

The

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Forestry Kaimin



Giant Tamaracks on the Cabinet Forest

RANGER SCHOOL NUMBER

In This Issue:

Opportunities in Forestry

A Tiger Hunt in Burma

A Bear Story

The Beaver

Handy Hints

The Forest Engineer

Solving Fire Detection Problems

Forestry Notes

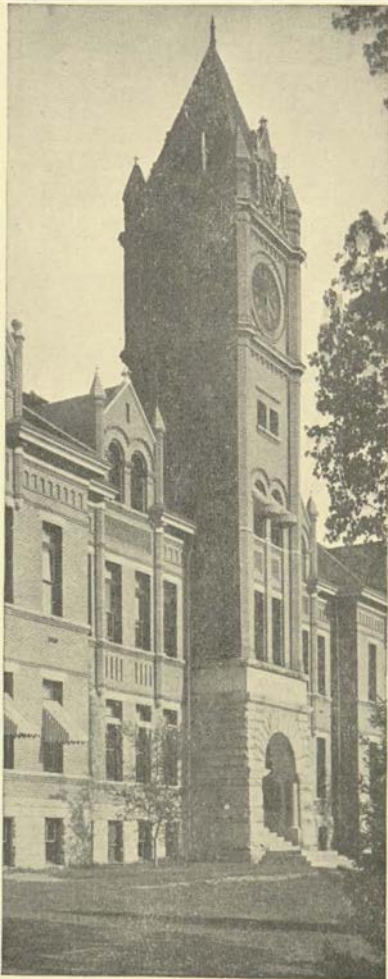
THE LOOKOUT

The University of Montana

MELVIN A. BRANNON, Chancellor of the University

The University of Montana is constituted under the provisions of Chapter 92 of the Laws of the Thirteenth Legislative Assembly, approved March 14, 1913 (effective July 1, 1913).

The general control and supervision of the University are vested in the State Board of Education. The Chancellor of the University is the chief executive officer. For each of the component institutions there is a local executive board.



Montana State Board of Education

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The University comprises the following institutions, schools and departments:

The State University, Missoula

Established February 17, 1893, and consisting of

- The College of Arts and Sciences
- The School of Law
- The School of Pharmacy
- The School of Business Administration
- The School of Music
- The Biological Station (Flathead Lake)
- The Public Service Division
- The School of Forestry
- The School of Journalism
- The Summer Quarter
- The Graduate Division

CHARLES H. CLAPP, President

The State College of Agriculture and Mechanic Arts, Bozeman

Established February 16, 1893, and Consisting of

- The College of Agriculture
- The College of Engineering
- The College of Applied Science
- The College of Household and Industrial Arts
- The School of Music
- The Summer Quarter
- The Secondary School of Agriculture
- The Agricultural Experiment Station
- The Agricultural Extension Service

ALFRED ATKINSON, President

The State School of Mines, Butte

Established February 17, 1893

Courses in Mining Engineering

Bureau of Mines and Metallurgy

GEORGE W. CRAVEN, President

The State Normal College, Dillon

Established February 23, 1893, and consisting of

The Teachers' Certificate Course

The Three-years' Course

The Course for Supervisors

The Two-years' Course

The Rural Teachers' Course

The Teachers' Service Division

SHELDON E. DAVIS, President

For publications and detailed information concerning the different schools and colleges address the president of the particular institution concerned. Communications intended for the Chancellor of the University should be addressed to the State Capitol, Helena, Montana.



GOD has lent us the earth for our life. It is a great entail. It belongs as much to those who are to come after us as to us, and we have no right, by anything we do or neglect, to involve them in any unnecessary penalties or to deprive them of the benefit which was in our power to bequeath.—Ruskin.



*I pledge allegiance to my Flag and the Republic for which it stands,
one nation, indivisible, with liberty and justice for all.*

THE FORESTRY KAIMIN

A JOURNAL OF WESTERN FORESTRY PRACTICE PUBLISHED AS A UNIVERSITY BULLETIN BY THE FORESTRY CLUB IN THE SCHOOL OF FORESTRY OF THE STATE UNIVERSITY AT MISSOULA, MONTANA

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Student Editor George Dally
Faculty Editor Dorr Skeels

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Comment



WHAT IRVIN COBB THINKS OF FOREST RANGERS

The following is an excerpt from an article appearing in the May "Cosmopolitan" by Irvin Cobb entitled, "The Bear That Hunted Me." The story is based on Cobb's Deschutes trip made in 1920.

"Or deeper still in the woods you may meet the ranger himself, a gallant figure in his greenish drab uniform. Usually he is young; always he is competent; nearly always he is deeply in love with the work he is doing."

A "COME-ALONG BOSS"

A member of the short-term force in the Yola Bola District, being questioned as to the kind of a boss he had, replied, "Oh, he's all right. He's one of these 'come-along bosses. When there's a job to be done he doesn't say, 'Go along, boys, and do it.' He says instead, 'Come along, boys, and we'll do it.'"—*Trinity National Forest.*

ARMY OF 22,000,000 TO COMBAT FOREST FIRES

(Forester William B. Greeley.)

"Can we not," asks Colonel Greeley in a letter to State superintendents of schools, "enlist the school children of the country—there are twenty-two million of them—in an effective army to fight a national foe that ravages the land before our eyes?"

"We give too little heed to small fires. They do a vast amount of harm. Our boys and girls should be taught this. They must be made to realize that good citizens are careful not to cause fires.

"The woods are royal playgrounds, for young and old. And they are never more so than in the fall. After school, and on holidays, our young people will have glorious times nutting, tramping, some of them hunting in the woods, and frolicking in the fallen leaves.

"The leaves are dry. Sun and wind and frost combine to cover the ground with potential tinder. It does not take long after a rain for the forest floor to become inflammable again. Then a little carelessness or thoughtlessness, and a fire is started.

"I wish I might tell every boy and girl in the United States of the fires that I have seen, and the terrible results of forest fires when they become big, and the harm that even small fires do. I wish I might ask each one of them to promise me his or her help in keeping the forests green."

BIG TOBACCO COMPANY URGES CARE WITH FIRE

"Be sure to extinguish match, cigar or cigarette before throwing away." This warning now appears on the cigarette packages of one of the largest American tobacco companies and is the first example of its kind in the United States.

Secretary of Agriculture Wallace, in whose department the Forest Service administers its 156 million acres of National Forests, wrote the tobacco company expressing his gratification over their action.

GRAZING LOSSES

The following contribution from the Tonto is a gratifying case of thinking along progressive lines:

"Ranger Sherman says 'Mortality of stock on the National Forest range can invariably be properly charged against three capital factors:

1st—*Natural Causes:* Under this comes death from lightning, drouth and poisonous plants.

2nd—*Management:* Under this comes disease of all classes, death from old age, starvation on account of overstocking, death from screw worms, death from poisonous waters and death from handling.

3rd—*Equipment:* Under this comes losses on account of bogholes, poorly constructed fences or a lack of fences to keep stock away from poison water or bogs, lack of necessary equipment or the maintenance of the wrong class of equipment.'

"There seems to be some merit in Mr. Sherman's contention and if so, the Forest Service should assume a different attitude toward mortality to the extent of not accepting haphazard statements of losses when taking grazing applications, since a Ranger can easily determine the approximate extent of causes of losses on the range and thereby get a fair idea of the percentage of loss. I believe if this subject is given a little more serious thought we will be able to demonstrate to the cowmen on the National Forests that their cattle losses are nearer three per cent than ten per cent, as is claimed on some of the districts where conditions are normal. I believe also it is worth while to instigate a campaign of education among the stockmen regarding loss, causes and effects, by demonstrating that losses are due largely to poor management or equipment and it might be that some of the stockmen will open their eyes and endeavor to prevent some of these losses on the ranges."—*Southwestern District.*

SERVICE AND FELLOWSHIP

I was talking today with an elderly man who has been in the Government service in another department for fourteen years. He stated, "I wish I were thirty again. I would not give up until I got into the Forest Service. It has the most interesting work, the best organization and the best feeling between man and man of any Government Department."

HOSPITALITY

"When the prizes for optimism are distributed, the large, solid silver loving-cup will be presented to officials of the U. S. Forest Service. No one else displays such an abiding faith in human nature. Each spring they welcome to the National Forests whomsoever feels the urge to camp in open country. More than that. They even issue literature urging people to take advantage of the finest natural playgrounds in the world. Their pamphlets set forth the charms of the hills and streams made accessible by Forest Service trails and roads, built with much toil and expense. To insure the comfort of travelers who answer the call, minimize the fire risk and make the forests "fool-proof," they clear and equip convenient camp sites. And after all this work is done, after everything is made easy for the camper and he appears in the forests in abundance, the hard-working hosts spend a pleasant summer fighting several hundred odd fires set by their guests. Yet they welcome the camper just as heartily next season, and continue to spend time and money in making the forests comfortable and safe for him, on the theory that he won't do it again. That shows a real faith in human nature." (Frederick Wagner in the Los Angeles Express.)

A GOOD EXAMPLE OF "STICK-TO-IT-IVENESS"

"Traced parties having passed up and down the road at the time this fire was supposed to have been left. Found a man who said his wife ought to know the license number of the car. Got the number from this man's wife, checked this number with the State Motor Vehicle Department's registration; found the car was registered to a man in Oroville. Went to Oroville, found out that this man had traded this car in a Chico garage. Came back to Chico. Went through this garage's records, got the name and address of the man they sold it to. Went to this address and he had moved, they did not know where. Traced parties through the doctor they had had in sickness. Found my man and he plead guilty.'"

—From a 618-b report, Lassen, N. F.

A NATIONAL POLICY OF FORESTRY SEEKS

The protection and beneficial utilization of our present forest resources—

The renewal after cutting of forests on lands not needed for agriculture and settlement—

The restoration of forest growth on lands now unproductive and idle—

The stability of forest industries and of satisfactory conditions for forest workers.

RANGER BILL SAYS:

Daddy, have you come home to live? said one of the children after my last field trip.

That Houdini chap who can keep afloat with his hands and feet tied must of trained on a National Forest.

A little money for fire publicity might save buyin' a lot of long-handled shovels.

I can't find any of these marks in the Brand Book, said our new Grazin' Asst., holdin' up my Chinese laundry ticket.

Sometime when you think you're overworked, trade jobs with your wife fer a day.

Whenever you see a Forest officer shy at a dish-cloth it's a sure sign the honeymoon's over, says my wife.

Callin' a man "Mister" ain't always an indication that you respect him.

Our Deputy Super. is so fond of arguin' that he can't even eat anything that agrees with him.

One of the hardest things in the world is t' know y'ur business an' keep from showin' it.

You sure do put up a good 50-cent meal, said the Deputy Super. as he passed his plate for the third helpin'.

My idea of a true friend is a feller that don't smoke but always has a match to lend 'ya.

Next to a cavalry harness on a pack mule, I don't know nothin' that beats the fit of my new uniform.

A genius ain't a bad feller to have 'round if you've got a plodder to do the work.

I sure admire the nerve of them 1300 odd students that's takin' up forestry for a profeshun.

A stick in time saves nine, says my wife lookin' at the empty wood box.

Next to a balky horse, I don't know anything more aggravatin' than a feller who wants to "play safe" on everything.

If you're goin' to plant a tree fer that boy of yourn, I'd recommend a willow, said Ranger Ed Skinner.

I've got a hunch that Rangers' backyards figger in a good many efficiency ratin's.

Makin' two hearts beat as one ain't nigh as important these days as makin' a salary check pay fer two.

Before gettin' too chesty about your promotion, you'd better remember all those chicken dinners I cooked for the Super., says my wife.

'Tain't a bad idea to include yourself in the annual property inventory.

The feller that's always busy at trifles don't usually get time for the big jobs.

Speakin' of fires, I know one place where they let 'em burn, but it has its disadvantages.

They can stop you Rangers smokin' but they can't make me quit "rollin' my own" in hot weather, remarked Jewel Dawn, our steno.

THE SCHOOL

SCHEDULE OF COURSES IN FORESTRY

FIRST YEAR

General Botany	5	General Botany	5	General Botany	5
Mathematics	2	Mathematics or		Mathematics or	
General Forestry	2	English	5	English	5
Surveying and		General Forestry	3	Fire Protection	3
Mapping	3	Surveying and		Surveying and	
Military Drill	1	Mapping	3	Mapping	3
Physical Education	1	Military Drill	1	Military Drill	1
College Education	*	Physical Education	1	Physical Education	1
	17		18		18

SECOND YEAR

Plant Histology	5	Plant Physiology	5	English	3
Plant Ecology	5	Forest Zoology	5	Forest Geology	5
Forest Measurements	3	Forest Measurements	3	Scaling and Cruising	3
Topographic Surveying		Logging, or an Elective	4	Topographic Surveying	
and Mapping, or an		Military Drill	1	and Mapping, or an	
Elective	4	Physical Education	1	Elective	4
Military Drill	1		19	Military Drill	1
Physical Education	1			Physical Education	1
	19				17

THIRD YEAR

Silviculture	4	Silviculture	4	Silviculture	4
Dendrology	4	Dendrology	4	Forest Pathology	5
Wood Technology	4	Wood Technology	4	Forest Products	5
Electives	4-6	Electives	4-6	Electives	4-6
	16-18		16-18		17-19

FOURTH YEAR

Management	4	Management	4	Management	4
Forest Policy	4	Forest Laws	4	Administration	4
Logging Engineering or		Logging Engineering or		Lumbering or Grazing	
Grazing Management	4	Grazing Management	4	Management	4
Electives	4-6	Electives	4-6	Electives	4-6
	16-18		16-18		16-18

SCHEDULE OF COURSES IN FOREST ENGINEERING

FIRST YEAR

General Botany	5	General Botany	5	General Botany	5
Mathematics	5	Mathematics or English	5	Mathematics or English	5
General Forestry	2	General Forestry	3	Fire Protection	3
Surveying and Mapping	3	Surveying and Mapping	3	Surveying and Mapping	3
Military Drill	1	Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1	Physical Education	1
College Education	*		18		18
	17				

SECOND YEAR

Mathematics	5	Improvement Construc-		Forest Geology	5
Forest Measurements	3	tion	4	Scaling and Cruising	3
Topographic Surveying		Forest Measurements	3	Topographic Surveying	
and Mapping	4	Logging	4	and Mapping	4
Elective	4	Elective	4	Elective	4
Military Drill	1	Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1	Physical Education	1
	18		17		18

THIRD YEAR

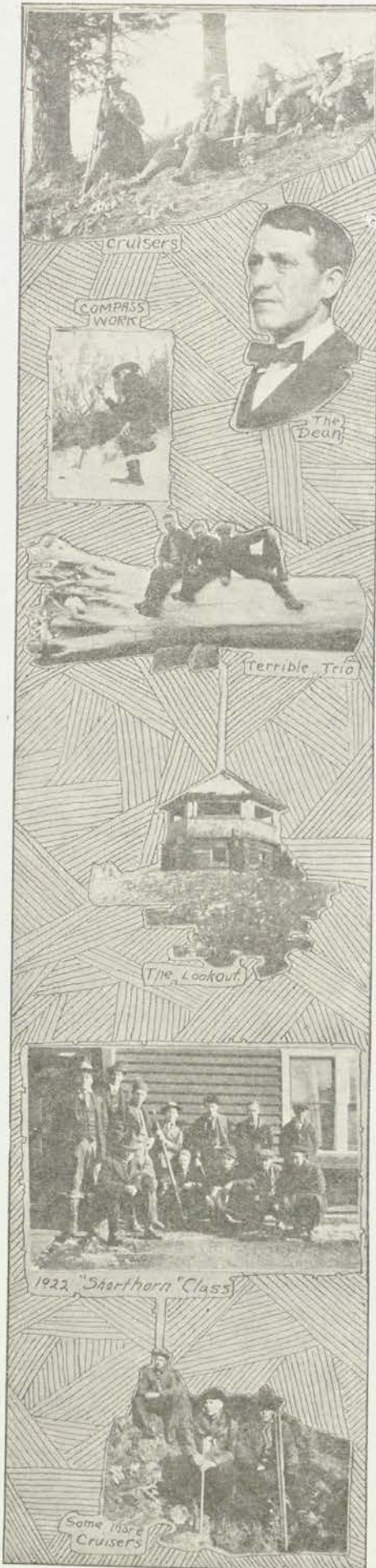
Wood Technology	4	Wood Technology	4	Forest Products	4
Forest Improvements	4	Strength of Material	4	Lumbering	4
Silviculture	4	Silviculture	4	Silviculture	4
Elective	4-6	Elective	4-6	Elective	4-6
	16-18		16-18		16-18

FOURTH YEAR

Highways and Bridges	3	Highways and Bridges	3	Highways and Bridges	3
Forest Management	4	Forest Management	4	Forest Management	4
Logging Engineering	4	Logging Engineering	4	Logging Railroads	4
Electives	4-6	Electives	4-6	Electives	4-6
	15-17		15-17		15-17

Electives in Forestry

Woodcraft	0	Forestry Appraisals	4	Economics of Forestry	3
Slide Rule	1	Grazing Management	4	Silvics	4
Forest Mapping	2	Woodcraft	2	Grazing Management	4
Grazing Management	4				



OF FORESTRY

The work of the Montana School of Forestry is along two distinct lines—undergraduate courses of four years which provide liberally for specialization in all the various branches of Forestry and Forest Engineering, and a short course of 12 weeks for Forest Rangers.

