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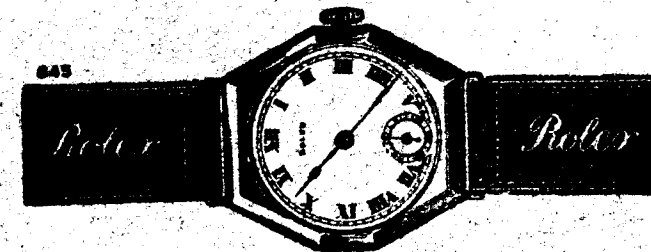
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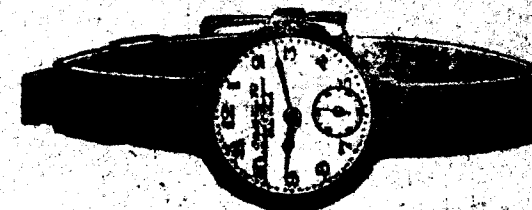
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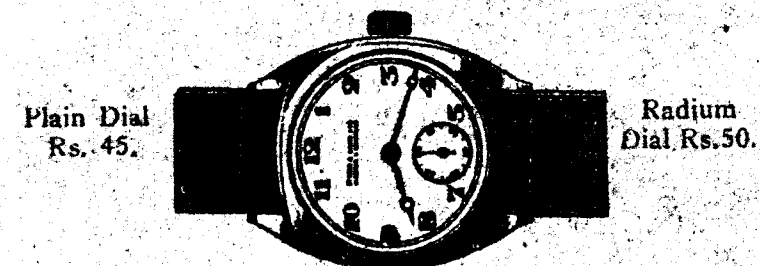
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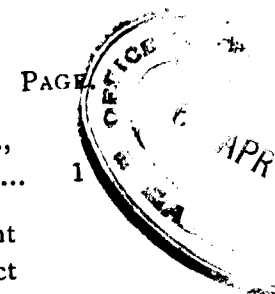
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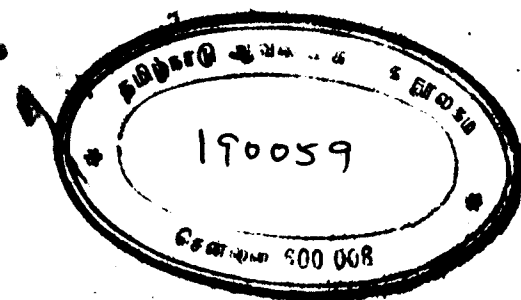
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Gale's Traverse System.

The forester, before he does any work in his forests, has often to survey the area in question and to plot it on paper. The survey, as is well known, is generally done by running a traverse with any one of the angular instruments like the Prismatic compass, the circumferenter, or the theodolite; then follows the plotting of the same. It is on the accuracy of the latter that the former can be judged in its true light as regards accuracy, which is the chief aim of any survey worth the name.

Surveyors have devised different ways of plotting a traverse, e.g. (1) Protracting the bearings, (2) protracting the internal angles, (3) the method of co-ordinates (Gale's traverse system). It would not be an exaggeration to say that the protracting of angles with ordinary protractors, with whatever care it may be done, cannot be accomplished to a high degree of accuracy; secondly where, besides degrees, minutes come into question, ordinary protractors fail to serve their purpose. Thirdly an error arising at one station is carried all through the subsequent stations or may

go on accumulating for so many stations that at the end it will give unsatisfactory results; or if the error has been negative with relation to one, if any, in the traverse itself, it will make the traverse close without any chance for the detection of the error that really existed (though this is more theory than fact).

The Gale's traverse system of plotting is perhaps the only accurate method of plotting. Its advantages are:— (1) Before you sharpen your pencil for plotting, you can at once know whether the survey work on the field is worth the trouble or you require resurveying. (2) All through the plotting business you have to deal with the drawing and measurements of the straight lines and right angles which are both easy enough. (3) If you make a mistake in plotting on point, the others are not affected in any way.

Therefore with the hope that it will benefit my brothers of the forest service, I am sending this article for publication; an elementary knowledge of trigonometrical ratios and logarithmic computation are assumed—I have adopted the example system which, I hope, would make the readers understand the thing well.

Suppose that in Fig. 1, A Y is the magnetic north line and A X is a line at right angles to it; and ABCD.....is a traverse.

The bearing of AB = $\angle YAB = \angle$, say

With respect to the lines AX and AY the co-ordinates of B are (BP, BM) or (AB sin $\angle$, AB cos $\angle$) or, say (x_1 , y_1).

The bearing of BC = $\angle YBC = B$ say; the co-ordinates of C are (CR, CQ) or (BP + CY₁, BM + CF) or (x_1 + BC sin B, y_1 + BC cos B) or say (x_2 , y_2).

The bearing of CD = $\angle YCD = V$ say; the co-ordinates of D are similarly (DT, DS) or (x_2 + CD sin V, y_2 + CD cos V) or (x_3 , y_3) and so on we can determine the co-ordinates of all the points on the traverse however far it may go and then the traverse can be plotted accordingly.

The distances along AX are known as departures or Eastings and Westings and those along AY are known as latitudes or Nothings and Southings. So far only advantages No. (2) and (3) have been availed of and No. 1 which can be availed of only in case of a closed traverse is given below:

In case of a closed traverse the following conditions must be satisfied:—

(1) Sum of all the interior angles + 4 Rt. $\angle s = 2n$. Rt. $\angle s$, where n is the number of the sides of the traverse.

(2) Sum of Northings = sum of southings.

(3) Sum of Eastings = sum of westings.

For example, in Fig. 2 in the case of the traverse A B C D E the interior $\angle s$ A + B + C + D + E + 4 Rt. $\angle s = 10$ Rt. $\angle s$. and the northings as shown by arrow heads M B + Q C = A R

And the southings SD + DN + GA = RA.

And the Eastings PB + BQ + CS = A H.

And the Westings NE + EG = H A.

i. e., from the numerical point of view conditions (2) and (3) must be satisfied.

4

The Traverse Table.

1	2	3	4	5	6	7	8	9
Sta- tions.	Mag. bearing.	Cardi- nal di- rection.	Reduc- ed be- aring.	Dis- tance.	Consecutive Departure Cols. 5 × Sin ○			
					E	Cor.	W	Cor. +
1	283° 45'	N.W.	76° 15'	508				
2	24° 45'	N.E.	24° 45'	258			463.4	1.6
3	349° 15'	N.W.	10° 45'	457	108.0	.8	1	
4	120°	S.E.	60°	444			84.2	1.5
5	74° 30'	N.E.	74° 30'	129	384.5	1.4		
6	105°	S.E.	75°	222	124.3	.4		
7	167° 30'	S.E.	12°-00'	128	214.4	.7		
8	186° 15'	S.W.	6° 15'	182	27.6	.4		
9	225° 15'	S.W.	45° 15'	356			19.8	.6
1							222.9	1.1
	283° 45'	N.W.	76° 15'					
					268.4	858.8	3.7	850.3
						850.3	4.8	4.8
					8.5	1.5		

5

The Traverse Table—(Contd.)

10	11	12	13	14	15	16	17	18
Coordinates. Latitude, Col. 5 × cos. ○				Independent coordinates.				Algebraical co- ordinates of points.
N	Cor.	S	Cor.	E	W	N	S	
	—		+					
119.7	.8				495	119.4		([°] , [°]) (—495, 119)
234.3	.1			107.1		234.2		(—387.8, 353.6)
449.0	.3				85.7	448.7		(—473.5, 802.3)
		222	.2	383.1			222.2	(—90.4, 580.1)
34.5	.1			123.8		84.4		(38.5, 614.5)
		57.5	.1	213.7			57.6	(247.2, 556.9)
		125.0	.1	27.2			125.1	(274.4, 431.8)
		180.9	.1		20.4		181	(254, 250.8)
		250.6	.2		254		250.8	(0, 0)
837.5	.8	836.0	.7					
836.0	.7							
1.5	1.5							



Explanations for the Traverse table.

Col. 1 denotes the stations as in the field book.

Col. 2 denotes the Map bearings of the lines according to the field book; for example the bearing of the line 12 is $283^{\circ} 45'$. Col. 3 denotes the cardinal direction of the line, that is whether the line lies in the N.E., S.E., S.W. or N.W. quadrant according as the bearing ranges from 0° — 90° , 90° — 180° , 180° — 270° , and 270° — 360° respectively. For example the bearing of line 12 is 283° — $45'$, that is, in quadrant 270° — 360° or its direction is N.W.

Col. 4 For column 4 calculate how many degrees east or west of North (or east or west of South) the Magnetic bearing of the line is. As in the logarithmic tables the angles vary from 0° — 90° so for bearings that are above 90° equivalents are determined by subtracting the bearings from 180° or 360° whichever gives the angle less than 90° . Readers knowing a bit of the trigonometry or the principle of reading the American compass will find no difficulty over the point. For instance, 12' has a bearing 283° — $45'$ which being subtracted from 390° gives the reduced bearing with reference to the North line as $N76^{\circ} 15'W$. The bearing 120° of the line 45 being subtracted from 180° gives the reduced bearing as $S60^{\circ} E$; and so on in all the cases.

