.77</u>

## Administration:

Salaries and wages .....	23,445.13
Other expenses .....	7,453.37
	<u>30,898.50</u>

## Investigation (general):

Salaries and wages .....	23,208.22
Other expenses .....	4,046.17
	<u>27,254.39</u>

## Bataan forest:

Salaries and wages .....	14,899.85
Other expenses .....	4,166.94
	<u>19,066.79</u>

## Northern Negros forest:

Salaries and wages .....	17,240.53
Other expenses .....	5,542.18
	<u>22,782.71</u>

## Maquiling forest:

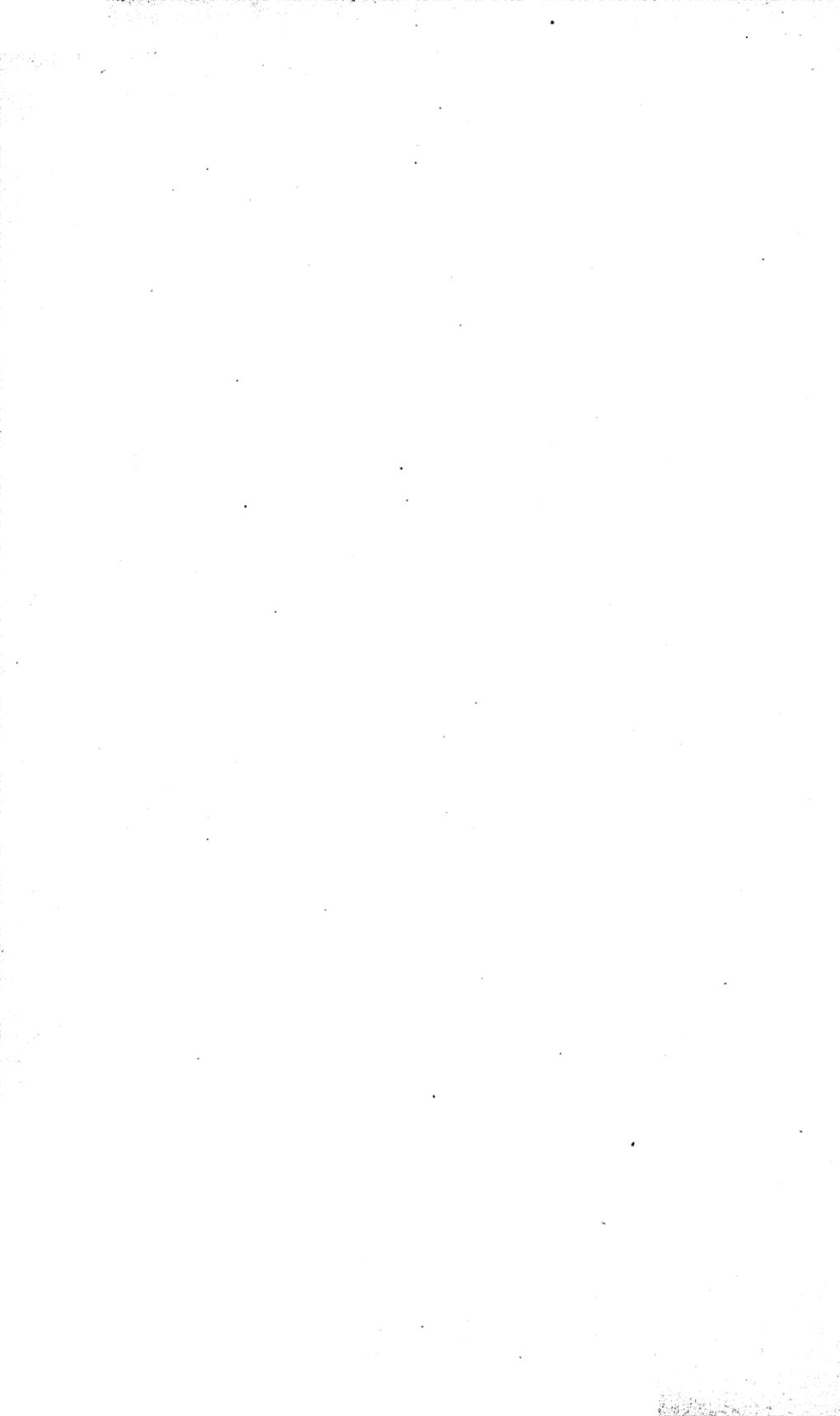
Salaries and wages .....	1,502.13
Other expenses .....	321.04
	<u>1,823.17</u>

Total .....	<u>152,161.33</u>
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