The undergraduate courses are arranged to train men for the various branches of scientific and administrative work in the government forest service and for work with lumber companies and timber-owning corporations involving the administration, protection, and utilization of forests. The work is arranged to allow for specialization in Forest Administration, Silviculture, Forest Management, Grazing Management, Lumbering and Forest Engineering.

Graduate training, leading to the degree of Master of Science, is offered in Silviculture Forest Management and Forest Engineering.

The short course for Forest Rangers is organized for the special purpose of training men already in woods to do better service in forestry and particularly to improve the training of forestry officers. Distinctly, it is not a course for inexperienced men.

A forestry club with a student and faculty membership of more than 100 meets fortnightly for the discussion of forestry problems, the consideration of technical and professional papers and the promotion of a social spirit.

Advisory Board

The advisory committee of the Montana school, proposed by the Pacific Coast Logging Congress and appointed by the State Board of Education, consists of the following members: Kenneth Ross, General Manager Lumber Department, Anaconda Copper Mining Co., Bonner, Mont.; W. R. Ballard, General Manager Somers Lumber Co., Somers, Mont.; Fred Morrell, District Forester District 1, U. S. F. S., Missoula, Mont.; E. G. Polleys, Polleys Lumber Co., Missoula, Mont.

Advantageous Location

The Montana School of Forestry possesses marked advantages in the matter of location. Two transcontinental railroads, three branch railroads and two interurban electric lines place the school within the easy reach of extensive lumbering and lumber manufacturing operations.

The headquarters of District 1 of the United States Forest Service and the offices of two forest supervisors are located in Missoula. The boundaries of the Lolo National Forest, the Bitter Root National Forest and the Missoula National Forest are adjacent to the school and include more than 3,000,000 acres of government timber lands, under forestry management. Within 50 miles of the school are the boundaries of nine national forests and two other government timber reserves. Within 100 miles are the boundaries of seventeen national forests, three other government timber reserves and a national park.

Summer Work

One of the most important features of the School of Forestry is the opportunity which the students have for summer work. Each student is expected to spend not less than three months of each year gaining practical experience in some form of woods work. The officials of the U. S. Forest Service and the lumber companies assist in placing the men for their first summer's work; their promotions through the succeeding vacations and positions after graduation are, therefore, entirely dependent on their own effort and ability.

It will be seen that this co-operative arrangement is most satisfactory: the student graduates as an experienced man, and while gaining his experience he has also earned money to pay for his college course.

Field Courses

To a great extent the work of the School of Forestry is carried on in the field and forest. Classes in Silviculture and Forest Management utilize the various forest types of the neighboring national forests. Classes in log scaling work on the decks and rollways at the local sawmills. Classes in timber cruising are held almost entirely within the forest. Classes in grazing uses of the forest and in range management study the local forest ranges and make frequent visits to the herds and flocks of nearby ranches. Instruction in forage plants is given in co-operation with specialists from the agricultural college. Use is made of nearby logging and lumber manufacturing operations by classes in lumbering and logging engineering.

Classes in forest policy and forest administration are given special opportunity for observation and investigation work in the offices of the District Forester of District No. 1 of the Forest Service and in the offices of the three forest supervisors which are located in Missoula. Experts and specialists in various lines of forestry are called upon freely for co-operation in the training which is given.

For a part of the spring quarter of each year, the school is moved to the shores of Flathead Lake in the Flathead National Forest where valuable use is made of forest and range types not found nearer the school. Various lumbering and wood using operations of that region are studied at this time.

Special Lecturers

The regular faculty of the School of Forestry is assisted by a staff of 30 special lecturers who are experts and specialists in various lines of forestry and forest uses. An unusual opportunity for this is afforded by the location of the Forest Services offices and headquarters in Missoula, and by the lumbering and stock raising industries of western Montana. An especially valuable co-operation is offered by the officers of the Government Forest Service and men prominent in the stock raising and lumbering industries. The Agricultural College at Bozeman is organized as a part of the University of Montana and in the winter quarter of each year experts from that school and from the Government Agricultural Experiment Station are detailed to the School of Forestry as special lecturers in the courses in grazing and range management.

Requirements for Admission

The completion of a four years' preparatory or high school course is the standard for regular entrance to the School of Forestry in the University, as in the other regular courses of the University.

Students in high school and preparatory schools who plan to enter the School of Forestry should preferably include various elementary natural sciences, English and mathematics, in their training. Students intending to specialize in Forest Engineering should also, when possible, include Manual Arts and Drawing in their preparation.

Special Students

Students over 21 years of age, who are not high school graduates and who are not candidates for degrees, may in exceptional cases, be admitted without the usual entrance credits, as special students, if they are prepared to pursue successfully the special courses desired, subject to the general rules of the University.

Detailed descriptions of all courses offered will be found in the University Catalogue which may be had upon application to the Registrar of the University or to the Dean, School of Forestry.

THE RANGER

RANGER SCHOOL SCHEDULE Winter Quarter 1923

RANGER SCHOOL			
R. S. 1	Surveying	- - - - -	1½
R. S. 1	Mapping	- - - - -	1½
R. S. 2	Topography, Surveying and Mapping	- - - - -	3
R. S. 3	Forest Improvements	- - - - -	2
R. S. 4	Forest Administration	- - - - -	2
R. S. 5	Fire Protection	- - - - -	2
R. S. 6	General Forestry	- - - - -	1
R. S. 12	Scaling and Cruising	- - - - -	1
R. S. 13	Logging and Lumbering	- - - - -	2
R. S. 17	Grazing	- - - - -	2
R. S. 20	Grazing	- - - - -	1
R. S. 21	Grazing	- - - - -	2
R. S. 22	Forest Management	- - - - -	2
R. S. 23	Silviculture	- - - - -	2
BOTANY			
Ranger	Botany	- - - - -	3
ENGLISH			
Ranger	English	- - - - -	3
MATHEMATICS			
15a	Forestry Computation	- - - - -	3
15b	Trigonometry for Forest Rangers	- - - - -	3

Ranger School.

The fourteenth annual Ranger School of the University of Montana will open on January 3, 1923, to give 12 weeks of short-course training for forest rangers, and special courses in Grazing and Lumbering. Founded in 1910 at the request of the Forest Service, its service to forest officers and lumbermen has kept pace with the progress in American forestry.

It is the purpose of this school to enable Forest Rangers and other Forest Officers to keep abreast of their profession. Forest Administration is rapidly passing into the hands of a highly technical organization, consequently the need of special training is becoming daily more apparent to the wideawake Forest Officer in order that he may maintain his position with satisfaction to himself and his superior officers. Men desiring to enter the Forest Service find the Ranger School an excellent foundation upon which to undertake the necessary examination.

Requirements for Admission.

The following will be admitted as students in the Ranger School:

Forest Rangers, guards, and other employees of the U. S. Forest Service, States, or private Timber Protective Associations.

Employees of corresponding rank with logging and lumbering companies.

Any person of good character at least 21 years of age and having experience in forestry or woods work and who can furnish evidence of his ability to pursue the subjects as outlined.

Students who have completed a high school course or equivalent preparatory training and who are otherwise qualified to benefit by short course training.

Further information relative to the entrance qualifications of individuals will be given upon application to the Dean, School of Forestry, University of Montana, Missoula.

Cost of Attendance.

The necessary cost of attendance in the Ranger School may be reduced to approximately \$125, apportioned as follows:

Fees (approximate)	\$ 10.00
Drafting instruments and books	25.00
Board, 11 weeks	75.00
Room, 3 months	12.50
Miscellaneous dues, etc.	3.00
Total	\$125.50

Meals are furnished on the campus for \$25.00 per month. Beds in Simpkins Hall dormitory are \$12.50 per term of three months.

There is a limited number of spaces for short course students in Simpkins Hall. These will be held by the Registrar upon receipt of definite application for same as long as they are available. Applicants for admission to the dormitory are required to bring with them sheets, pillow cases, and personal linen; other bedding is furnished.

An expense of about \$25.00 for drafting instruments, books, etc., may be greatly reduced or entirely eliminated by forest officers who are able to bring with them Forest Service Library books and equipment. Although students are not expected to purchase all of the books named below, Forest Officers who attend the school will find the following very useful.

Cary's: Manual for Northern Woodsmen.

Breed and Hosmer: Surveying, Vol. 1.

Barnes: Western Grazing Grounds and Forest Ranges.

U. S. Publications: Diseases of Cattle; Diseases of Horses.

Graves: Forest Mensuration.

National Forest Manual: (loose leaf, Regulations and Instructions.)

Hitchcock's: Text Book of Grasses.

Coulter and Nelson's: Botany.

Bryant's: Logging.

Kellogg's Lumber and Its Uses.

Graves: Principles of Handling Woodlands.

Instructions for Making Forest Surveys and Maps.

Instructions for the Scaling and Measurement of National Forest Timber.

Forest Service Scale Books for Log Scaling.

Brown's: Forest Products, Their Manufacture and Use.

The Forest Service Manual.
The Use Book.

If Forest Officers have drawing instruments in good condition, they should bring them with them. Officers should also, when possible, bring with them a compass and hand level, ranger note book, drawing pencils, and drawing ink.

Students from grazing Forests who desire to present local grazing problems for consideration or study should bring with them specimens of their range plants, preferably the complete plant with roots, in flower and seed stages; also such data as they may have available for the compilation of grazing working plans.

Students should come equipped with clothing for winter field trips.

Forest Officers who do not desire a place in the dormitory on the campus may often find it desirable to bring with them blankets and camping equipment for light housekeeping in case some may desire to "batch" in quarters about town.

Organization of the Ranger School

The work of the Ranger School has been carried on in close co-operation with and at times under the supervision of the Forest Service. A considerable part of the training is given by special lectures from the Forest Service, the Federal Bureau of Public Roads, the faculty of the State Agricultural College, State's officials, lumbermen, veterinary surgeons, and representatives of livestock associations; all of whom are experts in specialized lines of training. The members of the faculty of the School of Forestry have had long experience in the Forest Service either as Forest Engineers, Forest Supervisors, or Logging Engineers. The entire teaching force has combined technical training with a great deal of practical experience.

SCHOOL

Opportunities for Specialization.

Three distinct lines of specialization are offered in the Ranger School:

- Forest Rangers' Short Course
- Special Grazing Course
- Special Training in Lumbering, Logging, Sealing and Cruising.

Electives.

All courses offered in the Ranger School are elective, and a student may choose freely the course of training for which he has most need, provided previous experience, training, or education make it possible for him to carry the work with benefit to himself. The student will be carefully guided in his selection of electives that he may choose those subjects that will be of the greatest benefit to him after leaving school. The following schedule shows the courses offered in the Ranger School.

A credit unit of work represents one hour of lecture work and recitation or two to four hours of laboratory and field work per week for twelve weeks. Ordinarily ranger school students can carry from eighteen to twenty-two credit units of work, although it must be understood that this means the giving of the student's entire time for twelve weeks to his short course training. Classes are held six days of each week, some special lectures are given in the evening, and field trips may sometimes be taken on Sundays.

Opportunities For University Training.

Besides the courses specially offered for the Ranger School, work in all other departments of the University is open to the Ranger School student, provided he is prepared to benefit by the education and training which is offered. Courses in English and Mathematics offered to Ranger School students are given by the regular teachers in the departments of English and Mathematics of the University. Training in Botany, Biology, Zoology, Entomology, Geology, and other natural sciences, is given by the teachers in the various natural science departments of the University.

The period of twelve weeks during which the Ranger School is held is coin-

cident with the winter quarter of regular University work. The regular collegiate courses of the School of Forestry are open to Ranger School students who are qualified to carry the work successfully. If the student elects to do so, arrangements may be made also for him to carry work at this time in other vocational and professional schools and colleges of the University.

Ranger School Faculty

H. H. Swain, Ph.D., Acting Chancellor, University of Montana.

Charles H. Clapp, Ph.D. (Mass. Inst. Technology), President of the University.

Dorr Skeels, B.S. (Michigan Agricultural College), Dean of School of Forestry.

Thomas C. Spaulding, M.S. (University of Michigan), Professor of Forestry.

R. B. Prichard, M.S. (Yale University), Assistant Professor of Forestry.

F. G. Clark, B.S. (University of Michigan), Assistant Professor of Forestry.

Jerome H. Ramskill (Cornell, Yale University), Assistant Professor of Forestry.

Harold H. Lansing, B.S. (University of Montana), Instructor in Forestry.

Louis Dennie (University of Montana), Assistant Instructor in Forestry.

The list of lecturers and the subject of each follows:

- Fred Morell, forest administration;
- James H. Bonner, not yet announced;
- Elers Koch, fire protection;
- L. C. Stockdale, general forest administration;
- Fred Thieme, forest surveys;
- R. P. McLaughlin, state forestry;
- James W. Girard, scaling and cruising;
- J. W. Butler, veterinary science;
- Roscoe Haines, appraisals;
- A. D. Knowles, diseases of livestock;
- Glen Smith, grazing;
- P. J. O'Brien, law enforcement;
- E. O. Polleys, logging and lumbering;
- H. R. Flint, fire protection;
- R. B. Adafs, forestry improvements;
- L. C. Hurr, grazing administration;
- Herbert E. Smith, publicity;
- C. N. Arnett, range livestock.

The course covers a period of 12 weeks.



Forestry Club



By GEORGE DALLY, '22.

The Forestry Club, consisting of the faculty and most of the students of Forestry, is one of the largest and most energetic organizations on the campus. Each year finds it growing; each year finds it attaining greater accomplishments and because of its successes, each year finds it accepting greater responsibilities.

Being made up entirely of Foresters, we find the Forestry Club striving always to advance the ideals of Forestry, striving always to advance the men who are going into Forestry. Democratic and informal, the Forestry Club provides for all the students and faculty a chance to get together, to discuss the many subjects of interest, to meet and learn to know the big men of the Service who have pioneered in the Profession which we are to follow. Furthermore, the Forestry Club provides an active part for every member, wherein he can tackle some problem and carry it through, thus strengthening his own self-confidence and making him better able to tackle the bigger problems he meets when in the bigger game—Forestry.

Meeting in the "Old Shack" twice every month, the Club discusses plans for its various business transactions and then enjoys a lecture upon Forestry or some allied subject which is always given by a forestry expert. Following directly upon this comes the entertainment consisting of music, singing, boxing, wrestling, vaudeville skits, the male quartette or the stringed orchestra. Then the fellows form the chow line and tuck away the hot-dogs and coffee.

Being located in the heart of the National Forests and in the same city where many of the National Forest Officers are stationed the Club has always been able to obtain lecturers of the highest quality. We have the very good fortune of hearing discussed such subjects as Silviculture, Management, Grazing, "The Young Man, Forestry and the Forest Service," Planting on the National Forests, Experiments as Conducted in the Priest River Experiment Station and many similar subjects by men who are actually in the Profession and who are advancing these phases of the work.

The Foresters Ball.

Periodically during the three school quarters the club has informal dances exclusively for the club members. Then once each year, on the eve before Charter Day, comes the big Foresters ball which is enjoyed by the entire University. In popularity, in elaborate decorations, in unique features and in unstinted joy this Ball is unsurpassed by any other University activity.

The Indoor Meet.

During the winter quarter the Rangers and the Short Course men come in from the field and are welcomed by the Club. Then along in March, before they return to their stations the Club features an indoor Triangle-Track meet. Here the Regulars, the Rangers and the Specials-Vocationalists compete for honors in log sawing, packing, roping, three legged racing, tug-of-war, a cracker eating contest and many other events.

The Forestry Club Banquet.

In the Spring Quarter the men begin leaving for field work, but before they go the Club celebrates a get-together in the form of a banquet. And such a banquet! He who has not attended one of these banquets has indeed missed a rare treat. It's a big event, that banquet; a wonderful treat to tuck away the different courses, to hear the speeches, to take part in the songs, to hear the Dean (who acts as Toastmaster) tell his jokes with elaborated stuttering and then when the evening is over to stand with your Pals and Classmates and sing College Chums.

The I. A. F. C. Convention.

This year the Club is more active than ever. In former years the Club has accepted its responsibility as a member of the International Association of Forestry Clubs by sending a delegate to the conventions. This year the convention is held at Montana. The Club will entertain delegates from California, Oregon, Idaho, New York, Pennsylvania and other states. In conjunction with this convention the Club hopes to arrange a convention of Forest Service Officials and a convention of Lumbermen of the Inland Empire though at this time of going to press nothing definite can be stated concerning these last two conventions.

In conclusion the Club can justly claim



to be one of the finest organizations on the campus, to be a true FORESTRY Club whose entire membership is made up of Foresters and to be accepting in the fullest extent the work of advancing the ideals of Forestry.

OUR HUNTERS

A couple of years ago an Indian pitched his teepee on the University grounds close to the new Science hall. All day he and his squaw searched for the Bitter Root to augment his food supply. College students looked his way and grinned, then passed on to their classes. These same students little realized that they were seeing on their campus a sight that would draw crowds on most any other campus. What would happen at Yale or Princeton or Harvard if an Indian with his family were to saunter on to the campus and erect his teepee? Beyond doubt it would be sensational.