Col. 5 records the distances as in the field book. Eg., distance from $\triangle 1$ to $\triangle 2$ is 508 lks.

Col. 6, 8, 10 & 12 give the departure and latitude of East distance. If we refer to fig. 1 we will find that for a given distance AB with a given bearing, OL the departure

$BP = AB \sin \angle$ and the latitude $BM = AB \cos \angle$
i. e. for line 12 $BP = 508 \times 9713 = 493.4$ and $BM = 508 \times 2376 = 119.7$ where '9713 and '2376 are the sine and cosine of the angle $76^{\circ} 15'$, the reduced bearing of the line. By referring to col. 3 the departure and the latitude are put under col. 6 or 8 col. 10 or 12 respectively. For example the cardinal direct of 12 is N.W, so the departure comes under col. 8 (west) and the latitude comes under col. 10 (north) and so on in case of others.

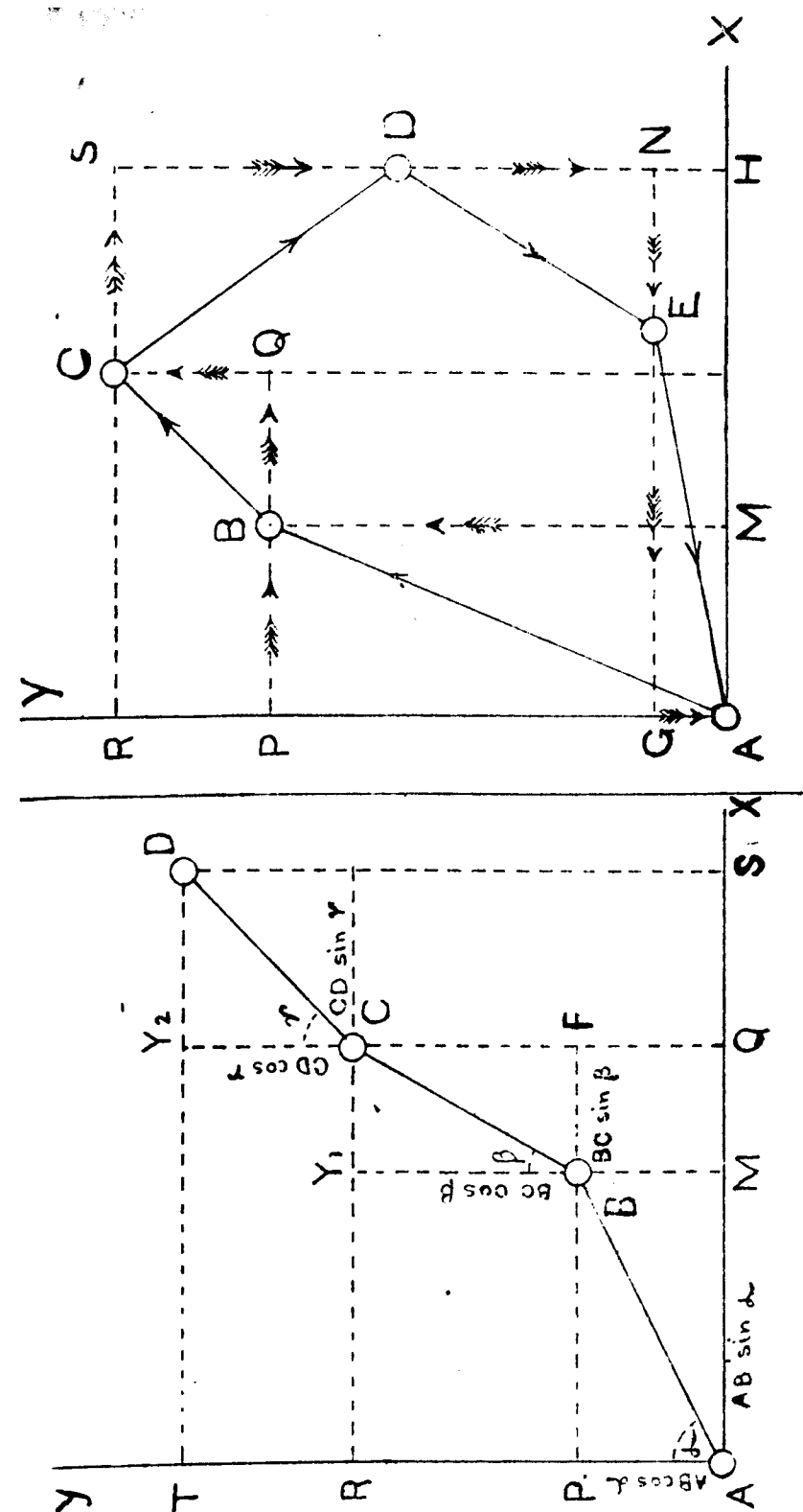
The above process of finding the departure and latitude involves too much of calculations and it can to some extent be avoided by taking logarithms of the quantities in the above equations and then by taking the antilogs the unknown departure and the latitude can be determined. The use of Boileau's Traverse Tables eliminate the above calculations much more considerably. Even the slide rule may be used for small traverse calculations.

Col. 7, 8, 9, 11, 13. It will be remembered that in a closed traverse, total of Eastings = total of Westings and total of Northings = total of Southings; but in the example given in the above table we find a difference of 8.5 in the 1st case and of 1.5 in the other. So there is error of $\sqrt{(8.5)^2 + (1.5)^2}$ lks. i. e. about 9 lks. The total chainage is 2700 lks nearly, so there is an error of 1 in 300 which is *inadmissible*. At this stage we can safely discard our work and must resurvey the area until we get an error not exceeding *1 in 500 at any rate*. For our purpose let us assume that the above error is permissible and the question is as to how to eliminate the error. For a total chainage of 2684 the eastings exceed the westings by 8.5 lks. If we distribute this difference proportionately between each distance and in case of Eastings we subtract such

difference and in case of westings we add such difference we will attain the state of equilibrium between the resulting Eastings and Westings. For example for the 1st distance 508 we will get the proportionate difference as $\frac{3.5 \times 508}{2684} = 1.6$. $\therefore$ 508 has got a westing departure, 1.6 will be added to the departure. For the 2nd distance 258 it is $\frac{258 \times 8.5}{2684} = .8$. $\therefore$ 258 has got an easting departure, .8 will be subtracted from the departure. So on we can deal with all the departures; a similar procedure is required for the latitudes. For example for the 1st distance 508 the proportionate difference is $\frac{508 \times 1.5}{2684} = .3$ and the latitude being north this difference will be subtracted from it.

Col. 14, 15, 16, 17. These columns are the final results obtained from cols. 6, 8, 10, 12 after adding or subtracting (as the case may be) the corrections of cols. 7, 3, 11 & 13 respectively. For example for 508 the westings and northings become 435 and 113.4 respectively instead of 493.4 and 113.7 in cols 8 and 10.

Cols. 18, gives the algebrical coordinates of the points with respect to the magnetic North South line and the line at right angles to it and assuming that the station 1 is at (0, 0). The co-ordinates of Δ_2 are west 495 and north 119.4. Taking the Northings and Eastings as positive and the Southings and Westings as negative quantities, we may represent Δ_2 by (-495, 113.4). Now Δ_3 107.2 East and 234.2 North of Δ_2 as shown in col. 14 and 16, so the algebrical co-ordinates of Δ_3 are $(-495+107.2, 119.4+234.2)$ i. e. $(-387.8, 353.6)$. Now Δ_4 is 85.7 West and 448.7 North of Δ_3 or the algebrical coordinates of Δ_4 are $(-387.8-85.7, 353.6+448.7)$ i. e. $(-473.5, 802.6)$



similarly Δ_5 has its coordinates as $(-478.5 + 383.1, 802.6 - 222.2)$ i. e. $(-30.4, 580.1)$. Similarly we can determine for the subsequent stations.

Method of plotting by the coordinates:—After the algebraical co-ordinates are determined, all students of Elementary Algebra must know how to plot the points on the paper. The magnetic North South line will be our Y axis and a line at right angles to it at a convenient place would serve as the X-axis. The points will be plotted and joined which would give us the required drawing of the traverse.

This finishes the seemingly cumbersome but really exceedingly easy method known as the Gale's Traverse system and I hope that with little efforts the readers would be able to master the method.

JAI SINGH JASWAL, B. A. HONS..
M. F. C. Senior Division.

[In the above article, α = Alpha; β = Beta. θ = theta]

**" Variation between the actual girth measurement with tapes
and the girth obtained by the product of π and average
diameter in the case of Normal Sal Trees ".**

A Solution.