A couple of weeks ago Herb Schwan left the University a few hours before dawn to hunt deer. Twelve hours later he came trudging back staggering under the weight of a five point Blacktail buck. He had made his kill during the morning and had used the remainder of the day bringing his trophy in. The head is a beauty and Herb presented it to the club to decorate the new club room. About three days later Charlie MacDonald, not having any classes, went off to the same locality and came in at night with a hundred pound Blacktail spike. Hunting became more popular. Bitney went to Westfall Creek and in two days returned with a Blacktail. Centerwall, who accompanied Bitney, brought in at the same time a two hundred pound buck. Otto and Max Lindh chummed up with TerKuile and drifted off to the North Fork of Fish Creek. They drifted off Friday morning and drifted in Monday morning with a Blacktail, a Whitetail and a full grown bear. Some of the fellows saw the game, grinned and passed on to their classes. What would happen at Yale or Princeton or Harvard if the students could leave on Friday and return on Monday with their deer or bear?

A short time ago some of the students

took a couple of days for deer hunting, were successful, and upon their return told their classmates. Each and every hearer told another, till before long each and every hearer had worked up an appetite for venison. Then began the Campus Deer Hunt. Each chap in possession of deer meat was skillfully stalked; old-time friendships were recalled; bye-gones became bye-gones and "handshaking" was scientifically conducted. Each possessor of venison was informed of many virtues he had never before suspected in himself and rapidly and surely his deer meat became less and less; rapidly and surely there were more and more steaks and roasts finding their way to other fellows' tables. Some of the fellows saw the game, grinned and passed on to their classes. What would happen if there should be a deer hunt like that on the campus of Yale, Princeton or Harvard?

THE FOREST SCHOOL RIFLE CLUB

The Forest School Rifle Club was organized two years ago, and has steadily gone ahead in numbers and excellence. At present the membership is over fifty, including most of the faculty.

The club is affiliated with the National Rifle Association, through which rifles and ammunition are purchased at a great saving in cost. The initial consignment of Springfields, .22 Winchester muskets, ammunition and targets was received last spring.

Standard army equipment has been installed on the 1000-yard range at Fort Missoula, which the club has the privilege of using. During the winter indoor practice is held every Sunday with the .22's in the R. O. T. C. armory in Cook hall.

Meets are held with the Missoula Rifle Club, the R. O. T. C. and other organizations, and so far the club has been very successful in all competitions.

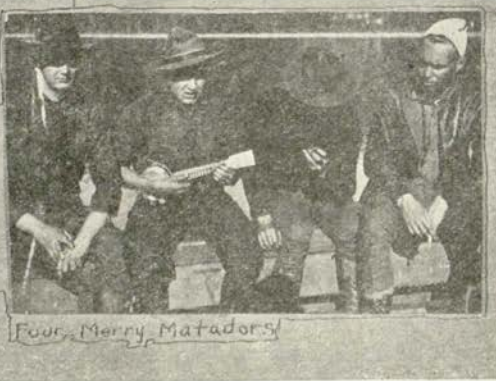
At this time a schedule of contests is being arranged with other clubs of the National Association, for the winter quarter. The first match will be a telegraphic one with the Oregon Agricultural College Foresters' Rifle Team.



The gang - going up on the Helena



Luke, Donny



Four Merry Matadors

Solving Detection Problems in the Winter

Part II.

MAKING THE SEEN AND UNSEEN AREA MAP

(T. C. Spaulding)

We discussed the probabilities of an analysis of your Lookout system in the last edition of the *Kaimin*. How many of you tried out the plans we talked about? How many plotted their profiles and then checked them out in the field last summer? Some did and found, as we predicted, that a few of the pet lookout system needed considerable "petting" before they were as efficient as the boss of the District hoped. One or two said, "well that's a job for the Supervisor's office." Not on your life. If you are handling a District why not handle it. If you intend to get a district some day you expect to run that district. You would raise Cain if the Supervisor told you he would handle your patrol force from the office. It's hardly more logical to expect him to do all your lookout checking for you. Perhaps he or the Fire Chief think you can't handle that very important part of your season's work and must do it for you. If that is the case how long will they continue to do **your** work for **you**. Just about as long as you would do your own work and that of one of your guards who couldn't measure up to his job. The fire game is advancing by leaps and bounds. So is the whole Service business all the way from Regulation A 1 to L 57. We have traveled a long way in the last dozen years. Some have—but a lot haven't. And just between us—if you could have taken a look with me at the orderly management of some of the European Forests you would realize we have a long, long way yet to go—realize we are not even well started in fire Protection, in Improvements (except telephones and there we have them beat) in Silviculture, in Regulation and in the technical capacity of the Forest Officer. If the Supervisor is doing part of your work for you **now** and continues to do so, where will he be in five years hence—? He won't be a Supervisor. That's manifest. And you won't be a District Ranger either. Now don't think I am inferring you two will have gone higher—. Not on this earth, at least. It's measure up to the job or the job will measure you. Let's get back to ours.

Districts One, Five and Six now require the compilation of those profiles and beyond that demand a "seen and unseen" area map made for each Lookout station. If you are in Districts Two, Three or Four you will find your District falling in line in the near future. If you are in one of the first three Districts, you either have yours compiled, are working on them or **haven't been asked**. If this was not required of you—why! A few judicious in-

quiries on your part might not be amiss. Assume though you plan on having yours completed by the time the demand comes or you desire to check up those prepared by the office—. Granting that—, then what is this "seen and unseen" area map? Probably it can best be defined by calling it a map upon which has been plotted those areas that can be seen and those areas that cannot be seen from a given lookout station or point. Its value lies:

1. In graphically showing the efficiency of a given station.
2. In determining the areas needing supplemental patrol.
3. As a check on the accuracy of the Lookout man's reports without constant plotting of profiles.
4. In assisting or preventing the establishment of two or more stations covering the same area

The making of the map is not at all difficult, but like most tasks it requires care and accuracy, if the results are sufficiently reliable for use. Get the topographic sheets (contour maps) covering your lookout system. Mark on them the location of the Stations. If you desire to plot each Station separately use only the sheets necessary to give you the maximum range of vision required. That may require only one topographic sheet. If two or more are necessary trim the edges and join the sheets together into one map. Fasten this to the drawing table or map board with thumb tacks. Now you will need the following:

- 1 Bottle black drawing ink.
- 1 Bottle red drawing ink.
- 1 Ruling or draftsman's pen.
- Cross section paper
- Pins.
- 1 Triangle.
- 1 Drawing pencil (4 H).
- 1 Protractor.
- 1 Red pencil.
- 1 Penholder and drawing pen (303).

All these may be obtained on requisition. Stick a needle or pin in the Lookout Station point on the map. This is not necessary, but it helps in the making of the profiles. Take your triangle and draw a light line from the Station to the furthest point you desire to map. Plot a profile along this line (if you are at all hazy about plotting profiles again read the first article of this series). After you have plotted the profile and are satisfied of the accuracy of your work, take your triangle and determine the limits of all the "unseen" areas on the profile. Mark these with pencil showing where each unseen area begins and ends. Now you are ready to plot your map.

Go back to the point of the profile where the first unseen area begins. You made a mark there you know. Using vertical lines on the cross section paper as guides carry this point to the upper edge of the profile paper just as you carried the elevations down when you plotted the profile itself. Make a heavy mark on the edge of the strip. Then carry the other end of this unseen area to the edge in the same way. Now take your red pencil and draw a line between the two marks. Do the same with all the "unseen" portions of the profile, being particularly careful to note the fact that they are "unseen" on the edge of the sheet. I suggested red because you will plot your unseen areas in red on the final map. Use any method of indication or color you desire, but be sure you mark them some way. If you don't you will have forgotten by the time you are ready to make the final map.

Now to plot the results on the fire map. If you have moved the profile put it back on the map in the same position it occupied when you made it. Mark the unseen areas of the profile **on** the fire map by drawing a light red line alongside the red "unseen" portions of the profile edge, being careful to see that the line on the map is neither longer nor shorter than the corresponding line on the profile. Take the profile strip away. You now have indicated on the map itself that portion of the territory you either can or cannot see in that direction. Plot another profile close to the first. Determine its unseen areas and transfer them to the map. Now join the corresponding ends of the two series of "unseen" lines by light pencil marks. Start at the Station. Take the nearest unseen point on the first profile and connect it to the corresponding unseen point on the second profile. The closer you have your profiles together the easier this will be—and the more accurate your work. Then do the same throughout the whole length of both profiles. Now go back and examine your work. If you have blindly connected up the ends without **reading** and **studying** the topography on the map the chances are the results you have obtained are far from accurate. Unseen areas are caused by ridges, peaks or shoulders. If your first unseen area was caused by a ridge you would know that the edge of that unseen area would coincide with that ridge or projections from it, and would not be a straight line drawn between the two points plotted on the map. Learn how to read the map, then use common sense and good judgment. Keep the profiles close together

until you are sure of your ability. Watch out for "islands" of seen or unseen areas between the profiles. If you are not certain make a short profile in the doubtful section.

The distance allowable between profiles varies with the conformation of the ground and the distance from the Station. With regular, well eroded hills and rounded valley or fairly flat country the angular distance between profiles may be 30° up to about five inches map distance from the station, beyond that 15 degrees. If the area is rough with irregular topography, sharp slopes and narrow tortuous valleys a maximum space of 15 degrees for the first four or five inches and 7½ degrees beyond that may be required with possibly a few short intermediate cross sections to cover doubtful boundaries or to establish the limit of a visibility area that does not extend from one cross section to another.

Save yourself all the labor you can. As an example, if a high ridge or peak obscures all the territory in a given direction don't waste time plotting behind it. Draw your unseen line directly on the map, make a section or two to determine the lateral boundaries—mark them, and let it go at that. The same condition is true if your map shows a ridge just about the height of the station. If there are no higher elevations beyond the ridge and no pronounced saddles, consider it as unseen. If there are saddles lower than the station, plot a section on both sides the bottom of the saddle and they will control the country beyond the gap.

After you have completed the circle around the station and have plotted in the boundaries of the unseen areas to your satisfaction outline the areas in black drawing ink. Don't make a heavy line. It merely spoils the appearance of your map. Then take your ruling pen and triangle and cross hatch the **unseen** area with the red drawing ink. Your map for that station is complete. Do it again for the other stations, preferably on the same map. Change the angle of the cross hatching for each station. When you plot in the unseen areas from the other stations you will undoubtedly find them overlapping the first. Just what you wanted! Complete your map just the same. Then study it. It shows you areas not seen from any station. Change your moving patrol to meet that contingency. Other areas are seen from several stations. That's good. You know a fire reported on those areas can be intersected from two or three lookout stations. Again an area within the nominal territory of one lookout that can't be seen by him can be observed by another station. That shows you the responsible man for next fire season. Why not have the seen and unseen areas plotted

on your fire map boards? You will find them an immense help to the lookout man, for if he sees a suspicious sign behind a ridge he can look at his map, discover at a glance that Baldy and Black Mountain can both see that territory; call them up and find out about it. Or if it's in a place his map shows as unseen from all stations, he can let you know about it and you don't waste a lot of good time trying to find if someone or the other of the lookouts can't see something. You found that out last winter and made your plans accordingly.

Now to answer that question—how long does it take to complete a map around a station? If you don't take in too much distance—say more than twelve miles on a map scaling about one-half inch to the mile—you can finish it completely in from eight to twelve hours; half that time if the country is easy and you have practiced a while. In other words, finish up your district in a week of cold weather.

THE BEAVER.

During my twenty-five years' experience in the woods of Michigan and my twelve years' experience with the Forest Service in Montana, I have made a careful study of the beaver and am sending along a few notes to you who may be interested.

Well, to begin with, the beaver is a water loving animal, has short front legs about three inches long, has webbed hind feet, a flat, scaly, paddle-shaped tail about sixteen inches long and about six inches wide and he will grow to be as large as eighty pounds. He has a very fine fur of a cinnamon brown color except in the eastern states where he is **always coal black**.

His food consists entirely of bark and he shows a decided preference for willow, aspen, cottonwood, birch, ash and tag-alder. Now the beaver cannot fall a tree in any direction he chooses. He simply picks out those trees which are leaning toward the water. These he keeps cutting around and around until it falls. Nor does he do the job all at one time. He will cut for awhile and then take off to the stream for some play with his mates. After awhile he will come back and gnaw away some more. A tree ten or twelve inches in diameter will keep him busy for about a week. When these trees and bushes are cut he lugs them to the stream above the dam by piling one on top of the other, sinks them to the bottom. Most folks cuss the beaver dam as a nuisance but they should not for this is his only method of canning his food supply. Anyhow, he works away all summer getting his pantry filled and when he has it fully stocked he has built a dam over which a

man may safely ride horseback. Then too, this dam is a protection for his home. House beaver run a tunnel from the floor of the pond up to their feeding room which is about five or six feet square. Into this room the beaver will bring his stick, peel the bark off for his food and then take it out again. About eight inches above this is another room which he uses for his sleeping quarters. Here he provides himself with a soft grass bed and keeps the room scrupulously clean and comfortable. Off to the right is the airhole running up to the surface of the ground where it cannot be detected because of his camouflage of sticks and debris.

The beaver has a peculiar habit about his home that is foreign to all other animals. Along about the latter part of April or the early part of May every respectable married family of beavers receives from the stork from two to four pound kittens. During the summer the parents play with these kittens, giving them rides through the water by carrying them on their tails and also training them in the work of gathering food. In the early fall the old beavers give the young ones their blessings and the home and will go off somewhere, usually up stream and build a new house, generally using the bank for their home until the new house is constructed. During the winter when the pond is frozen over and the beaver cannot come to the surface, they meet at the dam, draw their ration of sticks and go back to their own homes to enjoy them.

The beaver is a cheerful fellow who minds his own business and grows fat. His fat brings him several enemies, the worst ones being the otter, wolf and man. The wolf and man are the most dangerous. The wolf lies in the brush and waits till the beaver come out on the bank but man is more clever. Men will make a break in the dam and then place traps under the water in these breaks. Falling water is a matter of big concern to the beaver and he will at once set about repairing the break. Once caught he is held securely under the water and will drown in about fifteen minutes. When caught by the front foot he will almost always twist it off which is not difficult to do as he is so heavy. This loss does not hinder him much as it will heal over in about a week. The hind legs are much stronger and when caught in a trap will not be twisted off.

Most men after skinning out the catch will throw the carcass away. This is ridiculous as the beaver is excellent food, tasting about the same as a goose. Anyway, I have found out that the beaver is not just a "dam nuisance" but a jolly fellow whose industry deserves all the protection we can give him. Why not protect him?

Ranger A. B. Hodgins.

A Tiger Hunt in Burma

(By J. H. Ramskill)

The man in the machan* carefully wiped the horde of mosquitoes from his face and neck and silently shifted his cramped legs to a new position. By wiggling his toes he could partially relieve the numbness of his feet, but deciding that he could not risk the almost imperceptible creaking of his leather shoes, he settled down to bear his discomfort in stoic silence. The darkness of the warm, moonless, tropic night enfolded him as in a blanket, so that the ground, scarce twenty feet below, and the carcass of the cow, killed the day before by the tiger, were invisible. Even the stars were shut out by the dense leafy canopy overhead. The whispering leaves of a bamboo frond marked the passing of an errant breeze, no breath of which penetrated to the steaming dankness below. Suspended in the air, as it were, the man's whole being became concentrated in his ears. Far away across the river to the left came the faint bark of a village dog. From the hill to the right the short, staccato cough of a barking-deer punctuated the silence. A hercules beetle zoomed by in erratic flight only to come to grief with a sudden plop, against a tree trunk. Little rustlings, chewing sounds and an occasional muffled snarl, in the vicinity of the carcass below, marked the presence of those rarely seen but numerous little denizens of the jungle, the leopard cats, making the most of the time before the appearance of the lord of the jungle put a stop to their feast.

Presently, the man became conscious that these jungle noises had ceased. The barking-deer was silent. The leopard-cats had concluded their snarling feast, and the profundity of the silence almost hurt. With tautened nerves and pounding pulse he suddenly realized that "Stripes" had come, although not a sound had betrayed his presence. For a moment the drumming in his ears seemed deafening. As this passed his every faculty became submerged in listening. Would the killer feed tonight, or would he become suspicious, and postpone his meal. Still no sound! Ah! At last! The faint snap of a twig not more than a hundred feet behind the man relieved the tension. He was coming in! Now the faint pad, pad, of his huge pugs could be heard, with an occasional rustle of a dry bamboo leaf. He was working around the base of the hill to the right. Suddenly a sigh-like, air-testing sniff made the man hold his breath. Would he get the man scent? An eternity of several minutes passed without a sound. Had he gone? Damn that shikari* anyhow! The bungling pig-eater should be sacked tomorrow for building the machan in such a rotten place. But—pad, pad,—

No! "Stripes" was not only not gone, but he was almost directly under the machan, NOT TWENTY FEET AWAY! As silent and rigid as a part of the tree in which his machan was perched, the man waited, hardly breathing. Another eternity of minutes passed as the killer stalked around his kill, sniffing the ground and expressing displeasure in low throaty rumbles, probably at the scent of the leopard-cats, which had feasted so plentifully on his bounty.

Presently, when his nerves were almost beginning to rebel at the strain, that soul-satisfying crunch of powerful teeth on meat and bone, announced that the time for action had nearly come. But wait—let his senses become somewhat dulled by food before risking the shot—give him time to get outside of at least a part of his meal. Slowly, an inch at a time, the man brought his gun, the good old trusty double-barrel, into position. How thankful he was now that it had been cocked and ready these last three hours. Feeling tenderly of the switch to the electric torch fastened beneath the barrels of the gun, he carefully aimed directly at the spot from which that continuous sound of chewing and crunching came. NOW WAS THE TIME! Down pressed the finger on the switch, and there leaped into view below, in a small brilliant circle, the dead cow, and a long yellow, black striped body, surmounted by a massive head, the bloody jaws of which were wide open in a snarl. But the man was not interested in such details, his attention being focused on finding, and drawing a bead on that spot behind the shoulder, the hitting of which meant the success or failure of the hunt. For probably five seconds, the tiger stood motionless—when with a double roar the gun spoke—and all was darkness again, the recoil having released the light switch. Before the man could close it again, and flood the scene with light, there was a cough and a grunt and "Stripes" left that place with great bounding leaps, the crash of his course through the brush being easily followed for a hundred yards or more.

What was the result? Was he hit? It seemed almost impossible to miss at that distance. If so, was he mortally wounded? It was doubtful that he could carry those two loads of lethal ball very far, if hit in a vital spot. Try as he would, it was impossible for the man to discover blood stains, from his eyrie perch. So he settled himself as comfortably as possible to await the appearance of the hikari with the lantern, since wandering about in the jungle, with a wounded tiger not far away, was not only dangerous, but the finding of the trail back to camp,

a doubtful matter in the pitchy blackness. Sleep was of course impossible, principally because nerves, so recently highly strung, would not relax immediately, and the machan was not only too uncomfortable, but too insecurely built to run the risk, while the mosquitoes had never relaxed their attentions for a moment. Presently the little jungle creatures returned. The leopard-cats resumed their feast on the carcass, and the man amused himself by occasionally flashing his torch on the kill and watching them scuttle for cover. As time passed, the chill of night began to make itself felt, and long before the feeble twinkling light of the shikari's lantern appeared, the man's teeth were rattling in the grip of a malaria chill, the severity of which was but slightly affected by the contents of his thermos bottle.

An examination of the ground revealed such quantities of blood, and the trail taken by the tiger so broad, that the man was all for taking it up immediately. But the shikari showed his better judgment by objecting, with a "Nay, Sahib, he will either be dead or very stiff and sore in the morning." So the long tiresome tramp back to camp was made.

Returning in the early morning the trail was taken up afresh, with the shikari in the lead, ferretting out the difficult parts. But there were not many of these, for as progress was made, it became increasingly evident that the beast had been hard hit; the blood trail was broad and plain. At the spot where he had stopped first, not two hundred yards from the kill, was a pool of clotted blood of large size. The excitement of the shikari had been growing steadily. He now broke out with a "Not far now, Sahib, and a big one too." About a quarter of a mile from the kill the trail led into a thicket of grass, ten to twelve feet in height, so dense that eyes could not penetrate it more than a few feet. Here the shikari hesitated a moment and, indicating that he would make a circuit to cut the trail beyond, cautioned the man to watch for a shot, should the tiger double back on his trail. When he returned the shikari's excitement had increased. "He is there, Sahib, most certainly dead," pointing to the thicket. Presently he shinned up a nearby tree and crawling out on a limb extending over the grass, carefully examined the ground beneath. His excited, "The flies, Sahib," brought to the man's consciousness, a low humming sound, which he had not before noticed. Such a noise could mean but one thing, swarms of flies. And the flies indicated with certainty the presence of a dead animal. So the man plunged into the grass, to find within twenty feet of

(Continued on Page 13)

The Forest Engineer

During the last decade the education and training qualifying a man as a Forest Engineer have been so greatly changed and enlarged that it is almost impossible to compare the logging superintendent of a few years ago with the logging engineer of today. The old-timer reached the height of his profession by hard knocks, hard fights, and hard years of actual logging in timber that was easily accessible and low in price. He had to be a strong man—a fighting man—to properly enforce the authority given by his position; a thing which in the old days was very difficult.

His timber was plentiful and the problem of operation very simple because if the physical conditions of the ground were not to his liking he let the timber stand and cut somewhere else. The question of labor gave him little concern. There were no troublesome laws and regulations in his way. All he actually had to know was to run a logging road on the down grade from his timber to the river and keep his crews in action all of the time.

However, as the timber became more and more inaccessible the cost of operation increased. To keep the profits up it was necessary to log more cheaply or raise the price of lumber. Stumpage prices began to climb. Forestry regulations crept in despite the strenuous efforts on the part of many. Slowly but surely out of the tangled mass the art or profession of logging became evolved until forest engineering became a fact, a science, a reality, recognized and respected.

It is pitifully amusing to hear the statement that it is unnecessarily superfluous for a man to have a technical education to be a good forest engineer. Without the advantage of such a training he is sadly handicapped. He will find obstacles and problems rising before him daily that he cannot surmount or solve unless he has the aid of a technically trained man even if he has spent his entire life in the timber. On the other hand the technical man must have the advantage of having seen his theory put into practice before he really becomes proficient. Give him a few years in the bush and even if he has not learned to solve all his problems by having done so before he can resort to his knowledge of engineering principles by which, if he follows the laws, he generally wins out.

The forest engineer of today must be a man physically. He must be endowed with what is known as common sense. He must be a civil engineer for if called upon to construct a railroad, make a topographical survey or build a dam or bridge, it is necessary that he be able to do so. Cold figures do not lie,—if used correctly, and they have the power of convincing in a

short time where a week of discussion would fail. In short it is necessary for him to be proficient in all matters pertaining to advantageous exploitation of timber.

In addition to being a successful harvester or exploiter of his forest crop he must at the same time understand conserving it for future use. As this future does not necessarily include him or his descendants it is often somewhat difficult for him to grasp this view. However, it simply means exercising the virtue of unselfishness. A knowledge of silviculture and forest management are necessary to cope with this situation properly, and because we have as yet not had sufficient time in which to study these branches it is often very difficult to make a decision quickly.

Arduous as it may seem to satisfactorily fuse the sciences of exploitation and conservation it is by no means impossible. Through the process of elimination a result may be obtained, which, if put into practice will generally serve.

Forest students when entering upon their careers will find that the road is not smooth. It means constant study and faithful application, for opinions and theories are changing so often that it is hard to keep up. Forestry in this country is still in its infancy and very slowly being moulded into a tangible comprehensive state. Every problem may be solved correctly in a dozen different ways and success lies in being able to choose the most advantageous. The old-timers, who have been through so much, are apt to ridicule the newcomers' theories and laugh at their eagerness, but it must not be taken to heart for there is only goodwill in the feelings of those whose places they will take. They must be tactful and diplomatic and if called upon to render a decision, study the situation, make it, and then stand by it.

To these new men I want to say, that you cannot be a forest or logging engineer through your books alone. You must know your trees and live with them first. When you have learned in the forest and combined the result of your observation with your technical knowledge you will be in a few years where many have striven half a century to be. Your chance for both is there. Take it, use it, and succeed!

—Helmuth Bey, '17.

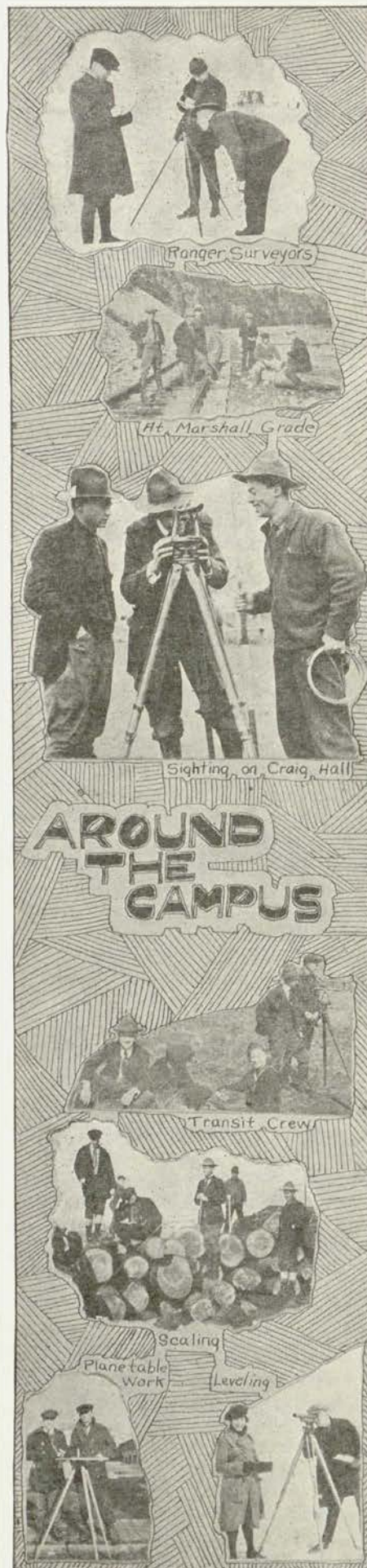
A TIGER HUNT

(Continued from page 12)

the edge of the thicket, the shikari bending over the dead body of "Stripes," while the air about was thick with buzzing blue-bottle flies.

*A Hindustani word applied to a staging built in a tree as a set for a hunter.

*A native hunter.



A Survey of the Student Employment Situation at the State University

The question, "What are the opportunities for earning my way through college," appears so often in letters of inquiry addressed to the various departments of the University, that a special survey has been undertaken to secure information on the subject. Letters from fathers, mothers, school principals, and others interested in seeing some boy or girl continue his or her education beyond the high school are received daily in the registrar's office, and the greater percentage request information regarding work.

Montana's state university is known as a democratic institution, the majority of the students being independent on their own efforts to earn at least a portion of their expenses. The Chamber of Commerce and the business men of Missoula assist many students to find work during the year; for a city of 20,000 people Missoula probably supports more college students than any other of its size in the country.

One frequently hears of the large number of students who are earning their way through this institution, of the large number who are able to secure work, and of the varieties of work that are available for students. However, no definite information along this line has ever before been secured. It was for these various reasons that the survey of which this is a report was undertaken.

For boys and girls seeking work after school hours four agencies co-operate for their benefit:

Student Employment Secretary,
The Missoula Chamber of Commerce,
The Rotary and Kiwanis clubs,
The University Club.

The University authorities encourage the employment of students wherever possible and set an example to the citizens of Missoula by employing students as janitors, night watchmen, stenographers, gardeners, and the like about the campus.

Departments and Schools of the University employ students as instructors, laboratory assistants, etc. Upper classmen majoring in the departments are usually preferred for these positions. The rate of pay varies from \$10 to \$50 per month, depending on the previous training and skill required in the work.

As much of the general maintenance and repair work as it is possible for students to do, working spare time, is turned over to them. Student carpenters and painters are in constant demand.

The employment bureaus specialize in obtaining work for students around homes; there is a steady demand for men to take care of furnaces and split wood during the winter months, and to mow

lawns and take care of gradens in the spring and fall. The rate of pay for tending a furnace varies from five to fifteen dollars a month.

Last year several hundred jobs were taken by students. Many of these were of a temporary nature, but many led into permanent positions. Quite often students could not be secured to fill the positions that were offered. There is certain to be some kind of employment for those who are willing to work.

During this year H. H. Badgley will have charge of the employment bureau. No charge will be made for any services. Students desiring employment should write Mr. Badgley or call at the office of the employment secretary soon after they arrive at the University.

One fact should be made clear, however; the University authorities do not guarantee employment to students. Every effort is made to find opportunities, but the actual results rest entirely with the student. If he is earnest, and aggressive and willing to get out and hustle for work on his own account he will succeed, but a student who sits back and depends on someone else to rustle a job for him is apt to fail, as would a man in business under similar conditions.

The form of letter that is written to students applying for work is usually as follows:

"As to your ability to become self sup-

porting while in attendance at the University of Montana, I believe this will depend principally upon your own efforts. Usually students have some difficulty in finding employment during the first few months of their attendance at the University, though some odd jobs may be picked up which will help defray expenses. A great many students in the University are actually self-supporting and able to defray all expenses, but these are usually men and women who have been in the University more than one year. We should not want to encourage you to come to the University with the idea that you will be able to entirely defray expenses by working during your first year's attendance. However, if you do come with this intention, we shall do all we can to assist you to find employment, but your success in doing so will depend upon your ability and energy in hustling for work."

Summer Work.

During summer vacations, students readily find profitable employment in many occupations. The forest service in particular offers unusual opportunities for those who are studying that subject and generally employs every student of forestry who desires work in the woods. The local office of the Bureau of Public Roads and Rural Engineering has work for students on surveying and construction crews.

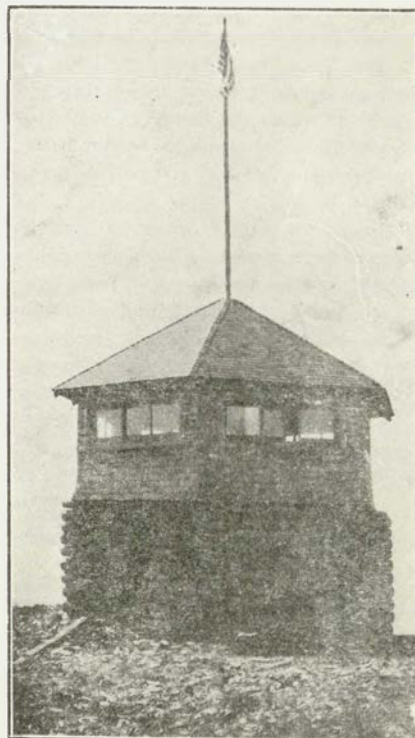
Many of our students save \$150 to \$200 from their summer work making it possible, with their earnings during the winter, to make their entire expenses during their four years of college training.

Students earning their way through school participate in every branch of college activities, athletics, debate, fraternity and social gatherings. As one self supporting student recently remarked:

"We do not look down on a man at Montana just because he has to work his way through college. As for my own experience, the first year I came to school I had the savings of the preceding summer in my pocket. I waited table and did odd jobs outside of school hours which paid my room rent, laundry and incidentals. I worked during the Christmas holidays and finished my first year \$50 to the bad.

"I had a better knowledge of how to go about my work the second year and with the help of janitor work and a newspaper job managed to break about even.

"It would be my advice that a student should come here equipped with sufficient clothes for the year, enough cash to pay registration fees and board for the



UNIVERSITY LOOKOUT STATION

first few months, and if he has the right stuff in him he will come through with flying colors.

"Even though I have had to earn all my expenses, I have had my share of the social life and plenty of recreation. I haven't been able to buy many cut-flowers or ride in taxi cabs to dances, but I have mingled at least on the edge of the social whirl."

The Business Manager of the University, when asked for his opinion of the opportunities for students to find employment at this institution as compared with other universities with which he had been connected, said:

"My first advice to any student would be that he should have a little money ahead to start on before entering the University. The exact amount that he should have is difficult to ascertain, but he should at least have enough to pay his University fees and living expenses for a few months until he will be able to secure employment.

"While there is enough employment to be had, it is not every student who is able to find work the first thing upon entering the University.

"The possibilities of earning part of student expenses are as good here, if not better, than in many of the institutions of the country. From the experience which I have had in other institutions, the students who must work, no matter what kind of honorable work he is doing, is treated better here than elsewhere. So far as I have been able to see, no social discriminations are made between those students who are paying their expenses by their own efforts and those who are paying money.

"I also think that the opportunities for work are better here because in most larger institutions there is very little to be done by students in the way of stenography, since most of the departments are supplied with regular stenographers. The same thing is true with regard to janitor work, for such work is done by regularly employed men and not by students. In eastern universities practically the only opportunity for students to secure employment in connection with the institutions is in waiting table or doing other work at the dormitories. Some few juniors and seniors are employed as laboratory assistants, but as there are a great number of graduate students, most places such as laboratory assistants are given to them."

The committee received many interesting letters from students who had been assisted in securing employment. Among others is one from William Strong, then a student in the School of Forestry.

"I shipped my clothes to Missoula and left Boston with just \$5 in my pocket on June 12th. I worked through the harvest fields of Illinois, Missouri, Kansas, Okla-

homa, and Wyoming and arrived in Missoula with \$65 cash.

"I had no trouble in earning all of my expenses during the year, though my employment varied from work with pick and shovel to waiting table. My total income for the year was \$495; my expenses were above the average as immediately after arriving in Missoula I was taken down with typhoid fever, which kept me in the hospital for five weeks. I also had a life insurance premium fall due during the year. I used my last five dollars in the spring to pay my railroad fare to the St. Joe forest, where I was assigned work for the summer by the U. S. Forest Service.

"Any boy that is willing to work, can earn his way through the University."