Other conditions being equal, the growth in a tree varies directly up to a certain limit, with the amount of light available. The tissue causing growth in a tree, as is well known, is the cambium which clothes the body of the tree all round and it is this cambium which gets stimulated when light-conditions are favourable. The same idea is

embodied in the term "heliotropism" or response of the plants towards light. This being the relation, it is evident that the tree-growth is homogeneous in all directions provided that the light conditions are homogeneous all round. The proviso appended above, every one can imagine is rarely, if ever, possible, and consequently we can seldom get homogenous growth on a tree. Now then, supposing in the case of a particular tree, the growth is homogeneous, the cross-section will then be a circle, a true geometrical figure and under this condition whether the measurements are taken with a tape or with a pair of callipers, the results will be dead true. $\text{Tape measurement} = \pi \times \text{Callipers measurements}$.

It has already been mentioned that this condition is never practical in nature and as the result of it the equation $T = \pi \times C$. ($T = \text{tape measurement}$ and $C = \text{Callipers measurement}$) cannot possibly hold good especially when one is apt to splitting hairs. Fortunately enough, however, it has been found by practical observation that the above referred section if not a perfect circle, is not very much off from it and in fact, we can take it to be a circle for all intents and purposes. In the majority of cases the circle tends towards an ellipse with very little difference between the two ordinates. The mistake arising out of it can however, be more or less eliminated while using callipers by taking the average of the two measurements at right angles. This average also eliminates errors arising out of various other irregularities in the stem. Then there are errors arising out of irregularities on account of wounds and diseases in the stem. These are to a great extent avoided by personal care and common sense aided by the observance of guiding rules for use of callipers as given in various books. To the above list of sources of errors which by no means is exhaustive, may be added the errors termed

as "Personal error" and the main difficulty lies here. This error is bound to be great when an irresponsible Forest Guard's measurements is taken for verification, nor do I believe that a batch of students can make it dead correct when their personal errors might be shooting off variously. I do not mean to disparage either the batch of students or the Forest Guard: But what I mean simply is that the personal errors are so variant that it is simply difficult to estimate, and hence to avoid.

With all these difficulties there is one consolation and it is that all the errors, if not in all cases, at least in the majority of cases, tend in one direction and that is the lower value of "G" as obtained by multiplying π and D, D being obtained by calliper measurement. So that if we give a slightly lower value to π the equation $T = \pi C$ will hold good in the majority of cases. Now then, the question arises what lower value should be given to π . Various authorities have proposed various values but none more convincing than the other as all of them are "empirical." I would have mentioned the compromise value given to π but unfortunately I do not remember it very well but I think it is something like $\pi = 3.10$ instead of $\pi = 3.1415926$. However I do not propose to carry it at length because this is a subject which has been elaborately discussed by various authorities and I do not think I can throw more light on it.

In fine I conclude that a simple value of 3.10 as given to π will meet all practical cases in the life of a Forester.

R. B. GUPTA,
Forest Ranger.
WORKING PLANS,
BIHAR & ORISSA
RANCHI.

"GOVERNMENT FORESTS AND THE PUBLIC"

A Contradiction.

In his article on "Government Forests and the Public" published in the June number of the M. F. C. Magazine, Mr. J. S. Jaswal B.A. (Hons) M. F. C., has hit upon some plans to educate the illiterate masses to realise the immense benefits derived from the forests which, I think, should not pass without a comment.

The first plan he suggests is that the Indian Schools should have Elementary Forestry as an *optional* subject, in as much as, none but a few of the educated people realises the direct and indirect benefits derived from the forests. But he forgets that the majority of the schools in India, nay all of them, are situated far away from the vicinity of forest areas and that worthless is the study of Forestry without an actual look at and a hard roaming about the forest to understand how the trees grow and the influence of the forest formations upon the local conditions of soil and climate. For instance, Botany forms one of the Optional subjects in most of the schools and Colleges in Bihar and Orissa and Bengal and probably also in other provinces, but can Babu Jaswal assure me that at best 40% of the students take interest in the subject? Some good effect could have been expected had the subject been included in the *compulsory* subjects of the curriculum.

There is absolutely nothing to be wondered at in the fact that in America and Europe, Forestry forms a part of the curriculum because these countries either have institutions situated in the neighbourhood of forests, whence a practical knowledge can be acquired, or the students there

have opportunities, from their boyhood to know clearly what they will aim at in their future life, want of which forms one of the greatest handicaps for the Indian students who very often have to start with an aimless life. The institutions in those countries, it is understood are generally situated within a radius of ten to fifteen miles from the forest areas; consequently the students have got every facility of having field training in conjunction with lectures. What they do there is that they go in a bus with their Instructor, on certain week days previously fixed, to the demonstration areas for practical knowledge. It is further known that some of those institutions have nurseries at their disposal which not only supply plants, shrubs etc. for decorations to the parks and gardens but also grow native and exotic species to enable the students to study the growth and habit of various timber species. But quite contrary is the situation of our schools and colleges. They neither have any nursery at their disposal nor proximity to any demonstration areas. Even if some happen to be in the neighbourhood of the forests, the maintenance or any similar conveyance for the students may not suit the financial condition of our schools and Colleges.

What therefore is required in India is, I think a regular forestry *propaganda work* with a view to cultivate a sense of forestry in the people just as the Public Health Department has taken recourse to impart in the young men's minds, the effects of good sanitation by magic lantern lectures and exhibition of slides.

2. His second suggestion is the adoption of the 'Forest Village and Village Panchayat system.' These systems will, of course, be useful in the general management, protection and improvement of forests if what he has said is really put into practice, that is, granting prive-

leges in the forests and shares in the final profits and consequently stopping the chances of forest offences, detrimental to forest growth. The hill tribes in 99.9 per cent of cases are very illiterate and the abolition or curtailment of forest rights, supplemented by the illtreatment of the villagers by a few subordinates has resulted in a serious displeasure among them and consequently the unpopularity of the Forest Department, so much so that the removal of displeasure from their minds requires a very deep consideration as the forests can in no circumstances be protected from fires and other offences without their help. As Rao Sahib K. R. Venkataramana Ayyar, Conservator of Forests, Madras, has remarked, "Whatever the efficiency of the supervising staff may be, forest conservancy can never be effective unless Forest Officers on the one hand and forest villagers on the other hand work in mutual co-operation for the same object." Over and above the formation of the above systems, the next thing to do seems to be that the Forest Ranger along with his delivery of lectures on Forestry by exhibition of slides, must freely mix with them, settle down local disputes, find out their wants and grievances and remove them thereby winning their confidence and creating a public opinion that the forests will have to be managed for a regular and steady supply of forest produce for generations to come. I believe and it is a fact that villagers unlike town-folk will readily respond to the kind treatment if any such is rendered to them.

In fine I am of opinion that over and above the formation of the above systems, the Forest ranger must act according to what I have stated above, for which he will of course need tact and discretion and judgement, in his contact with others, particularly the woodsmen and

start forest propaganda work by exhibition of magic lantern slides along with Forestry Lectures.

What he have stated above, may strain the credulity of some of my readers but I am sure they will be effective if acted upon, with all sincerity and wholeheartedness.

In conclusion, however divergent my views may be they do not exclude the possibility and a reasonable expectation to win over the forest Villagers and educate the illiterate mass of people about Forestry and thereby realising through them, the management, improvement and protection of forests at the end.

RASH BIHARI GUPTA, Forest Ranger,
Working Plans, Bihar and Orissa,
RANCHI.

Importance of scientific Forest Management with special reference to India.

It is surprising how little is known of the science of forestry, by the ordinary man in the street, even in these so called "advanced" days. The idea is very prevalent that forests are relics of barbarism, that the clearance of forests is in itself an improvement, and that as civilisation advances, forests must necessarily be destroyed, to make room for arable land and sites for cities and townships. It is only in comparatively recent years that the fallacy of this idea has come to be recognised and proper schemes for the conservation of forests taken in hand.

The history of the forests reflects little credit on the wisdom of man. Geologists and naturalists tell us that the greater portion of the dry land of this earth was at one time

covered with forests, then came man and by indiscriminate and reckless cutting, first to obtain pasture for his flocks and herds, then to prepare the land for agricultural pursuits, and latterly to obtain timber for economic purposes, reduced the area under forests to a very considerable extent, in many cases causing irreparable damage.

It may be argued that the destruction of forests was necessary in the interests of civilisation, in as much as no great progress could have been made if the greater part of the earth was allowed to remain virgin forest. That is true to a certain extent. It was necessary that forests should be felled, but the harm was caused through the felling being carried out indiscriminately at every one's own sweet will and pleasure, and without any realisation of the intrinsic value of forests. In the economy of man and of nature forests are of direct and indirect value, the former through the produce which they yield, and the latter through the influence which they exert on climate, the nature of the soil and similar matters. Let us examine this further and see just in what factors the utility of forests lies.