The dean of women at the State University, gathered statistics regarding the employment of women students, for the committee.

"More than \$9,000 in money or its equivalent was earned by young women attending the University in one year," she reported. Although the amount may seem large it is only by a strong determination and actual need that the 50 young women from whose earnings in money and school credits the statistics were gathered, were able to help themselves. For the girl who must earn her way through school, good health is an absolute necessity and even with that it is far better for the women students to come supplied with sufficient means in order to be able to devote their entire time to study.

Of any one occupation practiced by the young women, stenographic work seemed most popular. Eleven girls who followed this line earned a total of \$1,770 and an average of 29½ credits each for the year.

The miscellaneous work of caring for children, acting as accompanists, giving dancing lessons, setting tables, and the like netted 13 girls \$1,139, with 24 credits each earned at the end of the year.

Three young women who did library work earned \$700 during the year and an average of 21 credits each.

Tutoring brought five university women, carrying an average of 15 hours' work a semester \$420.

Counting the room and board which eighteen women students worked for, in terms of money, it was estimated that this group had earned \$4,050 for the school year and 31 credits each. Contrary to the general belief the school standing of these young women is among the highest, and in addition, many of them were looked upon as being the leaders in various forms of school activities.

Expenses.

Prospective students ask regarding the expenses of the normal three-quarters year at the University:

Beginning in September, 1923, a tuition fee of \$25 per quarter will be charged of **non-residents of Montana** who register for

the first time in the University after September 1, 1923.

No tuition fees are required of Montana students in the State University. A matriculation fee of \$10.00 is charged each year to resident and non-resident students alike, and an incidental fee of \$12.00 is collected once each year to pay for membership in the organizations of the Associated Students of the University of Montana. This membership admits you to all games, athletic contests, dances, special lectures, and other activities of the student organization.

The cost to the average student attending the University of Montana for one year is about as follows:

Registration fee	\$ 10.00	\$ 10.00
Incidental (athletic)	12.00	12.00
Deposits required (library, laboratory, etc.)	5.00 to	10.00
Books, etc.	10.00 to	20.00
Board	210.00 to	240.00
Room	37.50 to	100.00
Expenses.....	\$284.50 to \$392.00	

Expenses for other incidentals, entertainment, laundry, etc., would vary, of course, depending upon the personal tastes and resources of the individual.

Board may be had on the campus for \$25.00 per month. Single meals may be had at the dormitories or in the campus cafeteria. Room expenses vary from \$10.00 per quarter in the ward rooms of Simpkins Hall Barracks to \$10.00 per month in the dormitories. Rooms may be had in Missoula with private families for from \$5.00 to \$20.00 per month. Room and board may be had with private families for from \$35.00 to \$50.00 per month.

General University Loan Funds.

The Montana Bankers' Association and the alumni of the University of Nebraska, residing in Montana, have each established loan funds which are available for students in the junior and senior classes of any of the institutions of the University of Montana, who are unable to continue their studies without financial aid and are satisfactorily recommended as to character and scholarship by the dean or director or the head of the department in which the applicant's major work is done. The loan to any one student is limited to two hundred dollars during his course, and not more than one hundred dollars in any one year. Loans must be repaid within one year from the time of borrowing, or in exceptional cases, one year after graduation. Loans bear two per cent interest.

Application blanks and a statement of detailed regulations governing these loans may be obtained from the Business Manager.

Information regarding a number of scholarships will be found in the University catalog.

Around the Campfire



THE LARIAT OF NOMORE KAYENNE.

They say the tourist and the hunter keep
The range where once we fed the woolly
sheep,
And Blowhard, that great angler, tramps
the grass
And tells of catches that are hard to beat.

A sound of curses underneath a bough,
A punctured tire, a busted spring, and—
Wow!

A tourist howling in the wilderness,
O, wilderness were simply Hell enow.

And ah! that sheep should ever eat the
rose;

The sheep that's insult to the tourist's
nose.

We'll throw them out without a single
pang,

And wear a substitute for woolen clothes.

Each sheep a thousand posies eats, you
say,

And leaves a stench which drives the
dudes away—

But still in woolen blankets you repose
And throw a fit at prices you must pay.

And when the dudes have cornered all the
grass,

And roads are paved through every moun-
tain pass,

Please take me to some nice secluded
spot—

Then yank me hence, and please use
lethal gas.

J. V. Horton, D-6.

THE PACK RAT

The pack rat is a social cuss who calls
around at night,
To cheer the forest ranger bold and thrill
him with delight.

No cabin is so lonely, quite hid in the
mystic woods,
But there the pack rats rendezvous, and
mix the ranger's goods.

The pack rat's fond of raisins sweet, and
prunes he thinks are nice,
But beans he scatters on the floor, with
coffee, spuds, and rice.

The flour and sugar he mixes up with
spoons and forks and knives,
He chews the strings of cruising shoes,
on kindling wood he thrives.

The pack rat's fond of music sweet. He's
never known to fail,
Whene'er he has a chance, to drum a
stovepipe with his tail.

He happens in when all is still and quiet
in the night,
To crash the tinware to the floor is his
supreme delight.

And when the ranger starts from sleep,
and sets a trap with care,
The way the pack rats don't get in fills
him with dark despair.

The pack rat runs around the trap and
deadfalls make him smile.

When someone passes him a boot, he
dodges it a mile.

But when the ranger's wrath is roused,
to prove he's not a dub,
He slays the pesky pack rat with a flash-
light and a club.

Now if you live a lonely life where plea-
sures rarely come,
Cheer up, take courage, go and get a pack
rat for your home.

A. G. Jackson "Six Twenty-Six."

RANGER ACTIVITY STANDARDS.

The Standard of Efficiency turned in his
standard chair

And called to his stenographer, and stand-
ard was her hair;

"Please write the Average Ranger, and
say that he must go

And leave his wife and Standard kids and
wander to and fro."

(Chorus)

For the Average Ranger must-O

Do time from home or dust-O,

Scientific locomotion

Standardizing every notion,

Ninety-nine or bust-O.

The ranger packs his standard plans and
ambles out to roam,

With a standard watch and his schedule
bright, nobody finds him home;

For twenty-five days he must take air, the
public's wish be damned,

Only five days left to write reports on
how his work got jammed.

(Chorus)

Initiative shall rust-O

On standards he must trust-O,

For scientific locomotion

Standardizing every notion

Carries on with crust-O.

(Tune—"Christopher Columbo")

"Six Twenty-Six."

EFFICIENCY BILL

Come all you Rangers who want to hear
A story told, of a brave career;
Efficiency Bill was this brother's name,
On Uncle Sam's Forests, boys, he won his
fame.

He worked out a schedule numbered A
B C,

Which he followed up to the letter T,
It proved so effective that he hit the ball
And the district duties didn't bother him
at all.

It made short shift of his timber sales,
It got a hurry-up on his telephone and
trails,

His grazing and improvements were so
easy to take

Each evening after supper he went fish-
ing in the lake.

He took the boss once 'round the schedule
route

And said, "If you gotta kick now's your
time to shoot!"

The boss could only mutter, when aroused
from his amaze,

"I've never seen the likes, Bill, in all my
Super days."

"You see how it worketh," said Billy with
a shout,

"Just as she's hangin' or turn her inside
out

And the only thing that causes her to
even bat an ear

Is a visit from the Forester or Telephone
Engineer."

The Super said, "Bill, this makes me feel
good,

If I'd six more like you this job'd be a
'pud'."

Then he fell in a faint and whispered ere
he died,

"Inspection was too easy, I couldn't stand
the ride."

Now the moral, boys—I hope you take the
tip,

Get this schedule pronto or pull one off
your hip,

For if we don't get busy ere our Super
hears that tale

We'll all be long-eared boomers down that
long, long trail.

Holy Cross—D-2.

Deerslaying Parson Captured by Schoolma'am and Dog.—Albuquerque, N. M., January, 1920: A minister of the gospel, a school teacher, a girl pupil, a pet dog, a dead deer, a United States forest ranger, and a justice of the peace were the chief actors in a game violation case recently successfully prosecuted on the Coronado National Forest in Southern Arizona, according to a report just received by the District Forester. The curtain fell when the minister pleaded guilty to killing a deer out of season and was fined fifty dollars.—Intermountain District.

THIS STUDY COURSE

DEAR RANGER,

ABOUT THIS Study Course
 THAT THEY sent out to you
 AND CALLED it PEDO.
 NOW YOU may have thought
 THAT IT was
 SOME JOB to have to read
 ALL THE Manuals
 THROUGH ABOUT twice
 AND THEN guess besides
 WHAT THE questions
 WERE ALL about,
 AND THEN lie awake
 NIGHTS TRYING to figure out
 WHAT THESE
 D. O. BIRDS wanted anyhow.
 BUT LET me tell
 YOU ONE thing,
 AND THAT is that
 THE JOKE isn't entirely
 ON YOU, it's one of these
 D. O. BIRDS who
 DOPED OUT all these questions
 AND NOW have to grade all
 THOSE PAPERS you fellows sent in,
 AND THERE are only
 ABOUT TWO thousand papers,
 AND IT'S some job.
 AND THESE same
 EXAMINERS have also
 TO READ the dear
 OLD MANUALS through,
 AND SOMETIMES twice,
 TO FIND The correct
 ANSWERS TO their own questions.
 AND THESE examiners
 ARE NOW going around
 THE OFFICE with
 VERY LONG faces
 AND VERY sad looks,
 AND BLEARY eyes which
 SHOW THAT they too
 HAVE LOST some sleep
 BUT LEARNED a lot
 ABOUT THESE old Manuals,
 WHICH THEY never knew before.
 SO IT looks to me
 THAT THE horse is on them,
 OR AT least that it's
 FIFTY-FIFTY.
 I THANK YOU.

"Six Twenty-Six."

THE HOBO ENGINEER.

I sometimes think I'll quit this life
 And settle down and get a wife, by Jove.
 I sometimes think that I would like
 To have some place I could call home,
 And settle down, no more to roam.
 But hell! That very thing I've tried
 And found myself dissatisfied.
 I've often tried to settle down
 To office work and live in town,
 And act like civilized folks do;
 Take in the shows, and dances, too.
 But I'd no more'n get a start
 'Til wanderlust'd seize my heart,
 And in my night dreams I would see
 The "Great White Silence" calling me.
 And at the summons I'd not fail
 To bunch it all and hit the trail.
 Back to the solitudes once more,
 With transit, level, rod and chain,
 To lead the simple life again,
 To do the same things o'er and o'er.
 Day by day, week by week,
 Sometimes we go to town to seek
 A little fun, and well—
 Sometimes I guess we raised a little hell,
 We didn't mean to, but then you see,
 When we've been out two months, or
 three,
 Lead by grade lines on a chase
 Where mankind seems so out of place—
 Well, when we hit the "Great White Way"
 Our joyful spirits get full sway;
 We try to crowd into one night.
 The joys of many months—ain't right?
 Well, maybe not; 'tis not for me
 To shape man's final destiny.
 But when our last survey is done,
 And tied up to the "Great Unknown,"
 And to the chief the record's brought
 Of lonely work with danger fraught,
 Of hardships cheerfully endured
 That best results might be secured—
 Against all this our little sprees
 Will seem as ponds compared to seas.
 And the angels surely will decide
 That there's a balance on the credit side,
 And God, I hope, will drop a tear.
 And bless the "Hobo Engineer."

The Timberman.

RANGER BILL'S WIFE SAYS

"You can clean a barn with a pitchfork,
 but it's hard to sweep a straw from a
 carpet with a broom. You can't do every-
 thing one way, some things you have to
 just naturally pick up and carry out."
 "Some women may be vines, but up in
 Bill's district the woods are full of old
 dead trees, no good even for firewood, and
 their limbs look like the legs of a lot of
 men I've seen on the beach down by the
 lake."
 "Bill's going around these days in a
 deep, dark brown study. I thought at
 first it was the Manual Review that had
 his goat, or that maybe he was doping out
 something for the Bulletin, till yesterday

I caught him in the barn, swinging on a
 rope from the hay loft down to the ground,
 like a kid that's seen his first circus. He
 said he's trying to think up stunts for a
 movie scenario! Lands sakes, I wouldn't
 have to THINK up any, my trouble would
 be to get them all FILMED. Only I don't
 think Bill would be exactly crazy about
 them, he's the villain in all of 'em."

THE WOODPECKER AGAIN

There are drones and slackers and idlers
 galore
 And when you say DIG, they seem to get
 sore;
 Their reports are all punk and hard to
 make out,
 They only get busy when the boss is
 about.

There are others, however, who are much
 on the go
 But they work in a way that makes little
 show,
 The pay check's no bigger, which might
 seem a shame;
 They see their misfortune, but DIG just
 the same.

Let's consider conditions, is one to blame,
 If he digs all his days without promotion
 or fame,
 If he digs with his hands, seems about
 all he's got,
 Tho he digs till the day he might better
 be shot.

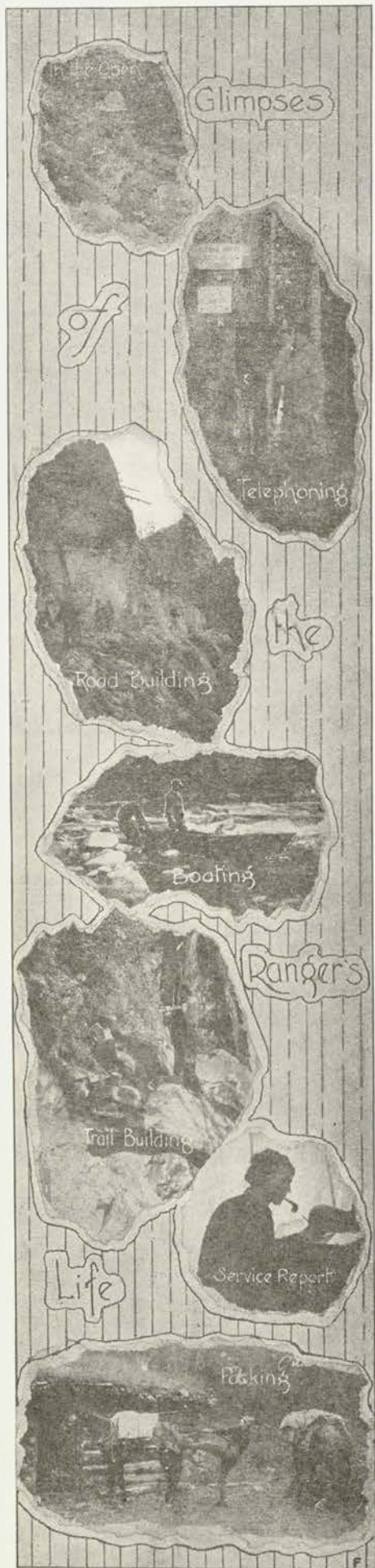
He's short on material, or something of
 the kind,
 He's born without matter that developed
 the mind.
 Is he to be discarded and hauled to the
 dump
 When his frame becomes useless from
 bump after bump?

It seems that the fellow who has worn
 out with time,
 Who failed to be blessed with a specially
 topped spine,
 Should have a few flowers, at least when
 he's dead,
 Tho he DIGGED with his hands instead
 of his head.

Let's boil down this matter, the wood-
 pecker stuff.
 And see where we'd get to if all were good
 enough,
 If all gained promotion and got to the top
 The conservation business might clog up
 and stop.

I'd long been in Washington, my guard
 took my place,
 We'd push out the top ones with pure
 lack of space;
 We'd soon forget the Service that mothered
 us along.
 Just get a job started and then "pro-
 moter" on.

Ranger Ryan, Colorado.



PAUL BUNYAN'S HEAD COW-PUNCHER

It is recorded in history that Paul Bunyan logged off North Dakota; also how he threw a chain around a quarter section of timber and "hitched" the big blue ox to it and dragged it bodily to the river where the timber was cut and rolled into the river. It is not, however, recorded in history, or is it generally known that besides being the greatest logger ever known that he was a great stockman and that he raised the big blue ox as well as many other oxen used in his extensive logging operations, and also that he raised all the beef used in his lumber camps. The picture above is a real photograph of Paul's head cowpuncher and is the only living person of that historical time. His face is probably familiar to many throughout District 1 of the Forest Service as he is now the head of the branch of Grazing.



The special lecturer detailed from the District Forester's office for grazing instruction in the Rangers' School is none other than Paul Bunyan's old head cowpuncher.

1923 RANGER SCHOOL

As the Kaimin goes to press, the Short Course for Forest Rangers, which is always held in the winter quarter, starts off with an enrollment of twenty-five students. All classes are being held in the new building. Our total enrollment in the School for the winter quarter is well over one hundred and fifty students. This keeps seven profs and several special lecturers on the qui vive—which, as I understand it, means busy—.

The Ranger School students are made up principally of Forest Service employes, guards and rangers from western forests with one or two men from the east. The enrollment is as follows:

- George E. Benjamin.....Butte, Mont.
- Charles G. Burdick.....Wise River, Mont.
- Lenay A. Christensen.....Ephraim, Utah
- David W. Eaton.....La Grande, Ore.
- Harold J. Engles.....Portland, Ore.
- Raymond Engles.....Portland, Ore.
- Gustav A. Fredrikson.....Fairfield, Mont.
- Gail Green.....Bozeman, Mont.
- Frank A. Gummer.....Missoula, Mont.
- James H. Haycock.....Circleville, Utah
- Edwin Jost.....Quantico, Va.

- Oak A. Knapp.....Lewiston, Idaho
- Arthur J. Kramis.....Missoula, Mont.
- Eric Lindquist.....Two Dot, Mont.
- Harry E. Maynard.....West Allis, Wis.
- Clarence H. McFee.....Coeur d'Alene, Idaho
- Thomas E. Murray.....Ketchikan, Alaska
- Raymond E. Peterson.....Moravia, Idaho
- Hugh S. Redding.....Ione, Wash.
- David Robertson.....Pritchard, Idaho
- James T. Saban.....Hyattville, Wyo.
- Walter M. Shields.....Glengary, Idaho
- James M. Thompson.....Missoula, Mont.
- Lester R. Vanairsdale.....Orofino, Idaho
- Herbert Zeh.....Elkhart Lake, Wis.

Our Profs

We start out in the new building with seven regular, full-time teachers and with several special lecturers added for the Ranger School.

Required work in English, mathematics and botany and elective courses in other departments is given in co-operation with the School in and by the department concerned.

Here's the line up:

- C. H. Clapp, President, State University.
- Dorr Skeels, Professor of Forestry, Dean.



FAY G. CLARK

Thomas C. Spaulding, Professor of Forestry.

J. H. Ramskill, Assistant Professor of Forestry.

Fay G. Clark, Assistant Professor of Forestry.

Reuben Prichard, Assistant Professor of Forestry.

Harold H. Lansing, Instructor in Forestry.

Louis W. Dennie, Assistant Instructor in Forestry.

Heads of University departments giving courses required in Forestry:

Dr. J. E. Kirkwood, Botany.

Dr. N. J. Lennes, Mathematics.

Professor H. G. Merriam, English

Dr. J. P. Rowe, Geology.

Dr. M. J. Elrod, Biology.

*Special Lecturers in the Ranger School:

R. B. Adams, U. S. Forest Service—Forest improvements, telephones, radio.

Glenn Smith, U. S. Forest Service—Grazing, range management.

Howard R. Flint, U. S. Forest Service—Fire protection.

James Yule, U. S. Forest Service—Forest maps.

Hugh Calkins, U. S. Forest Service—Forest surveys.

J. W. Butler, D. V. S., State Veterinarian—Range stock diseases.

R. P. McLaughlin, State Forester—State forestry.

R. B. Millin, Professor of Animal Husbandry, Montana Agricultural College, Bozeman—Management of Range livestock.

The heads and chiefs of nearly all the departments and branches in the offices of District One of the United States Forest Service have agreed to give talks and addresses in the Forestry Club or before the Ranger Short Course.

*If from the forest service; subject to the approval of the Secretary of Agriculture.

Our New Profs

We have two new profs this year. Professor F. G. Clark was appointed this year to take over instruction in forest administration and forest measurements and to look after the welfare of the men in the vocational courses.

We get this brief biography from official sources:

University of Michigan, B. A. 1911, M. S. in Forestry 1914; forest assistant on St. Joe National Forest (under Professor T. C. Spaulding, then Forest Supervisor) 1912; deputy supervisor, Missoula National Forest, 1913; District Office, District One, in charge of improvement work in District One, 1914; Y. M. C. A. Physical Director, 1918; Supervisor on Deer Lodge National Forest, 1919; Assistant Professor of Forestry, School of Forestry, State University, Missoula, Mont., 1922.

Professor Clark was one of Yost's right-hand men at Michigan and was fullback on several championship teams. His hobby is Boy Scout work.

Professor Reuben Prichard was appointed this fall to the Chair of Silviculture. We pried loose his biography also from official sources:

Dartmouth, B. S., 1907; Yale Forest School, Master of Forestry, 1909; Northern Pacific timber estimation work until 1911; Forest Assistant, Lolo National Forest, 1911-1912; New York State College of Forestry, Professor of Silviculture, 1913-1922; School of Forestry, State University, Missoula, Mont., Professor of Silviculture, 1922.

Professor Prichard is an old football star, too, of the famous old Dartmouth line of '06 and '07. His hobby is fishing. Professor Clark and Professor Prichard both won their spurs in practical forestry work in the national forests of Montana.



REUBEN PRICHARD



Opportunities in Forestry

Howard R. Flint, U. S. F. S.



Foresters and Forest School students are always interested in hearing of the expansion of their field and of the overflow of their fellows to other and perhaps broader fields of activity. Never has the outlook for foresters been better than it is at the present. Important legislation dealing with forestry programs and forest policies is pending or in progress in Congress and in a great many State Legislatures. All of the proposed measures call for increased activities and more intensive work in forestry and a number of them are assured of powerful support. The passage of any of these measures means a fresh or an increased demand for foresters in public work.

Men with technical training and experience in forestry are being employed in increasing numbers by lumber companies, by railroads, by paper manufacturers, many of whom, by the way, are becoming paper growers; by match manufacturers, and by large land holders who desire to keep productive lands not well adapted to agricultural use. Very recently Henry Ford has acquired a forest of nearly a half million acres from which he hopes to cut and continue to produce the vast quantity of wood that enters into the construction and distribution of the now indispensable Ford cars, tractors and trucks.

To the man who brings into the profession of forestry high ambitions and talents above the average, perhaps there is no more encouraging feature than the knowledge of the increasing demand which outside fields of public service are making on the profession for men to fill high positions calling for ability and character. As a profession, forestry is still in its infancy and the number of men who have answered its call is comparatively small, indeed. A very casual scanning of the lists of those who have been called to other work is illuminating. The best known forester in the United States is Governor-elect of Pennsylvania; another well-known locally, will represent a Montana district

in the next Congress; one is in the Consular Service at Suez; another is director of a State Experiment Station. A forester, very recently of this locality, is now in China where he will play an important part in an effort to reclaim some of the vast devastated areas of that country.

Perhaps approximately seventy-five per cent of all the men who enter forestry in the United States pass at one time or another in various capacities through the "rearing pond" of the United States Forest Service, and possibly it is for this reason that there is a constantly reiterated demand on the Forest Service to furnish men from its scant personnel for other lines of forestry work and for work which is only in the most remote way related to forestry. While it is often a severe drain on the organization of the Forest Service, this steady demand for men is recognized as an evil well balanced by compensations, and men in the Service are given every opportunity to take advantage of desirable openings in other fields.

Two common avenues of entry into the Forest Service are recognized. One by way of a very stiff technical examination intended to secure men highly trained as foresters or grazing specialists, the other by way of the non-technical Ranger's examination in which, however, technical training is of great advantage and assistance to the man who has it. Probably the most auspicious manner in which an enterprising beginner can enter the Forest Service is as a duly appointed Ranger who has also to his credit a good passing mark in the Forest Assistant or Grazing Assistant examination. For such a one the road to the top of the Forest Service is open and straight, provided he has only the ability and the ambition; and beyond, and along the way lie many openings similar to the few cited above.

Of course a man may go to the top in the Federal Service without technical training if he has the endurance and the native ability, but one thing is certain, that he must, as he goes through his career, acquire at least a reasonably good knowledge of the technical side of forestry along the way. But few find time to do this in the busy press of the day's work.

In an attempt to define qualifications for the various positions in the Forest Service it has been pretty well agreed that it is highly desirable that all men in administrative positions enter through the position of District Ranger, that very few, if any, should become Supervisors who have not seen service as

Rangers, and that none become District Foresters who have not been both Ranger and Supervisor in turn and who have not had in addition a thorough technical training in forestry. A District Forester must be a man of unusual administrative ability, long and varied experience, and with a thorough knowledge of the various branches of Forestry. A Supervisor must be a leader, a student, and a teacher of men, and a business executive as well. With these specifications in mind, the Forest School student who has administrative ambitions should lay a firm foundation. For the man who lacks the inclination or the special talent for administrative work there is a great field of special lines dealing with Silviculture, Forest Products and many lines of investigation and research. In any case there is always a need for a thorough elemental training in English, Economics, Botany, Chemistry, Physics, Meteorology, and above all in the mechanics and the "how" of soaking up new facts and applying them to the new problems which each day of the busy forester's life is sure to bring.

The promise of romance has attracted many who were not well fitted for the serious toil of a forester's life, and many have dropped out in the early stages of their career when the expected romance appeared in the guise of steady, grilling, hard work. Romance there is, but as a rule it is most apparent to the innocent by-stander who has ample time for high-altitude feats of imagination. Many people still believe that the Ranger's sole duty is to ride the purple hills without a care in the world other than to connect with his next meal of venison, trout, wild fruit and chocolate. As a matter of fact, he usually doesn't ride but runs afoot with a load of miscellaneous hardware on his back, blisters and galls on his feet, Pandora's box of troubles on his mind, bacon and cold beans on his stomach, wood smoke on his lungs, and, finally whenever he comes in reach of communication, the Supervisor or some irate Forest user is on his neck. If he leaves any speck of his anatomy exposed there is quite certain to be bloodthirsty mosquitoes and woodticks on that. Romance goes glimmering and the budding Ranger quits forthwith or rapidly seasons into a purveyor of high, fine service to a world that needs wood, water, meat and wool.

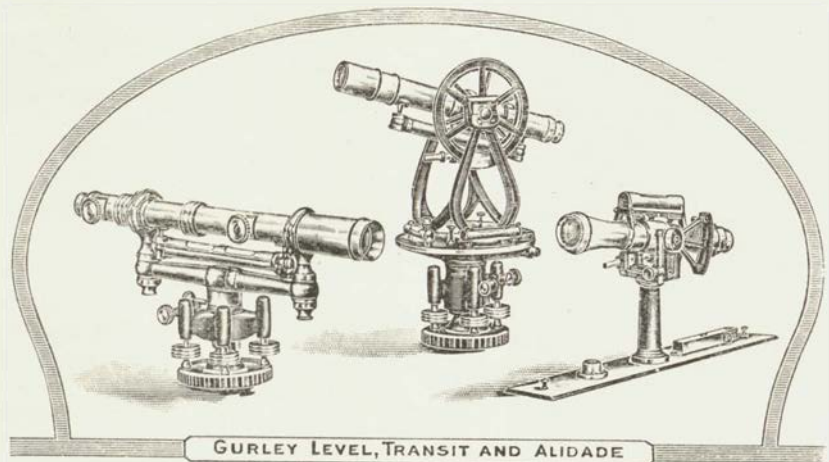
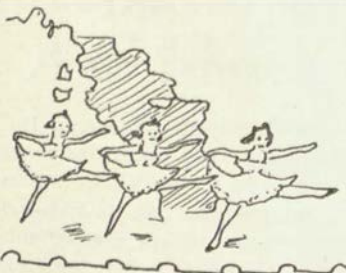
After all, it matters not much whether the beginning forester approaches through the National Service, through a State Forest Service, or through some private forest enterprise, he will find his great-

est security in a foundation based on the technical training of a school, backed up by the rough practical experience of a ranger job in rough field duty. Even the man who elects to remain with the Forest School in the capacity of a teacher will usually find himself in the brisk competition of men who have done their turn with credit in a real field service that meets problems at their source. For example, every man on the faculty of the Forest School at Montana University, with possibly a single exception, went through the "rearing pond" of filed work in the Forest Service. To a surprisingly large extent the same is true in other Forest Schools and the sign is a healthy one for the man who is taking up a forestry course at a time when foresters promise to be in good demand.

MIND LOAFING

"One point of man-making or man-breaking importance is the use of time when riding or on other duties which do not fully occupy the mind. Here is a time resource which, if reasonably well used, will equip a man with the kind of ideas he needs to make things happen as he wants them to. It is easy to waste this resource without even realizing the fact of waste. When one has ridden thirty miles the fact of the ride and physical weariness makes it easy to believe that one has done a good day's work when the truth may be that the more important part of the man has loafed all day."

Roy Headley.



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AN APOLOGY.

The Forestry Kaimin has twice published the poem, "A Ranger's Joys," of which Mr. Albert R. Ivey of Nevada City, California, is the author, and in both issues we failed to credit the poem to its author. In the last issue of the Forestry Kaimin the poem was credited to another forest ranger. This poem has been a favorite with the men in the Forest Service and has been printed several times in Forest News letters and District news bulletins. In some cases it has been credited to the Forestry Kaimin, which is, of course, our fault, since we first copied it from a Forest Service news letter without properly crediting its authorship. We print material taken from the news letters and desire to properly credit it.

LINES TO A PENCIL.

"I know not where thou art,
I only know
That thou wert on my desk,
Peaceful and contented,
A moment back,
And as I turned my head
To light a pill,
Some heartless wretch
Went South with thee.
I know not who he was,
Nor shall I investigate.
Perchance
It may have been
The guy I stole thee from."

"Six Twenty-Six."
July, 1921.

A TRUE BEAR STORY.

Some months ago a Ranger on the Targhee killed a bear under very unusual circumstances. Soon after reports of the fight reached the District Forester and who, because of the very nature of the tale, feared the worst demanded the facts in the case. In response to this demand the following was submitted:

The "Bear" and Naked Facts.

To delve into the bowels of the earth after bear, while exciting and requiring no little amount of courage and determination, is, nevertheless, only a mere incident in the day's work of a busy ranger.

Extract from "Sunny" Allan's Diary for November 5, 1920.

7 A. M.

Left my headquarters horseback for trip over my east end.

9 A. M.

Met bear hunter with pack of hounds. Fell in with hunter and hounds and continued on.

9:30 A. M.

Came across large, black, track of a bear. Followed same to mouth of cave leading back into mountain side.

10 A. M.

Entered cave on hands and knees, flashlight in mouth, bowie knife in belt, automatic grasped firmly in right hand. Pulse normal, temperature normal, heart action good, followed by hunter and hounds in like manner and condition.

10:02 A. M.

Entered long, high, narrow chamber, just wide enough to permit me and my brave followers to proceed in single file. Followed passage about sixty feet, came to declivity in ceiling which required the all-fours method of procedure again. We proceeded thus, equipped as before, pulse a little abnormal, temperature rising, heart action irregular but strong.

10:10 A. M.

Entered second chamber about the size of first one but a trifle wider. Marked time here in single file. Flashlight beginning to show signs of weakening. Sounds of deep breathing and restless sleep coming from regions to our left; dogs becoming unmanageable, showing signs of eagerness to proceed and pursue. Pulse flighty, temperature becoming sub-normal, heart action disgraceful, strong impulse to about face and retreat but fear overruled reason and we remained.

10:15 A. M.

Sounds from sleeping chamber to left becoming more pronounced as though coming from a conscious and wakeful animal. Flashlight unable to stand the strain expires, leaving its dead body in my hands.

Total darkness, pulse racing and resting alternately, temperature down to freezing, especially along the spine, hair beginning to assume the perpendicular, vocal organs paralyzed, hunter in same condition only worse, sense of direction missing entirely. Dogs squeeze by and rush in a foolhardy, headlong manner into sleeping chamber, great commotion, yelps, grunts, squeals and sounds of heavy blows striking soft bodies fills the air.

10:17 A. M.

Hunter and I facing north in single file, total darkness punctuated by sounds of tumult coming rapidly from sleeping chamber; suddenly struck in solar plexus by an all-impelling, large, black, growling, grunting, clawing, rapidly moving force which caused me to assume a horizontal posture with my head to the south and face up. Hunter meets like fate and the above described force passes over us followed by hounds in hot and noisy pursuit. Pulse doing a shimmy, temperature away below par, ice cold perspiration issuing from all pores of body, hair standing at attention, heart on strike.

10:20 A. M.

Regained reasoning faculties to some extent and guided by instinct we followed course taken by bear and hounds. Proceeding in total darkness ran into bear stuck in outer chamber and suddenly realizing our opportunity for revenge we proceeded to pass over him in much the same manner as he had passed over us.

10:21 A. M.

Reached mouth of cave and daylight closely followed by the bear thirsting for revenge. No improvement in status of pulse, temperature or heart action. Hair still standing at attention but faded. Daylight and fresh air soon brought us back to normalcy. One well-aimed shot from my trusty automatic which I found still grasped firmly in my right hand sent bruin to the mat for the count.

11:30 A. M.

Finished skinning the bear and started for my headquarters.

5 P. M.

Arrived at my headquarters.
Foster Steel, Forest Ranger, Targhee.

KEEPER OF THE BULLS FAILED TO KEEP THE BEAR.

The May 6 issue of the Saturday Evening Post contained a circus story about Fred Alispaw, keeper of the Sells-Floto elephant herd. Mr. Alispaw quit the circus business several years ago and took up a ranch on Fortification Creek near the boundary of the Routt Forest.

Recently while looking over some range

in the neighborhood of his ranch, Ranger Ray and myself ran across an old bear and two cubs. One of the cubs went up a tree and we succeeded in capturing it. Mr. Alispaw desired very much to make a circus bear of the animal so it was given to him. He had a strong cage and also some chains left over from the circus days which he utilized in fastening up the cub. Along in the night of the day the cub was captured the old bear made a visit to his place and tore the cage to pieces, broke the chains and took the cub away with her. Since the cub was carried in a gunny sack several miles from where it was captured to his place it is wondered how old bruin made connections. However, it is presumed that the cub sent out an S. O. S. call by bear radio and got a good connection.