First, their indirect utility. A piece of land bare of vegetation is subjected to full effects of sun, wind and rain, and air currents. On the other hand a piece of land covered with forest is protected from these agencies by the trees intercepting the sun's rays, breaking the force of the falling rain and intercepting air currents. In addition the roots of the trees penetrate in all directions, binding the soil together while the fallen leaves, flowers and fruits together with the plants that grow in the shade of the trees form a bed of mould, which regulates the temperature, and greatly influences the movement of water in it. These beneficent effects are not confined to the area actually under forest, but extend also to the country round about. Briefly

then the indirect utility of forest lies in the following facts. They reduce the temperature and evaporation, thus rendering the climate more equable and increasing the relative humidity of the air; they help to regulate the water supply, feeding springs, and through the spring affording a continuous supply of water for rivers, thus tending to reduce violent floods. They assist in preventing erosion, denudation, and landslips and protect neighbouring fields against cold or dry winds, besides affording shelter to animals and birds. They may under certain conditions increase the rainfall, improve the healthiness of the country, to assist in its defence. Lastly they are a source of beauty and exert a healthy aesthetic influence upon the people.

The direct utility of forests lies chiefly in the produce they yield, the capital they represent and the work they provide. The produce of forest consists principally of timber and firewood, and although in these days iron and other materials successfully compete with timber, while coal, and latterly electricity are serious rivals of firewood, there is no likelihood of the demand for wood ever ceasing. Fodder is another, though a minor, forest produce while mention need only be made of such products as tanning materials, resin, turpentine, rubber, lac, (the last named an important industrial product in the model state of Mysore) to realise the great value of forests from an industrial point of view. The capital which the forests represent consists chiefly of the soil and of the stock of wood. A sustained yield may be expected from a forest properly managed and in many cases the profits derived from the forest land are greater than those derived from lands used for agricultural purposes. These then are the factors which constitute the utility of forests.

Let us now look at the other side of the picture. What does deforestation, when carried out in a reckless manner

mean? It means once a beautiful country-side scarred and blackened. It means a temperate climate exchanged for one of extremes.

Let us now take a concrete example, India. In early times the greater portion of India was covered with forest, peopled by aboriginal tribes. Then came the Aryan, and other central Asian invaders from the North, driving the aboriginies southwards and cutting down huge areas of forest to provide grazing lands for their flocks and herds and for agricultural purposes. Each successive tide of invasion resulted in further destruction of forests as the early Aryan invaders were forced Southwards by the new conquerors. In those early days there was no forest management. The forest was a free gift of god, men used it and destroyed it as they pleased. This process went on for centuries till the advent of the British in India. The result of this continued deforestation was deleterious so that what at one time was well populated fertile land became deserted barren waste. It was not until the shortage of timber for public work was experienced that the government of India woke up to the fact that a serious mistake had been committed in allowing the forests to be recklessly destroyed. Having realised this error the government immediately set about rectifying it, and the year 1864 saw the birth of the Indian forest department. Since then remarkable progress has been made until now India ranks foremost among the countries of the East in scientific forest management.

A. P. SITARAM MUDALIAR,
M. F. C Senior Division.

The Madras Forest College Athletic Sports, 1928.

The athletic sports of the Madras Forest College were held on the college ground on the 31st October, 1928. The rainy and inclement weather of the morning fortunately changed into a fine one in the afternoon, enabling us to keep to our programme except in the fag end, when the last event, the sack-scrimmage had to be cancelled owing to a threatened thunder-storm.

Prominent among those present were: Mr. A. Wimbush, Chief Conservator of Forests, Mr. and Mrs. Whitehead, Mr. E. F. Thomas C. I. E., I. C. S., Collector of Coimbatore, Lt. Col. P. L. O'Neill, D. M. S. O., Messrs. J. M. Sweet, R. O. Iliffe; Rao Bahadur M. R. Ramasamy Sivan, Mr. C. Tadulinga Mudaliar, Rao Bahadur C. S. Ratnasabapathy Mudaliar, The Raja of Kollengode etc.

The Richmond Cup awarded to the competitor gaining the highest aggregate of marks was won this year by Senior Division student A. Astewala who gained 25 points as against 15 of last year's winner—four firsts, viz, in 100 yards, $\frac{1}{4}$ mile, mile, and high-jump; second in long-jump, and third in 120 yards hurdles, and throwing the Cricket-ball. The winner acquitted himself particularly well in the mile race which he completed in about a second more than the college record time. A very handsome cup was presented for this event by the Chief Conservator of Forests. Junior Division student B. R. Singh came second, with 18 points. Student Apte who won the obstacle race last year repeated his success this year.

Mrs. T. A. Whitehead kindly distributed the prizes.

The following are the events :—

1. Throwing the Cricket ball :—

- | | |
|-------------------|----------------------|
| I. N. Tiga | ... 83 yards 6 feet. |
| II. B. R. Singh. | |
| III. A. Astewala. | |

2. High jump: —

- | | |
|------------------|-----------------|
| I. A. Astewala, | ... 4 ft, 7 in. |
| II. B. R. Singh. | |
| III. S. M. Ali. | |

3. 100 Yards Flat Race:—

- | | |
|----------------|------------------|
| I. A. Astewala | ... 11 3/5 secs. |
| II. S. M. Ali. | |
| III. B. Ali. | |

4. Half mile:—

- | | |
|----------------|----------------------|
| I. B. R. Singh | 2 min. 28½ sec. |
| II. E. Cameron | |
| III. N. Tiga. | |

5. Invitation half mile: —

- | | |
|-------------------------------------|--------------------|
| I. Central Recruit school | ... 2 min. 16 sec. |
| II. London Mission High School. | |
| III. Government College Coimbatore. | |

6. 120 Yards Hurdles:—

- | | |
|-------------------|-------------|
| I. B. R. Singh | ... 21 min. |
| II. Premar | |
| III. A. Astewala. | |

7. Mile:—

- | | |
|----------------|---------------------|
| I. A. Astewala | ... 5 min. 29½ sec. |
| B. Ali. | } dead heat. |
| E. Cameron. | |

8. Quarter mile:—

- | | |
|-------------------|-----------------------|
| I. A. Astewala | ... 1 min. 2 1/5 sec. |
| II. S. M. Ali. | |
| III. B. R. Singh. | |

9. Long Jump:—

- | | |
|-------------------|-----------------|
| I. N. Tiga | ... 16 ft. 6 in |
| II. Astewala. | |
| III. B. B. Singh. | |

10. Quarter mile (for past students of M. F. C.):—

None turned up.

11. Obstacle race:—

- | |
|-------------|
| I. Apte. |
| II. Premar. |

12. Relay race:—

RED TEAM,
(Central Provinces.)

EXTRACTS.

1. Long lived plant cells:

D. T. MacDougall and his collaborators have made some interesting observations regarding certain types of plant cells which seem to show remarkable longevity. Living medullary cells of the tree-cactus (*Carnegia*), well over a century old, have been recorded, and examination of elements of all ages indicates active enlargement during the second half of the century. The melon cactus (*Fero-cactus*) has also been found to contain similar medullary

rays of great age, the active growth, in this case, however ceasing after the first decade. * * * * Still more recently MacDougall and Smith have recorded living ray cells in the heartwood of *Sequoia sempervirens*. The changes in the Redwood are accompanied by the disappearance of starch and protoplasts from all wood parenchyma cells, and the formation of an orange coloured resin that completely or partially fills the lumina. Similar disappearance of starch from the ray parenchyma cells is not always followed by the death and disintegration of the protoplasts, and a thin layer of cytoplasm and a conspicuous nucleus are sometimes retained. Cells of this kind have been recorded by the authors from places seventy layers deep in the heartwood, and as the sapwood was about twenty three layers in thickness the approximate age of the cells was reckoned at nearly a century.

Nature, May 26, 1928.

2. Branching in the Oil Palm:

A most remarkable case of branching in the Oil Palm (*Elæis guinensis*) is recorded in the recent issue of the "*Kew Bulletin of Miscellaneous information*". The palm in question is at Sierra Leone, is supposed to be more than hundred years old, and has never been known to bear fruit. It branches very abnormally at a height of six feet or so from the ground, and sends out and up from a kind of fasciated growth eight normal sized branches which attain a normal height. A further remarkable feature is that two of these branches have also branched. In many cases branching or forking in palms is due to injury or destruction of the growing point. The author finds it difficult to believe that the branching in this case is due to accidental causes, since the repeated branching would seem to indicate a physiological character. He would be

interested to learn if any other cases of branching in the oil palm have been met with in any other part of West Africa or elsewhere.

3. Periodical flowering of bamboo:

In the *Japanese Journal of Botany*, Seiichi Kawamura analyses the problem of periodicity in the flowering of the bamboo. The brakes come into flower at intervals of many years, the phenomenon occurring universally and simultaneously in the case of all brakes of the same species, even though situated in different provinces of Japan and in different latitudes. Different species, however, come into flower at different periods. The period of flowering seems to be unrelated to the age and extension of the brake, the thickness of the aerial stems, the fertility and humidity of the soil, exposure to sun, or climate of locality. From incomplete chronological records, the author assumes that the species *Phyllostachys Henonis* flowers at intervals of 120 (occasionally 60) years. Other species of bamboo show a similar order of periodicity. From consideration of the vegetative propagation of the bamboo, carried out by means of subterranean organs it is suggested that all members of one species originated vegetatively from one ancestor, and thus all individuals of that species would be outogenetically of the same age. This would explain the simultaneous flowering, which is seemingly independent of external conditions.