Supervisor Peck, Routt, N. F.

TWO LYNX CAUGHT IN SAME TRAP

A few days ago while in Linwood Utah, for supplies, Mark Anson, a resident of that place, requested me to go with him to Henry's Fork Creek back of Linwood and see his catch of furs. On arriving at the designated place I observed two full-grown lynx cats in the same trap. One was caught by the left front foot, one toe being between the jaws of the trap and one toe between the jaws and the spring. The other cat was caught by the right foot and was evidently the one that sprung the trap. It was quite evident by their looks that each one had thought the other responsible for his predicament as both of them were badly scratched and torn about the head, but were perfectly quiet when we arrived.—News Letter, Ashley Nat'l Forest.

TRAPPER BILL

"Trapper" Bill tells this one—He had discovered an animal scent that he wished to try out so he took a bottle of it in his pocket and an extra one in his pack on his back and started out over 30 miles of trap line. Along the way he placed a few drops on stumps, logs, etc. Before very long he could hear packs of wolves coming along his trail and on looking back saw forty or fifty of them coming behind him. He fell over a log, jumped up and thinking they were after the bottle in his pack, threw the pack off and looked behind to see the wolves tear the pack to pieces and lick up the scented fluid. The wolves kept on coming and finally discovered that his shirt was full of the scent (the bottle in the pack had broken and stained his shirt) so he tore his shirt off and fed it to the wolves—still they kept coming, and about the time Bill was ready to become the victim of the wolves they jumped on his back and licked it.



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Very truly yours,
WM. M. ANDERSON,
Forest Supervisor.

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I have the honor to report that I have this day received certified check for \$209.85, the same as payment for consignment of fur shipped to you on the 27th ult., and beg to inform you in this connection that the price paid therefor is satisfactory to me.

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WALTER FRY,
Ranger in Charge of Sequoia and General Grant National Parks.



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HANDY HINTS

HANDY HINTS

(By F. Wehmeyer, Ranger, Chelan N. F.)

Just plain pitch from a Yellow Pine makes a very healing and sanitary dressing for a cut if gathered clean and placed upon the wound. This is good for man or beast.

A spice box makes a good damp proof match container for packing in the hills.

When building stoves of rock or concrete for permanent camp grounds, it will more than repay, in added convenience, for the extra work involved if they are built up from a base so that the cooking surface is about 30 or 32 inches from the ground.

A cooking iron made of ½-inch steel and bent in the shape of a hairpin, and of any length desired, will be a handy arrangement for the camper going light. This can be easily packed, as it lays flat on top of the alforjas. A convenient length is thirty inches.

Anyone having trouble keeping leather shoe laces tied, try this: make a loop and pass through the top eyelet, take the opposite string and pass through this loop. Do this to both sides and tighten. This will never slip or come undone, and is easy to loosen at will.

Oftentimes one has need of a level when trying to level up timbers at some 'way back' point. I have found that for rough work a bottle can be filled with water, just leaving a bubble of air, which will serve the purpose of a spirit level. In an emergency, I helped build a lookout cabin when our principal tools, besides an axe, were a rock on a string for plumb bob, and a can of tomatoes for a level. We leveled the timbers until the can refused to roll when placed upon them, and it is doubtful if anyone not familiar with the circumstances ever knew the difference, but that we had squares, levels, and plumb-bobs.

Yarrow makes good material for a smudge when trying to free a tent or camp of mosquitos.

Always keep in mind the thought of the prevailing breezes when building a camp fire, in relation to the rest of the camp. Much inconvenience can be avoided if one remembers that the wind usually travels up a canyon or valley in the day, and down at night.

I suppose everyone knows how handy a watch is for a compass. If the correct time is had, point the hour hand at the

sun. Halfway between that and the meridian is always due south.

Anyone sleeping out will find they get several times the benefit from their blankets if they roll up in them instead of making them up in bed fashion.

A little cold water applied to a pack animal's back, or a massage of the portion where the pack rested heaviest, will do wonders towards preventing a sore back. Saddle blankets should be aired often to prevent souring, and an occasional rinsing in cold water will do them good.

A simple diamond hitch can be thrown as follows: Throw the cincha over the horse's back, grasp under the animal's belly and hook the rope, pulling slightly taut. Pass the free part up along parallel with and to the front of the one encircling the animal; when on top pass under this rope twice, leaving a small loop. Through this loop pass a generous bight of the free end of the line, and cast bight to far side. Tighten up, working the rope to the center, the slack thus formed makes the lash for the nigh side. Try it.

Here is a good way to climb a telephone pole without the climbing irons: Take a piece of No. 12 wire or hay wire if possible as it is lighter, make a loop around the pole leaving about 3 inches slack between pole and wire. Make a few twists in the wire and make a loop for the foot. By placing a small stick on the wire under the foot, the wire will not bind the shoe. Wrap the arms around the pole and raise up foot in wire. The weight of the body will keep this wire from slipping. This wire climber works fine on poles that are too small for climbing irons.

H. E. Flack, Holy Cross Forest Ranger.

Ranger Cook on the Manzano has tried out a proposition with his road and trail signs that promises considerable success. Instead of using one post and the back brace across the cleats on the larger signs above the size of the usual trail sign, he uses two posts, placing them so that each post touches along the back cleats. He states that his experiment so far has shown greater success in keeping the larger signs permanently placed. Possibly some other ranger would care to try out this experiment.—Southwestern District.

DID THIS AD PULL?

"The ladies of the Pecan Street Church have discarded clothes of all kinds. You may call at 44 North Pecan Street and inspect them."
—Alamo Lines.

A HANDY CRUISER STICK

When cruising dense Lodgepole Pine stands of ties, mine props or smaller sizes, it has been found very convenient to use a short cruiser stick constructed as follows:

Take a 1-foot rule and on the back of the beveled edge mark the distances from the left end with an awl or other sharp tool, blacken with soft lead pencil and varnish. The proper distances for a 25-foot reach are as follows:

Diam. of tree	Dist. to be marked on stick
3 inches	2.83 inches
5 "	4.56 "
7 "	6.19 "
9 "	7.72 "
11 "	9.17 "
13 "	10.54 "
15 "	11.86 "

If a hole is bored in the right end of the cruiser stick it can be looped to the wrist, which reduces the danger of loss to a minimum and leaves the hand free when not actually measuring trees.

J. W. Stokes, Minidoka Nat'l Forest.

On another sheet I have made a crude sketch of a fire place which I constructed this fall during some cold weather. I have been camping in Montana more or less for the past 25 years and have never seen a fire place in a tent before. In case this should be something new, it might be of some use to someone caught in like circumstances.

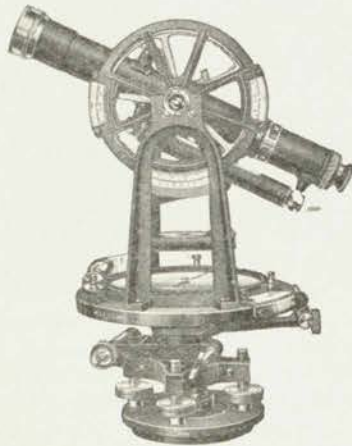
To build this fire place first dig a trench from the inside of the tent about one foot in depth through to the outside, and on for a distance of at least six feet. Cover the trench with flat rocks and enough dirt so the wall of the tent is safe. Build a chimney of rocks about four feet high and fill in with dirt. On the inside build a fire place as you would outside, and place a large flat rock on edge between the fireplace and the tent. This fireplace worked well for me, and I recommend it if it is built properly. Two men with a shovel and pick can build it in about three hours.

Ranger David Lake, Jefferson N. F.

PRACTICAL SUGGESTION

The substitution of a piece of soft iron wire of convenient size for the string usually used to tie the corks to your water-bags may save you a lot of inconvenience before the summer is over.

—Ranger L. C. Smith, Cache N. F.



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A BEAR STORY

"One August afternoon in 1911 I was riding southward along an unfamiliar trail across the east face of the mountain which lies between Bear Hollow and Herd Hollow, District 2, Cache National Forest. I had been doing some trail work over toward the head of the right-hand fork of Logan River and was headed for Leatham Ranger station, some twelve miles distant.

For the past two summers I had burdened myself and horse wherever I went, with my 35-calibre Remington automatic rifle, in the hopes that I would get a chance shot at a bear. Failing to find any use for the weapon I had, just ten days before, sold it to a shepherd over in the Franklin Basin country.

I was alone except for the company of "Toby," my dog, a big, white, short-haired animal, "half and half," pointer and bull-terrier, of great size, strength, and courage, and possessing more character and intelligence than any animal I have ever seen.

The trail I was following was narrow and just under the summit of the main ridge on my right a short distance, but was cut off from the ridge by a dense thicket of aspen and mountain willow, beyond which stretched a belt of heavy chaparral. Above these was visible the open bare ridge. On my left was a precipitous mountain side.

I came to a boggy, wet place in the trail, and just at this time my horse began to fret and fight the bit as he had a habit of doing when in soft, miry ground. My dog, with his great mouth open and tongue lolling out, had sought the source of the seep that muddied the trail ahead for some distance. Engaged in controlling my horse, I was brought to a sense of other things by seeing "Toby" coming to-

wards me from ahead, reaching for a little more turf at every terror-inspired leap. Merciful heaven! What is that terrifying monster in pursuit! The hair on my head turns to a covering of ten-penny nails, my heart to ice! It flashes upon me that it is a bear! He presents a fearsome sight! He also is reaching for all of mother earth that he can gather at each leap and he can't be over 10 yards behind "Toby!" He is not a clean, respectable, gentlemanly appearing bear at all! He is covered with mud and water from his ears to his tail, and his whole appearance denotes cruel intensity of purpose to be revenged for some fancied wrong. I can see all this easily as it is a scant 75 yards to the bear, and both bear and dog are coming their best. I can also see utter destruction, annihilation, hell-fire and damnation staring me in the face, so in one one-hundredth of a second (or thereabouts) I get busy! I am telling you, I pick that gray horse up on the curb, pivot him on the usual "dime with a nickel to spare," sock in the steel, and in three jumps I am getting out of him more speed than the best trial before has ever shown. In fact, he gets to going so good that I can't help throwing a glance over my shoulder to see whether it will be five or ten more jumps before I must set my teeth for final destruction. With a warm rush of blood to my head and heart, I see Mr. Bruin standing stock still in the trail, a good 125 yards to the rear. I pull up at once. "Toby" goes by at a highly-creditable rate of speed for a 90-pounder, not deigning to notice me at all.

There Bruin stands, shifting a little on his front feet, from side to side, and swinging his head. Even now he's a good-sized bear, and the fact that he's covered with

mud and water makes him really look larger.

I long for my 35 Remington with five one-ton punches under my forefinger! Would I have the sand to dismount and tackle him if I had that gun now? I can't prove it.

But there he stands as fair a target as could be desired. Only for a few seconds, though, after which he turns very slowly and re-enters the thicket.

I think I know just what happened. "Toby" ran into the head of the seep or spring where Bruin was cooling off in the mud and water, possibly lying half asleep. The big old white dog gave him an awful scare suddenly, and like a human the scare made him mad when he saw it was something much smaller than he was. I guess he figured to give old "Toby" a heat, and punish him, and the only thing that changed his mind was seeing a horseman, who, with the dog, was leaving the country at too fast a clip to make it worth while. Especially on a hot August afternoon, and he carrying six inches of tallow on his ribs!

The fun was over for him but not for me. After debating a few moments, I decided I didn't want to return over that particular trail, so I turned to my right at right angles and attempted to buck through the thicket and chaparral to the top of the open ridge, which I could see. It didn't look far, but that distance was rich in experiences for me and mine.

After I got into the brush about half-way I had to resort to cutting my way with my marking hatchet. It was hot, hard work. I was excited and so was my horse, and we were both in a hurry.

The horse kept crowding me as I held him with one hand and chopped with the

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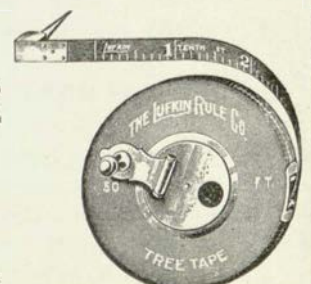
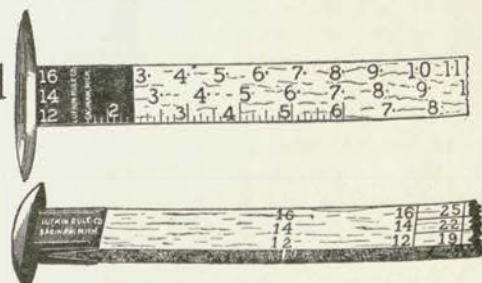
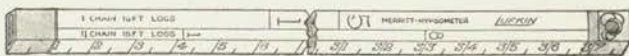
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other. He stepped on my feet half a dozen times and I finally took time to work him over a bit. This made a hell of a racket in the brush, and I was afraid that the bear might come up there any minute to investigate. In the meantime "Toby" had returned and was vainly endeavoring to find a hiding place in my vest pocket. To cap the climax I finally unwittingly commenced chopping on a big willow that had a hornets' nest as big as your hat hanging to it. I hadn't seen this—yet. "About three licks, then—W O W!—I got mine! Thirteen times! I counted them that night after reaching Leatham. They stung the horse and the dog, too. Something fierce, I'm telling you! To escape a hero's death, in a hand-to-hand flight (I almost wrote fight) with a B E A R and then suffer an ignominious death from a massacre by hornets!

Well, we all got out in a hurry. How? I don't know, but we did, and the top of that bald ridge looked awful good. Finally arrived about dark at Leatham R. S. after what to date holds the belt as the most exciting and for me "thrilling" experience of my life."—Southern Utah Forest Officer.

SLOW DEVELOPEMENT OF THE YOUNG OF THE CAMP ROBBER

According to authenticated reports, the Rocky Mountain Jay or Camp Robber (*Perisorous conodensis capitalis*), nests early in April in secluded spots in the high pine and spruce forests of the Rocky Mountains. Ornithologists have always found it difficult to locate the nest and eggs of the bird although several collections have been completed. On July 21, forest officers of the Medicine Bow National Forest in Wyoming found the young of this bird, gray, scrawny birds, just being taught to fly among the dense spruce forests at an altitude of 10,500 feet. Inquiry among sheepmen and mountaineers residing at this elevation has failed to find a person who has previously seen the young of this bird because of its well-known habit of secreting its nest and young far from the haunts of man. The officers secured a good picture of the birds to authenticate their story if necessary.

The curious feature in connection with the young of the camp robber is that although the young are hatched early, their development is slow and when robins, white crowned sparrows and mountain finches who nest much later were teaching their young to fly, the old camp robbers were also acting as instructors to their young.

Supervisor Hilton, Medicine Bow.



VELVET JOE: "When it comes to complexions and tobacco, any improvement on Nature ain't any improvement."

THE CHEMIST: "You're right, Joe. The smartest scientists are stumped when they try to mellow tobacco by artificial methods, instead of natural ageing in the wood."

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IT HAPPENED ON THE CHELAN.

It was late in October, past the usual fire season, when a fire was reported on Gold Creek. Ranger Dick was sent in with a number of men but the fire was on Ranger Fred's district. Dick went in and went to work. Ranger Fred got word and also took a few men and went to the fire. They arrived about the same time and had the fire under control by dark.

Both parties had taken but little bedding and as there were only six men in all they decided to make one long bed and all sleep together. There was but little horse feed and the horses were tied to trees near the camp. About midnight, the horses got to fighting which excited a dream of bears to Ranger Dick. He sat upright in bed and shouted "Bear" as loudly as he could. One man, clad only in underwear, started up a small tree nearby. This frightened the dog which ran across the bed. Dick immediately changed his cry to "Bears," which came with as rapid regularity as a word on a cracked phonograph record.

One of the men had a gun under his pillow and he was on all fours trying to locate it. When Dick saw him he changed his shout to "Three of 'em," and increased the pitch of his voice somewhat and at the same time began pounding the man on the head. Each time the man raised up,

Dick would land on him with both fists. During this time another fellow had made about a dozen circles around the bed looking for a good place to run.

Finally the other men began to realize what was happening and they quieted the rest of the fellows. The man in the tree came down and wanted to know what the trouble was. As soon as Dick was able to convince the gunman that he thought he was a bear and had no other reason for beating him up, they called the roll and laid down to finish the night.

G. E. Mitchell.

For Sale.

One Ford car with piston ring;
Two rear wheels, one front spring;
Has no fenders, seat or plank;
Burns lots of gasolene and is hard to crank;
Carburetor busted half way through;
Engine missing—hits on two;
Three years old, four in the spring;
Has shock absorbers and everything;
Radiator busted—sure does leak;
Differential dry, you can hear it squeak;
Ten spokes missing, front all bent;
Top blown off, ain't worth a cent;
Got lots of speed, runs like the deuce;
Burns either gas or tobacco juice;
Tire all off, been run on the rim;
She's a darn good Liz for the shape she's in.

L. H. McLean, Forest Ranger.

WILL COYOTES KILL DEER?

In reply to your question, whether coyotes kill deer or not, I will say, that it is my opinion, that they kill a great many. I also believe that they are a constantly growing menace to the game in Idaho. I use the word GROWING for the reason that it is rather recently that the coyote has shifted his field of operation to the higher mountains, and it may be expected that this habit will become more general.

While I have not had the opportunity to study this subject as much as I would like, I have had the opportunity to see several examples of the methods used by the coyotes in killing deer, and these cases I will describe as well as I can.

During the month of March, 1920, while working on the Lochsa river, I found a number of deer, or rather what little remained of them, scattered along the river and in the bottom of steep gulches, but not until the middle of the month, was I absolutely certain it was the work of coyotes.

At this time one morning early, I saw two coyotes eating on a deer carcass, on Glade creek. Close examination of the carcass, revealed the fact that it was still warm. I backtracked the deer, there being some snow on the ground, and found the coyotes had run the deer, a very large doe in splendid condition, down a ridge.

and had turned her off the ridge, down a very steep hillside, partly covered with ice; apparently the deer had lost its footing, and slid into the gulch. Again this winter I saw three coyotes kill two deer.

I had noticed the coyotes would follow the river whenever it was cold weather and mush ice formed, and leave it when it became warmer. So I decided to investigate, to find out just what caused this change of hunting ground.

With this in view I started out on the morning of December 16, and took up a stand on a high point above the Selway river, about halfway between Pinchot and Cascade creeks. I watched several hours, but saw no sign of a coyote. About noon a large whitetail doe came out of the timber on the opposite side of the river, and was shortly after followed by a fawn. They watched the river for perhaps twenty minutes, and seemed to be very uneasy, but finally swam across. The river at this point is an eddy, and was covered with mush ice and pancake ice, and it was very hard for the deer to swim. They often had to bring their front legs up on top of the ice to break through, but they finally made it, and had no sooner landed and got about sixteen feet up on the bank, when two coyotes closed up behind them. The deer started running up the trail, the doe in the lead, only to be met by another coyote coming from above. The doe tried to hurdle this last coyote, but he jumped and caught her by the flank and brought her down. The fawn jumped out among the snow covered boulders, lost his footing and fell, back down, between two boulders, and was literally torn to pieces by the other two coyotes. The whole thing lasted less than fifteen seconds, from the time the deer landed until they were down.

Since then I have seen several examples of the almost human intelligence displayed by coyotes in catching deer. One of their favorite methods seems to be to chase deer off of a very steep bluff, but from very reliable information I have learned that more deer are killed on the ice in the river, than all other places combined.

—C. K. Hjort, Warden, Kooskia, Idaho.

THE END OF A PERFECT DAY

Out in the hills beside some stream,
 And under a spreading tree
 I pitch my camp and linger there
 Where nature's wild and free.
 I sit with pipe beside the fire
 And watch the shadows fall.
 I listen to the roosting quail
 And hear the coyotes call.
 I watch the camp-fire's leaping flame,
 And the dying embers glow,
 Then knock the ashes from my pipe
 And off to bed I go.

—A Ranger.

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Does A Mountain Lion Scream

Mountain lions may scream, again they may not, but it would appear that if they do they would make the Kaibab ring since, opinions of experts notwithstanding, there are numerous lions on the Kaibab, and, so far as is of record, no one who is reliable has ever heard one scream, although a captured kitten was heard to make a noise similar to that made by a house cat. This, of course, is not conclusive evidence that mountain lions do not scream, but I have spent most of the past twenty years on the Kaibab and other areas on which lions occur and have never yet heard one scream. It might also be remarked that "Uncle Jim" Owens never has heard a lion scream, and he probably has killed more lions than any other man in the United States.

Benjamin Swapp, Ranger, Kaibab National Forest.

What Say? Ye Colorado Lions.

Yes, the mountain lion does scream, or to me this scream has always sounded more like the clear clean-cut call of a woman. With the exception of the months December to February inclusive, I have heard them call in every month of the year, usually in the evening and early night. This call can be heard for a distance of several miles when atmospheric conditions are favorable, and is particularly clear and penetrating when heard at close range. One who has ever heard this call and known its source will never tell you that a mountain lion does not scream, for it automatically quickens your pulse and advances the spark of alertness.—Stephenson, White River.

Mountain lions do not scream. For forty years I have led an out-of-doors life in the foothills and mountains of Colorado; always in localities where lions were more or less plentiful. I have hunted and killed lions, have seen them captured alive and packed on horses, but I have never heard a lion scream. I have talked with famous hunters, men who have hunted, captured, and killed lions throughout the mountains of the western states, and none of these men claim that they ever heard a lion scream. The high-pitched snarling squall, sometimes heard in the woods, or in wild out-of-the-way places, is made by the red fox. It is this harsh piercing "squall" of the fox, that nature-fakers and tenderfeet hear and believe to be the scream of a lion.—Loring, San Juan N. F.

They Scream On Ole Kaniksu.

While I have not had the forty years of foothill and mountain life experience that our worthy friend Loring of the San Juan

speaks of, yet I have other endowments which may qualify me as an expert witness, one of which is, I am a "Missourian" by birth and a Montanan by naturalization, and with twenty-three years residence therein, I still retain that Missouri instinct of "Show Me." I have been shown to my entire satisfaction that at least one mountain lion did scream. It was the summer of 1907 on the Kaniksu Forest in northern Idaho, while following an old and therefore dim section line through a heavy stand of matured white pine and cedar, with an understory of hemlock, that I was suddenly halted (all except my heart and hair) by the most unearthly scream I had ever heard. This was followed by a dead silence of a few moments duration, in which it seemed that the trees of the forest quivered. This silence was quickly broken by the second scream, which indicated it came from a point just ahead and on the section line I was following. The underbrush obstructing a clear view ahead, I dropped to my knees to detect if possible the "Whirring Wimpers," but lo, it was a she-lion with two kittens and a fresh killed deer. During the few seconds I was hesitating to offset two and a half chains to the west, I actually saw the old mother lion open her mouth and actually heard a third unearthly scream, and thus my "Missouri Show Me" instinct was satisfied.

Glen A. Smith, D-1

He Screams

(By Harriman, Forest Service, D-6.)

Why this quibble as to whether or not the mountain lion screams? He makes a noise that's a cinch, for I have stood within 20 feet of a good healthy specimen in captivity when he "put it across." You might as well say that a dog does not bark as to contend that the cougar is dumb.

Of course, as to what the sound should be called, there might reasonably be a difference of opinion, for the quality of the tone varies greatly with the distance from its source. If you are very near, say within 200 feet you will note a very catlike quality to the call and you would probably describe it as more of a squall than a scream. But if you are at some distance from the animal, perhaps half a mile or more, you miss the catlike quality altogether and you very likely would describe the call as a scream. Many have described it as being very like the high pitched call of a woman.

Squall or scream or catcall, as you will, but the mountain lion makes a noise, and a good healthy one too, such as would make Mr. Loring's red fox die of high blood pressure if he should attempt it.

If nearer than 200 feet to the source, say 50, one would probably describe it as a shriek—that is, if one were able to speak coherently after hearing it.—ED.

The Ayes Have It.

(By Will C. Barnes, Asst. Forester, U. S. F. S.)

My own experience covers but one instance in which a mountain lion uttered some of the most piercing, awe-inspiring screams that I have ever listened to, except from some of our alley cats here in Washington. The mountain lion is, of course, the puma, known officially as "*Felis concolor*" or "*felis cougar*." He is nothing but a great big cat, and why any man who has ever listened to the screams, howls and wails of the ordinary alley cat, especially of the Thomas variety, should doubt that his older and larger relative, the puma or mountain lion, does not indulge in the same sort of vocal atrocities, I am unable to state. In other words, I am thoroughly convinced that the mountain lion does emit screams or cries or howls, or whatever you choose to call them, exactly as does the alley cat and for probably the same general causes. In looking for authority on this subject, I went at once to the person whose observations as to the habits of wild animals in America are probably the most widely respected of any of our present authorities. This is Mr. E. W. Nelson, present chief of the Biological Survey. (Nelson, by the way, was once a cowman on the same Arizona ranges with myself and Potter.) In his wonderfully interesting discussion of "The Larger North American Mammals," published originally in the National Geographical Magazine for November, 1916, I find under the head of "mountain lion (*Felis cougar*)," the following statement: "It has a wild screaming cry which is thrillingly impressive. * * * In the mountains of Arizona one summer a mountain lion rapidly passed along a series of ridges high above my cabin at dusk, uttering this loud wierd cry popularly supposed to resemble the screams of a terrified woman." As far as I am concerned, this is enough for me. The mountain lions do howl.

This interesting discussion appeared last winter in the Weekly News Letters published by and circulated among the forest officers of the various western districts.—Ed.

RANGERS SELL CHRISTMAS TREES

The Pike, in the Christmas-tree business, finds that a thousand trees can be cut from Douglas fir stands in Jarr Canyon, along the Sedalia-Decker road, of three to four thousand trees per acre, at 15 cents apiece, yielding \$150 per acre, comparable with 50 M feet at \$3, and considerably better than 27 cent 3-tie lodgepole trees running to the acre. Four sample acres have been laid out, one as a check, and the others to be thinned to approximately 8x8 feet, 6½x6½ feet, and 5x5 feet, respectively, to determine whether the thinning will reduce the rotation for tie or saw-timber production, and if so, how much, and how many trees should be left for best results.

The business grew from 200 trees last year to 2,000 trees in 1921, cutting over 3 acres of a less dense sapling stand than that described above and leaving an average of 750 well-spaced trees per acre to grow into ties and saw-logs. The 2,000 trees brought the Service \$300, at a cost of \$136.59, of which \$48.12 is chargeable to the experiment, leaving a net profit of \$211.53, or \$70.51 per acre. It is estimated that 30,000 trees are used annually in Denver, and if the Pike can ultimately furnish as many as this (including possible large orders from Omaha, Kansas City, and other prairie cities) it would require the thinning, at 500 trees per acre, of

some 60 acres, or on a 30-year rotation, 1,800 acres on a sustained yield basis. At a net return of \$50 per acre this would add \$3,000 per annum to the Pike's receipts. Fifty dollars per acre for thirty years' use of land near Denver may appear small—less than the returns if cleared for grazing. However, watershed protection and recreation value should be considered in such comparisons.

PLANTING WORK IS SUCCESSFUL

A decade ago the first attempts at reforestation were made by the forest service in district No. 1, including Montana and northern Idaho.

Today, according to reports received by the office of planting, 27½ per cent of the trees planted in the spring of 1909 and 42.1 per cent of those planted in the fall of the same year, are still alive and growing, despite periods of drought and severe forest fires practically every year. The first planting was done 10 years ago on the Deer Lodge, Helena, Madison, Lolo and Missoula forests and more than one-third of the trees then planted are prospering.

Of the trees planted in the year of 1914, five years ago, 43.9 per cent are still living, while the percentage for 1915 is 66.6 per cent, for 1916, 47.3 per cent, and for 1917, 47.2 per cent.

HELIOGRAPH IN PROTECTIVE WORK ON THE SAWTOOTH

Ranger Allen T. Osborn, Guard Dan Mizer, and Lookout Art. Smith, have worked out a scheme which has proved of great convenience in keeping in touch with the fire situation while in the field.

Smith uses a regulation heliograph set at the Iron Mountain Lookout. When Osborn or Mizer wish to learn if all is well while away from phone lines, they sight in the direction of the lookout over the top of a small hand mirror and across the tip of a limb or piece of brush stuck into the ground about 15 feet distant, thus throwing a steady flash on the lookout. When seen by the observer he lines up his heliograph on the inquisitive flash coming from yonder ridge or knoll and begins to flash forth the information most likely desired by the operator of the hand mirror. "O K" tells that he has no fires to worry about. "One-half mile S. E." tells that the small fire he is looking for lies hidden one-half mile southeast of his present whereabouts, and so on in endless variety.

While it is difficult to hold steady enough to signal back the precise Morse Code with the hand mirror, yet any protective group can agree upon a few sets of signals, such as a series of dashes for "Send more help," or a series of dots for "We have the fire under control."

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Many of the lines specially advertised in this journal will be found here in regular stock, while we are factory agents for many others.

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FORESTRY NOETS

In the midst of the details of administrative work let us not forget the larger aspects of the forestry situation. Col. W. B. Greeley, Chief of Silviculture, gave some graphic facts and arguments at a meeting of the local section of the Society of American Foresters held in Albuquerque.

The stand of all kinds of timber in this country—including saw-timber, fuel, pulp-wood, posts, etc.—is estimated by experts to be eight hundred and forty-five billion cubic feet.

The estimated average annual cut is twenty-three billion cubic feet.

The estimated average annual growth of all forests in the United States is eight billion cubic feet.

In short, we are cutting our forests three times as fast as they grow. We are eating up not only our interest, but our capital stock at a rate which will destroy that capital stock in about fifty years.

There are two hundred million acres of idle cut-over forest land in this country, most of which should be producing timber but isn't. This desert is being constantly increased by destructive logging and fire.

DESTRUCTIVE LOGGING AND FIRE! These are the two enemies of forestry that must be held in check if we are to remove the menace of a timber-famine in the coming decades. How?

The central point of the whole forestry program is to prevent forest devastation. The public has a vital interest in the perpetuation of forests that transcends mere private property rights. The owner of timber-lands has a public obligation—namely, to prevent forest destruction. This means legislation—preferably by compelling owners to prevent devastation, states, in the exercise of the police power.

The average annual growth of timber in the western white pine region, including western Montana and northern Idaho, is estimated at 240 board feet per acre yearly for all species, in a report received at the forest service district headquarters.

The mean annual growth of fully stocked pure western white pine stands reaches a maximum at 110 years and the highest current volume increment between 60 and 70 years often reaches 1,000 board feet per acre yearly. The current and mean annual growth of the white pine is considerably greater than that of other species.

This does not apply, however, to large areas of virgin forest under present conditions; more representative figures for an entire watershed composed largely of western white pine, larch, Douglas fir, etc., indicate that the annual growth per acre at 70 years is 237 board feet, at 110 years 248

board feet and at 130 years 220 board feet. Mature virgin timber made up mostly of white pine, larch, cedar, white fir and hemlock, cuts from 30,000 to 40,000 board feet an acre. One 150 year stand on the Kaniksu forest scaled 55,000 board feet an acre, representing an annual growth of 336 board feet. Many factors tend to reduce the annual growth from the possible or normal growth for the area, such factors being decay in mature and over-mature stands, loss of timber killed by insects, incomplete stocking of the area due to fires and other causes, as well as loss by fires.

In the future the forest service will appraise the value of timber on all coal lands situated within the national forests so that it may be included in the selling price of such areas, according to instructions received from the secretary of the interior.

"The loss of so much young growth is a serious matter—more serious even than that of the mature timber. For young growth, or reproduction, is the very foundation of California's timber supply thirty, forty or fifty years hence. Without it—and we shall be without it wherever fire is permitted to run through our forests—California may easily lose her enviable position as a timber-producing state."—P. J. Redington in recent District 5 News Bulletin.

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ON THE CAMPUS



MOTHER HUBBARD
of the Lumber Camp



A PLATOON OF THE
1917 RANGERS



Artist Hixon
His studio is a favorite
with the Rangers



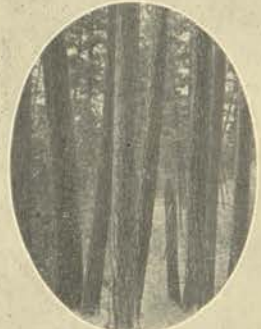
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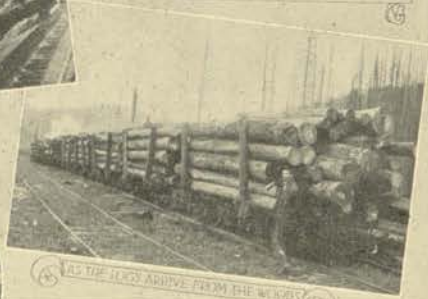
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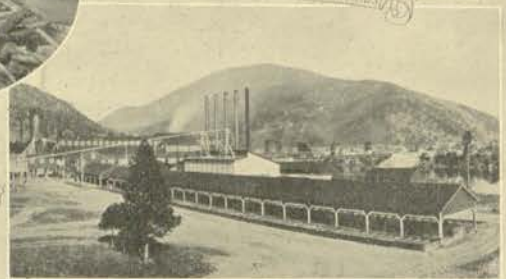
TYPICAL TIMBER STAND OF WESTERN MONTANA



AS THE LOGS ARRIVE FROM THE WOODS

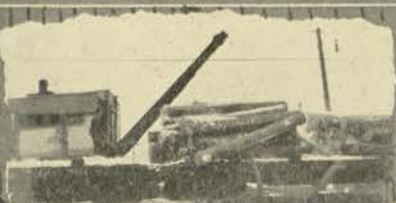


ABANDONED CONCRETE PILING MILL
DOWN NEAR MISSOULA



VIEW OF WESTERN LUMBER
COMPANY'S PLANT

LUMBER



LOGGING

FIELD WORK





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