Nature, March, 17, 1928.

4. Will a Bear stay up a Tree?

The following item appeared in a recent issue of yosemite Nature notes:

"A group of nature students were crossing Yosemite Valley through the automobile camps when a camper attracted their attention to a black bear about forty feet up in a large yellow pine. According to the statements of nearby campers, this bear had gone up the tree the night before. A man and a boy had slept beneath the tree, and apparently the bear had been afraid to come down. The consequent interest of campers which resulted in crowds gathering had continued to keep the bear treed. Thus, if the campers' statement can be believed, the bear had been in the tree since 10 o'clock the preceding evening and accordingly had to make himself comfortable for more than twelve hours. As the party watched the bear, they noted that he had become tired of standing on his feet on a limb and he had seated himself on his haunches with the front feet grasping an upper limb. On returning to the spot an hour later the bear was still in the tree apparently taking a noon-day nap. Having searched out a large limb, he was lying flat on his stomach with his four legs hanging down on all sides.—Unfortunately, it was not possible to see exactly how long the bear did stay in the tree. Hunger would eventually drive him down, but the main point is that black bears, are fairly at home in trees, and by using a number of different postures they are able to make themselves comfortable."

—*American Forests and Forest Life, April 1928.*

5. Starch and Cambium activity in the woody twig:

Swarbrick has recently directed attention to the complexity of the problems associated with the appearance and disappearance of starch in the woody twig. Curtis has previously drawn conclusions as to the necessity of phloem

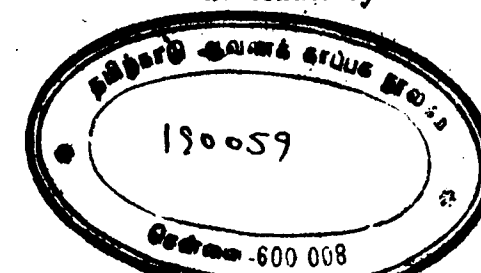
for translocation from the retention of the starch in a region of the stem isolated between two rings made down to the cambium. Swarbrick now shows that the retention of this starch depends upon the absence of buds in the region lying between the rings, and is associated with the absence of cambial activity under these conditions. If buds are present then cambial activity is initiated in this region, and the starch quickly disappears. Experience with dis-budded twigs, upon which an occasional adventitious bud regenerates, shows that, whilst a limited amount of cambial activity and Xylem formation is found below this bud and nowhere else on the twig, starch hydrolysis begins below this bud and then continues throughout all the tissues of the twig below this bud. In this case starch disappearance seems rather dependent upon cambial activity than the latter upon the food reserves, and both seem to be connected with the initiation of bud development.

Nature April 14, 1928.

6. Compressive tests on Balsa Wood:

Balsa wood (*Ochroma lagopus*) has been used on several occasions to insulate machinery so that the vibration of the machine would not be transmitted to the floor, and has apparently proved successful for this purpose. Since few data are available on the compressive properties, of Balsa wood, the United States Bureau of Standards conducted tests to determine how much shortening took place under a uniformly distributed load, how much permanent set remained when the load was removed, and the compression time relations when the Balsa wood was loaded by dead weights.

4
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* * * At low loads the proportionality between the stress and the shortening of these specimens was remarkably close. It was therefore possible to find fairly definite values for the proportional limit from the stress strain curves. For stresses higher than the proportional limit the compression increased more rapidly than the load and consequently, the load increments were increased and the tests were continued until the final thickness was about one-half of the original thickness. * * * As with specimens of other materials having a large area compared to thickness, the Balsa wood did not appear to have a definite maximum compressive strength. The load continued to increase as the thickness decreased.

—Tropical Woods, June 1928.

7. A wood which is durable in contact with the ground and exposed to the weather does not necessarily mean that it is also resistant to marine wood borers. Molave (*Vitex spp.*) and Ipil (*Intsia*) which are considered very durable woods, fail in a relatively short time when exposed to the attacks of marine wood borers

Most woods which fail in a relatively short time when exposed to the weather last longer and, in fact, are very rarely attacked by insects when used for interior work. Guijo (*Shorea spp.*), Apitong (*Dipterocarpus spp.*) which are not durable when exposed to the weather will last for a very long time if properly used for interior work. Woods like Pahutan (*Mangifera*), the various members of the family Burseraceae (Kamingi—*Santiria*; Pagsahingin—*canarium villosum*), members of the family Myristicaceae while hard and heavy enough, fail in a relatively short time, even if employed in interior work as they are subject

to the attack of house termites (*cryptotermes* and *Plano-cryptotermis*.)

Annual report of the Director of Forestry of the Philippine Islands for the fiscal year ended Dec. 31, 1926.

8. Weather made to order :

Artificial winter weather ranging from a mild day to 30 degrees below zero has been reproduced in a laboratory at Massachusetts Institute of Technology for studying the effect of low temperatures on certain insects which cause great losses in forest and orchard. * * * As a result of this experiment, which is part of a scientific campaign to prevent further spread of insect pests, the entomologists of the bureau hope it will be possible to forecast relative abundance of some of these insects following severe winters. The tests are also expected to determine definitely the temperatures fatal to the hibernating forms of the insects treated. * * *

The process, however, was not a continuous and steady lowering of temperature. As such conditions never occur in nature the greatest care was exercised to stimulate natural conditions as closely as possible. This was accomplished by slowly lowering temperature to reproduce the conditions of night and allowing it to rise as it does in nature during the day.

9. 'Fatherless' apples having fertile seeds :

Healthy apple trees grown from seed that never had a father have been produced in Switzerland, according to Dr. Swingle, National Research council fellow in Botany, who is now studying at the University of Leeds. The

production of seed by unpollinated flowers is not unknown in the plant world, for the common dandelion regularly forms asexual seed and many other plants do likewise; but it has long been almost a dogma that viable apple seeds could not be formed without the intervention of the male element which comes from the pollen. The Swiss trees, according to Dr. Swingle, have been grown from seeds produced by flowers which had been deprived of their stamens and covered with bags to prevent insects from bringing in pollen from other flowers. Their fruits are identical with those of their mother trees, which rarely is the case in ordinary seedling apples but regularly occurs with asexually propagated, that is, grafted, trees.—Science Service.

Scientific American, June 1928

10. Biggest Teak Tree in Burma:

A teak tree in Bhamo Division, Burma, yielded about 27 tons of wood, the girth at breast height being about 26 ft.

Indian Forester, July 1928.

11. Luminous wood.

A specimen of wood taken from a tree that had been lying for some time on leaf mould in a certain forest was found to be luminous. Mr. J. Ramsbottom explains the luminosity as due to the invasion of the timber by the fungus *Armillaria mellea*, the luminosity of the fungus itself being caused by the same reactions of luciferin and luciferase as occurred in animals; the luminosity was continuous if the temperature was above freezing-point and in the presence of oxygen.

Barn-owls some times appear luminous on account of particles of luminous wood from the lining of the nest holes adhering to their plumage.—*Linnean Society of London.*

Indian Forester July 1928.

12. During the year 1926—27, a matter which is of great importance in the history of the Department, viz., the work of classifying reserved forests into those which are to be managed by the Forest Department and those which will be handed over to panchayats under the control of the Revenue Department, was finally settled, and as a result an area of about 3,300 square miles out of the total of about 19,000 square miles of reserved forest in this Presidency will in future be managed by panchayats. The principle of this new classification has broadly been that those forests which are intended to supply the ordinary every day requirements of the ryots shall be managed by the ryots themselves.

Railway Sleepers:—

The Valparai Sleeper Project for the extraction of Railway sleepers from the forests in the Anamalais, destined for planting with cinchona, has proved profitable. 7,443 broad, narrow and metre gauge sleepers were extracted. The result of the operations of the year (1926—27) was a profit of Rs. 19,795. A total of 17,735 broad gauge sleepers and 13,823 metre gauge sleepers were supplied during the year. In addition a contract was obtained for the supply of 15,000 narrow gauge sleepers for the Cauvery Mettur Project.

London Sales agency:—

The total quantity of timber handed by Messrs. Howard Bros., & Co., during the year was 9,205 c. ft.

including 5,466 c. ft. of rose wood consigned during the year. 7241 c. ft. (*Terminalia tomentosa*, Rose wood *Terminalia paniculata*, *Adina cordifolia* and Teak) were sold during the year leaving a balance of 2024 c. ft. (*Terminalia* and *Allizia Lebbek*) with the agents at the end of the year.

The estimated value of sales effected by the Forest Utilization Officer during the year (1926—27) was about ten lakhs of rupees, as compared with about four lakhs of rupees in the previous year.

Sandal wood:—

Some 724 tons of sandal wood were sold realising Rs. 9,27,771 (at Tirupattur 430 tons, at Satyamangalam 174 tons and at Vellore 120 tons.) The average price realised was Rs. 1,286 per ton as compared with the last year's figure of Rs. 1,148. The increase in the quantity sold is due to increased extraction of spiked Sandal trees in North Salem and in Kollegal divisions where it had been suspended in the previous year.

The following figures are of interest:—

Period.	Out put of sandal in tons.	Revenue.
1913—14	273	Rs. 1,52,375
1919—20	497	7,19,592
1920—21	418	6,67,471
1921—22	521	6,05,358
1922—23	468	5,54,358
1923—24	710	7,86,118
1924—25	703	8,88,085
1925—26	541	7,52,804
1926—27	724	9,27,771

Elephants:—

During the year (1926—27), 32 elephants were captured, 2 were purchased and 7 calves were born * * * capturing operations were conducted in S. Coimbatore, the Niligiris, the Wynaad and the Nilambur Divisions and resulted in 32 captures (7 in S. Coimbatore, 13 in the Niligiris, 7 in the Wynad, and 5 in Nilambur) * * * The cost of the operations was Rs. 10,608.

Finance:—

The total revenue for the year (1926—27) amounted to Rs. 55.30 lakhs as against Rs. 51.70 lakhs in the previous year. The expenditure was Rs. 50.58 as compared with Rs. 48.15 lakhs in the previous year. The result was a surplus of Rs. 4.72 lakhs as compared with Rs. 3.55 lakhs in the previous year.

Forest Division.	Surplus.	Deficit.
Vizaapatam	Rs. 10,578	
Lower Godavari	1,52,497	
Nellore	1,06,938	
Guntur	84,000	
Ananthapur	1,90,779	
East Kurnool		13,425
West „	28,137	
South „	29,514	
North Cuddapah		38,060
South „		15,343
Chittoor „	11,981	
Vellore	2,50,230	
North Salem	4,13,033	
Central „	97,652	
South „	66,521	
Kollegal	71,114	
North Coimbatore	1,53,213	

Fores Division.	Surplus.	Deficit.
South „		1,42,672
Madura	36,665	
Tinnevelly	83,222	
North Mangalore		14,200
South „		43,485
Wynaad	16,332	
Nilgiris		48,221
Palghat	29,062	
Nilambur	45,804	

Extracts from Administration Report of the Forest Department for the year 1926—27.

Gzette Notifictios.

3—7—28.

Mr. R. H. Mitchell, Senior Instructor, Madras Forest College, leave on average pay for eight months with effect from 15th July 1928.

M. Amir Padsha Sahib Bahadur, E.A.C., Central Salem Dn., to act as D.F.O., N. Cuddapah Dn.

In modification of notification dated 18th June, Mr. M. C. Chandy, E.A.C., and junior Instructor, Madras Forest College, granted leave on average pay for two months with effect from the 10th July 1928.

10—7—28.

Consequent on the retirement of Mr. H. Tireman, C.I.E., Mr. R. D. Richmond Acting Chief Conservator of Forests, to be Chief Conservator of Forests, *permanent*, with effect from 30th June 1928.

17—7—28.

The posting of Mr. M. C. Chandy, to the North Cuddapah Division is cancelled.

24—7—28.

Mr. H. A. Irwin, Forest Engineer, privilege leave for one month and seven days from 11th August 1928, and furlough on half average salary for ten months & seventeen days in continuation thereof till the date of the expiry of his contract on 4th August 1928.

M. B. Ry. V. N. Seshagiri Rao Avl., E. A. C., is attached to the office of the conservator of forests, I circle for the period from 15th July to 15th Oct 1928.

M. R. Ry. S. Ramsami Ayyar Avl., E. A. C., granted leave on average pay for two months and twenty five days with effect from the 19th July 1928 or date of relief.

Mr. N S. Ghate, A. C. F., is attached to the Vellore Division vice M. R. Ry. S. Ramasamier Avl, on leave or until further orders.

Mr. C. J. Van Haeften E. A. C. granted leave on average pay for fifteen days with effect from 16th July 1928.

31—7—28.

Mr. A. A. F. Minchin, to be conservator of Forests, *permanent*, with effect from 30th June 1928 vice Mr. R. D. Richmond, confirmed as Chief Conservator of Forests,

Mr. E. A. Lasrado, A. C. F., Palghat, is transferred to the Nilgiri Division for work in the Mudumalai Range with effect from or about the 15th August 1928. His headquarters will be Kargudi.

7—8—28.

The Government of India have sanctioned the deputation of Mr. R. D. Richmond, chief conservator of Forests, as a delegate to be Empire Forestry Conference to be held in the Autumn of 1928 in Australia and New Zealand.

14—8—28.

Mr. J. A. Master, Dy. Conservator of forests, leave on average pay for four months, with effect from 10th October 1928, or date of relief.

Mr. A. Wimbish, Conservator of forests, Third (working Plans) Circle, to act as Chief Conservator of forests, vice Mr. R.D. Richmond on other duty.

(The leave granted to Mr. A. Wimbush, in G. O. dated 21st March 1928, is cancelled).

Mr. C. M. Belliappa, E. A. C., on return from leave, to be Junior Instructor, Madras Forest College. vice Mr. M. C. Chandy.

Mr. P. W. F. Walpole, E. A. C., to be senior Instructor Madras Forest College, vice Mr. R. H. Mitchell.

Mr. A. A. F. Minchin, Conservator of Forests, Sixth Circle to be Conservator of Forests, Third (Working Plans) Circle.

Mr. F. R. Madan, Ag. Conservator, First Circle, to be Ag. Conservator Sixth Circle, in relief of Mr. Minchin.

Mr. J. H. Longrigg, Dy. Conservator of Forests, to act as Conservator of Forests, First Circle, vice Mr. F. R. Madan.

Mr. N. Trimurthi, Assistant Conservator of Forests, to act as D. F. O., Tinnevely, vice Mr. J. H. Longrigg.

Mr. S. Ragunatha Rao, Assistant Conservator of Forests, granted extension of leave for one month and four days.

21—8—28.

M. R. Ry. P. Govinda Menon, E. A. C., on special duty in Gudem Agency is attached to the Ganjam Dn., with effect from the 4th August 1928 until further orders.

4—9—28.

The leave granted to Mr. R. H. Mitchel, E. A. C., in G. O. dated 25-6-28 is modified into leave on average pay for four months and in continuation thereof leave on half average pay for four months.

Mr. C. J. Van Haeften, E. A. C.; will act as Forest Engineer, during the absence of Mr. H. A. Irwin, on leave or until further orders.

11—9—28.

Mr. C. Mahony, E. A. C. of Forests, Tinnevely Dn. is attached to the Logging Engineering Dn. with head quarters at Ootacamund.

18—9—28.

The services of Mr. C. C. Wilson, Forest Economist at the Forest Research Institute Dehra Dun, are replaced at the disposal of the Government of Madras with effect from the afternoon of the 30th April, 1928.

Mr. A. Raju Nayakar, E. A. C., Vizagapatam, granted leave on average pay for six weeks with effect from the date of relief.

Mr. V. N. Seshagiri Rao, E. A. C. of forests, attached to the I circle, will act as D. F. O., during the absence of Mr. Raju Nayakar on leave, or until further orders.

2—10—28.

Mr. H. E. Brown, E. A. C. of Forests, Wynaad, to be Assistant Working Plans Officer, with effect from 2nd November 1928 or date of relief.

Mr. M. C. Chandy, E. A. C., granted extension of leave on average pay for 24 days from 11th September 1928 and on half average pay for six days in continuation thereof.

Mr. M. C. Chandy, E. A. C., will on return from leave, be attached to the Vellore Division.

Mr. N. S. Ghate, A.C.F., Vellore, will on relief by Mr. Chandy be attached to the office of the Conservator of Forests, fifth circle.

Notifications relating to Rangers.

18—8—1928.

The grant of leave on average pay without medical certificate for one month from 1st August 1928 to M. R. Ry. P. A. Venkataraman Ranger V Grade is approved.

13—8—1928.

The Chief Forest Engineer, Madras, approves (1) the grant of leave on full average pay from 15-8-1928 to 29th September 28 (both days inclusive) to M. R. Ry. K. Raghavan Ranger VI Grade, Nanjangud. (2) the posting of M. R. Ry. B. K. Krishna Rao, Ranger III Grade, Kasargod to relieve K. Raghavan and to be in charge of Kasargod and Nanjangud Depots until further orders ordered by the Forest Utilisation Officer, Madras.

11—9—1928.

M. R. Ry. T. D. Ponniah, Ranger VI Grade, Logging Engineer's Division, Ootacamund, is granted leave on average pay for two months with effect from the forenoon of 9-8-1928.

11—9—1928.

M. R. Ry. A. P. Sreenivasa Aiyangar, Ranger, III Grade Forest Utilization Division, is granted an extension of furlough for 9 months with effect from the date of expiry of his last leave sanctioned in this office S. O. dated 27-8-28 to 5-4-28.

First Circle.

27—7—1928.

The leave on average pay for one month from the afternoon of 4—7—1928 granted by the District Forest Officer, Ganjam in his S. O. dated 3—6—1928 to Ranger M. R. Ry. B. Chenchurama Naidu, III grade, is extended by another month.

30—7—1928.

1. Mr. C. S. King, Ranger III grade on expiry of leave on 2—9—1928 to Cherla Range, Upper Godavari.
2. On relief by No. 1 M. R. Ry. P. Chengal Reddi, Ranger VI grade to Peddapur Range, Lower Godavari.
3. On relief by No. 2 M. R. Ry. T. S. Ratnavelu Mudaliar, Ranger VI grade to Surada Range, Ganjam District.

3—8—1928.

M. R. Ry. M. Subba Rao, Ranger VI grade is granted leave on average pay for 4 months with effect from date of relief by Ranger D. Krishnaswamiah.

11—8—1928.

M. R. Ry. M. Narasinga Rao Naidu, Ranger V grade, granted leave on average pay for four months with effect from date of relief by Ranger Chenchuram Naidu whose leave expires on 4th September 1928.

17—8—1928.

M. R. Ry. B. S. Sankara Iyer, Ranger VI grade, on expiry of his leave (12—9—1928) is posted to Bailiguda Range charge, Ganjam District.

25—8—1928.

The leave on average pay granted for four months on medical certificate to Ranger D. Krishnasawami Ayyar in this office S. O. dated 19—4—1928 is extended by two months.

17—8—1928.

1. If and when Ranger Kirimani Sahab is recommended leave by the District Medical Officer, the following arrangements proposed by the District Forest Officer are approved as a temporary measure.
- (i) Mr. E. K. Krishnan, Extra Assistant Conservator to hold charge of Mojjogoda Range.

(ii) Ranger B. Gulam Dustagiri Sahab on relief to assume charge of Pondakhol Range and to be in additional charge of Surada Range till Ranger T. S. Ratnavelu Mudaliar joins from Lower Godavari.

2. Service order No. 16/28 dated 11—8—1928 granting leave to Ranger M. Narasinga Rao is cancelled.

3. Mr. Saiyed uddin Ahmad Sahab Bahadur, Extra Assistant Conservator to be temporarily in charge of Kukulaba Range till Ranger M. Narasinga Rao joins.

30—8—1928.

V.N. Leapingwell Supernumerary Ranger attached to Rampa Agency, Godavari Lower is granted leave on average pay for two months and fifteen days with effect from 26th July 1928.

7—9—1928.

Mr. M. A. H. Kirimani Sahib Ranger IV grade leave on average salary for 8 months on medical certificate with effect from date of relief.

9—9—1928.

M. R. Ry. A. Thirupathi Raidu, Supernumerary Ranger Godavari Upper is granted leave on average pay for three months with effect from 20th June 1928.

17—9—1928.

1. On return from leave (28-9-1928) M. R. Ry. A. Thirupathi Raidu, Supernumerary Ranger to Kukulaba Range Ganjam, to relieve M. R. Ry. M. Narasinga Rao granted leave for 4 months.
2. R. Jagannatham Naidu, Ranger VI grade on return from leave (17-10-1928) to Mojjogoda Range, Ganjam.

5—10—1928.

Under Rule 81 of the Fundamental Rules Mr. Lewin Ranger IV grade, Vizagapatam is granted leave on average pay on medical certificate for three months with effect from date of relief.

12—10—1928.

The leave granted to Ranger B. S. Sankara Iyer in this office S. O. No. 26 dated 9-5-1926, 60 dated 15-9-1927 6 dated 10-1-1928 and 51 dated 2-6-1928 is extended by leave not due on half average pay on medical certificate for six months from 12th September 1928.

Second Circle.

15—7—1928.

1. M. R. Ry., A. Vyasalu Ranger VII grade, in charge of Bairluty Range, Kurnool West Division, on relief by M. R. Ry. B. H. Anandathirtha Rao, is posted to charge of Balapalle Range Cuddapah South Division.
2. M. R. Ry., T. M. Krishnamachari, Supernumerary Ranger in charge of Balapalli Range, on relief by No. 1 is posted to special duty Kurnool West Division.

Note :—This cancels the posting of M. R. Ry., A. Vayasalu to special duty to Kurnool West.

20—7—1928.

M. R. Ry., T. K. Ramaswami Ayyar, Ranger II grade is granted an extension of leave on half average pay for a period of 3 months and 26 days in continuation of the leave already granted.

2. M. R. Ry., N. Rajagopala Chetty Supernumerary Ranger in charge of Markapur Range, on relief by M. R. Ry., A. Seetharamayya, Junior Instructor, Vernacular Training School, is posted to charge of Bukkapatnam Range as a temporary measure.

To join expeditiously.

This cancels his posting to Kurnool South on special duty.

14—8—1928.

1. M. R. Ry., M. Krishna Rao Ranger III grade is granted leave on average pay for one month from the date of relief.
2. M. R. Ry., A. Vyasalu Ranger VII grade transferred to this division is posted to Kodur Range to relieve No. 1.
3. M. R. Ry., T. M. Krishnachary Supernumerary Ranger transferred to West Kurnool Division will continue in charge of Balapalle Range until further orders.

23—8—1928.

M. R. Ry., C. Ramaswami Nayudu Ranger, I grade, on expiry of his leave on 3rd September 1928 will rejoin duty as Range Officer Bukkapatnam.

2. M. R. Ry., N. Rajagopala Chetty Supernumerary Ranger now in temporary charge of Bukkapatnam Range will remain attached to the same Range after relief by No. 1 pending further orders.

23—8—1928.

1. M. R. Ry., M. Krishna Rao—Ranger III grade on expiry of his leave on 17—9—1928, is posted to the charge of Sanipaya Range Cuddapah South Division. To join expeditiously.
2. M. R. Ry., T. Venkatasubbiah Ranger V grade, in charge of Sanipaya Range, on relief by No. 1, is transferred to Sirvel Range, Kurnool South Division—vice M. R. Ry., N. C. Mahadevan Pillai who is reported to have applied for leave. To proceed expeditiously after relief.

24—8—1928.

M. R. Ry., S. Ramachandra Ayyar Ranger III grade is granted an extension of leave on average pay on medical certificate for a period of 2 months from 11—8—1928 in continuation of the leave already granted.

8—9—1928.

The leave of 2 months granted to M. R. Ry., C. Ramaswami Nayudu Ranger I grade will be treated as leave on average pay without medical certificate instead of leave on average pay on medical certificate as previously ordered.

9—9—1928.

M. R. Ry., N. C. Mahadevan Pillai Ranger II grade in charge of Sirvel Range Kurnool South Division is granted leave on average pay for one month and 21 days and leave on half average pay 9 days in continuation thereof from the date of relief by M.R.Ry., T. Venkatasubbiah Ranger V grade already posted to charge of Sirvel Range.

2. M. R. Ry., T. Venkatasubbayya should join expeditiously on relief by Ranger N. Krishna Rao who should also join Sanipaya Range expeditiously on expiry of his present leave.

22—9—1928.

M. R. Ry., D. Venkateswaralu, Ranger VII grade is posted to the charge of Gundlabrahmeswaram Range Kurnool West Division, vice M. R. Ry., A. Muthukrishnan who has applied for leave.

To join expeditiously.

8—10—1928.

M. R. Ry., S. Ramachandra Ayyar; Ranger III grade on expiry of leave is posted to charge of Bukkapatnam Range, Anantapur Division.

2. M. R. Ry., N. Rajagopala Chetty Supernumerary Ranger, in charge of Bukkapatnam Range, on relief by No. 1 to be on special duty in Anantapur Division.

26—10—1928.

1. M. R. Ry., C. Ramaswami Nayudu Ranger, I grade on return from medical leave (3—11—1928) is posted to Dhone Range, Kurnool West Division.
2. Mr. A. Rahiman Khan, Ranger VI grade, Dhone Range, Kurnool West Division on relief by No. 1 is posted on special duty Kurnool South Division to be attached to Gundalakamma Range for departmental timber fellings in Isukagudam Coupe No. 4.

Third Circle.

16—7—1928.

1. Ranger T. V. Govinda Rao V grade, from Shevaroy's North Range to Cauveri Range.
2. Ranger T. D. Rajabhadar Mudaliyar, VI grade, from Cauveri Range to Shevaroy's North Range.

18—7—1928.

M. R. Ry. V. D. Ramalingam Pillai, Ranger VII grade, North Salem division, is transferred to the charge of Shevaroy's South Range, Central Salem division.

2. M. R. Ry. J. S. Vedanayagam, Supernumerary Ranger, Vellore division, is transferred to North Salem division for special duty in connection with the checking of patta Sandalwood trees.

24—7—1928.

1. M. R. Ry., V. D. Ramalingam Pillai, Ranger VII grade, is posted to the charge of Denkanikotah East Range, North Salem Division.

2. M. R. Ry., V. Narayanaswami Ayyar, Ranger, V grade in charge of Denkanikota East Range, North Salem Division, is posted to the charge of Shevaroy's South Range, Central Salem Division.

22—8—1928.

M. R. Ry. J. Z. Robert Paul, Ranger V grade, Central Salem division, is permitted to return to duty cancelling the unexpired portion of the leave granted to him in this office Service Order No. 45 of 1928, dated 6—6—1928.

2. He is transferred to South Salem division for special duty in connection with the enumeration of patta Sandal trees.

5—9—1928.

M. R. Ry., R. Manikam Pillai, Ranger, III grade, Vellore division, is granted an extension of leave on average pay without medical certificate for 2 months in continuation of the leave granted to him.

6—9—1928.

The posting of M. R. Ry., I. Z. Robert Paul, Ranger V grade to special duty in South Salem, is cancelled.

The Ranger is permitted to avail himself of the full period of leave granted to him.

27—9—1928.

M. R. Ry., P. Mathuramuthu Pillai, Ranger, II grade, Senior Instructor, Vernacular Training School, 1928 session, North Salem division is, on the termination of the session posted to the charge of Gudiyattam range, Chittoor Division.

2. M. R. Ry., S. Nagalingam Pillai, Ranger VII grade, now in charge of Gudiyatham range, is transferred to North Salem Division for sandal work.

3. M. R. Ry. P. K. Subbanarayana Ayyar, Supernumerary Ranger Assistant Instructor, Vernacular Training school is, on the termination of the 1928 session, granted privilege leave for 2 months.

4. M. R. Ry. J. S. Vedanayagam, Supernumerary ranger is posted for Lac work in North Salem division.

4—10—1928.

M. R. Ry., A. Siddhan Pillai, Ranger III grade, transferred from the Sixth Circle, is posted for enumeration of Sandal on patta lands in South Salem Division.

23—10—1928.

M. R. Ry. S. Nagalingam Pillai, Ranger VII grade, Chittoor division is granted leave on average salary on medical certificate for three months from date of relief.

Fifth Circle.

Supernumerary Ranger K. O. Anandan is posted to take charge of sandalwood depot at Satyamangalam vice Ranger V. Jaganatham Pillai granted leave.

17—7—1928.

On relief by Mr. Giriffith, Ranger P. Sithapathi Iyer is transferred to the Punachi Range, South Coimbatore district to join at once on relief of Ranger B. S. Ramaswami Iyer, services dispensed with.

1—8—1928.

In supersession of this office S. O. dated 7th July 1928, M. R. Ry. V. Jaganatham Pillai, Ranger VI Grade is granted leave on average pay from 5th August 1928 to 2nd September 1928 both days inclusive preparatory to retirement.

18—8—1928.

Ranger M. P. Philips is granted extension of leave on aver-

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age pay on medical certificate for 15 days with effect from 9th September 1928.

21-9-1928.

Ranger M. Sankaran Nair is transferred from Special duty in the Tunacadavu Range, South Coimbatore district to the charge of Nanguneri Range, Tinnevely district in relief of Ranger C. Thiruvengadam Pillai granted 2 months leave on Medical Certificate.

25-9-1928.

M. R. Ry. A. Krishnamachari, Ranger III Grade, on return from leave is posted to the charge of Srivaikuntam Range, Tinnevely District.

6-10-1928.

M. R. Ry. A. Krishnamachari, Ranger III Grade, North Coimbatore District is granted extension of leave on average pay on medical certificate for 4 months with effect from 19th July 1928.

11-10-1928.

M. R. Ry. S. Shankugakumaran Pillai, Ranger II grade is granted extension of leave on medical certificate for 3 months and 15 days with effect from 5th August 1928 as follows :

Commuted furlough for 1 month and 24 days and furlough on half pay for the balance.

16-10-1928.

In partial modification of this office S. O. dated 23rd September 1928, M. R. Ry. G. Thiruvengadam Pillai, Ranger V Grade, Tinnevely District is granted one month's leave on medical certificate as follows with effect from 7th October 1928.

L. A. P. for 24 days, and L. H. P. not due for the balance.

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16-10-1928.

1. M. R. Ry. C. Thiruvengadam Pillai, Ranger V Grade, on return from leave will take charge of Nanguneri Range, Tinnevely District.
2. On relief by No. 1 M. R. Ry. M. Sankaran Nair Ranger VI grade will hold charge of Ayyalur Range, Madura District during the absence of Mr. Griffith on other duty.

23-10-1928.

Sixth Circle.

26-7-1928.

1. Mr. E. A. Lasrado, Assistant Conservator of Forests, in charge of the Palghat Range, is transferred to the Nilgiris division to do duty as Assistant to the District Forest Officer, The Nilgiris, in the Mudumalai Range. His headquarters will be at Kargudi. To be relieved at Palghat on 8th August 1928.
2. Supernumerary Ranger M. V. Ganesan will be in temporary charge of the Palghat Range in relief of Mr. E. A. Lasrado.

6-8-1928.

1. M. R. Ry. A. Rama Hebbar, Ranger II grade, on expiry of leave (19th August 1928) is posted to the charge of the Palghat Range, Palghat Division.
2. M. R. Ry. M. V. Ganesan, Supernumerary Ranger in charge of the Palghat Range on relief by No. 1 is transferred to Nilambur Division for special duty in the Amarampalam Range.
3. Mr. J. D. Theodore, Ranger VI grade, on relief by No. 2, is posted for special duty for enumerations in the Muzur Reserve, Uppinangady Range, South Mangalore Division.

10—8—1928.

In continuation of one month's leave granted to him by the District Forest Officer, Nilgiris, M. R. Ry. P. A. Madhavan, Supernumerary Ranger, is granted leave on average pay on medical certificate for four months from 1st July 1928.

29—8—1928.

M. R. Ry. C. M. Narayanan, Ranger III grade, is, on return from leave, posted to Nilambur division for special duty.

4—10—1928.

The leave granted to M. R. Ry. M. P. Subbayya, Ranger VI grade, is extended by one month (from 9th October 1928) to enable him to undergo military training.

M. R. Ry. A. Siddhan Pillai, Ranger III grade, Senior Instructor, Vernacular Training School, Palghat, is granted leave on average pay on medical certificate for two months from 30th September 1928 (Forenoon).

On expiry of this leave he will be transferred to IV Circle, as ordered by the Chief Conservator of Forests, Madras.

7—10—1928.

12—10—1928.

M. R. Ry. N. Gopalan, Nair, Ranger VI grade, on special duty in the Nilambur Range, is granted leave on average pay on medical certificate for 3 months from date of relief.

2. M. R. Ry. I. Z. Robert Paul, Ranger V grade, transferred from IV Circle in Chief Conservator's L. Dia. No. 3702/28 dated 10th May 1928, is on the expiry of of his leave on 18th October 1928, posted to Nilambur for special duty in relief of No. 1.

3. M. R. Ry. P. Sankunni Nair, Ranger, VI grade Assistant instructor, Vernacular Training school, is on the conclusion of the Vernacular Training school, posted to palghat division for special duty.

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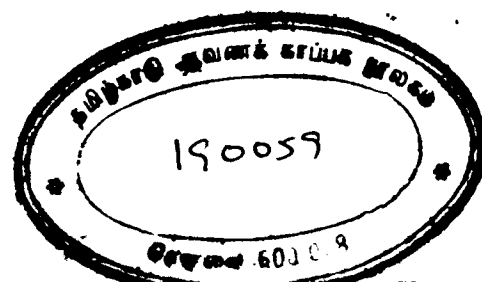
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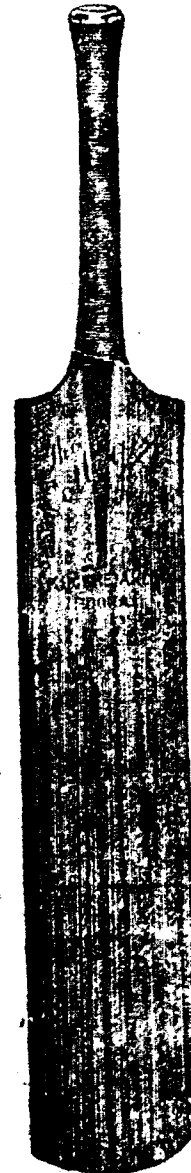
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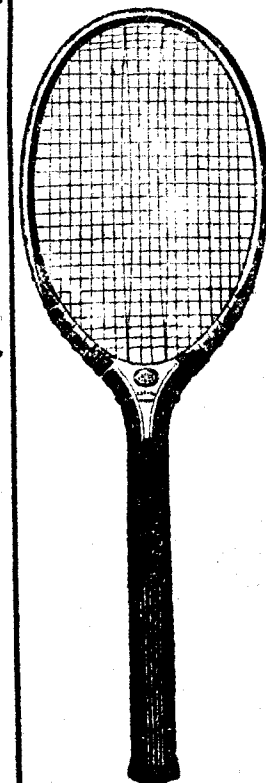
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