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INLAND LETTER CARD



To,

DR. N. V. JOSHI

CENTRE FOR ECOLOGICAL SCIENCES

INDIAN INSTITUTE OF SCIENCE

BANGALORE

पिन PIN

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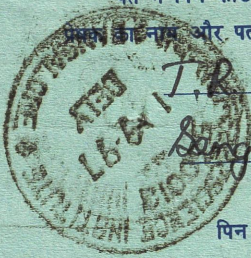
|| KARNATAKA || |||| ||||| ||||| || ||||| |||||

दूसरा मोड़ SECOND FOLD

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पते में पिन कोड लिखें WRITE PIN CODE IN ADDRESS

भेजक का नाम और पता :- SENDER'S NAME AND ADDRESS :-



T. K. Shankar Ramran, Researcher

Sengaltheri, P. O. Kalakad, T. N.

पिन PIN

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यहाँ काट कर खोलिए TO OPEN CUT HERE

यहाँ काट कर खोलिए TO OPEN CUT HERE

Perhaps this is a good time to reiterate something which I've told you before - that it will be useful to have a course in community ecology in CES - theory, models, concepts, case studies & applied / conservation aspects. Since Prof. Gadgil, yourself, & Dr. Subraman are all involved in community ecology research, perhaps this can be a 'joint' course. Instead, of course, there on even more 'richard' community ecologist taken among new faculty in the future - then the additional teaching load may not be there or at least be minimal on you. I'm trying to build & near a couple of more forest lizard (Colletes grandisquamis) babies (hatched from eggs I saved from a predator - opened nest) in a terrarium here. I'm rediscovering the wonder & utility of the fountain pen & the portable typewriter in the many dark evenings under the gas lamp. I hope you are having fun too. Regards, Shankar Ram

Dear Sir,

23/8/1997  
Sengaltheri

I have once read of a definition of a traveller as a 'person who spends an inordinate amount of energy to see what rain looks like in different parts of the world'. After enjoying two days of rain here in the Sengaltheri rainforest, I can empathize with that. It's a cool, placid evening now, though not very quiet - from the forest nearby a couple of Malabar Whistling Thrushes exchange songs and calls, while from the kitchen, my assistants are listening to the radio playing loudly Tamil film songs that are, well, lively, shall we say?

Having 'saved up' for a rainy day, I decided to do some reading (of papers), writing (of letters), and thinking (of work). Not very successful in the third, I was going strong with the n. & the w., when I remembered an earlier discussion I had with you regarding a book you wanted reviewed for Current Science. I'd told you that I'll inform you before leaving for the field & would be able to review it when I'm in the field in case you did not find a more suitable person. This is to apologize for not meeting you before I left for the field.

I hope you have found a more suitable person to review the book. I think I would be more comfortable reviewing books that are more in the nature of natural history, descriptive studies, field guides & methods in subjects where I have some field experience at this stage. As you can see, my inexperience makes me very hesitant - in fact, the last time I was asked to review a book I very craftily 'passed the book' to Kartik Shanker! But anyway, I'll accept your opinion & advice on this. If you've not found a reviewer, I think that I won't do a bad job, please do give the book to me - I'll try my best. I'll be appearing again @ CES on Sept. 1st for the faculty-'hopefuls' talks / seminars which I'm looking forward to. My 'pre-viva' date has been fixed for the 8th and numerous lepidoptera are duly pupating in my stomach!

I enjoyed reading & benefited from your papers with Pramod in Current Science, which we get here for the field station. Your approach focussing on relevant site & species parameters / attributes is laudable. I also enjoyed the paper by Dr Jamesraiah et al. on shola tree communities - again, a very interesting approach - given the same data, I would have analysed it very differently! The only surprising thing was that not even a single tree species was mentioned by name, being subsumed in the numbers & indices. Is there 'safety in numbers' here? As Pramod, you & others have seen, the identity & characteristics of the species / sites matter. Anyway, I'm sure that the picture will become clearer and more explicit in the future publications of Dr Jamesraiah's group which I look forward to.

Dear Sir,

Hello and thank you very much for your letter of 16 Oct. I'm glad that moves are afoot regarding the KMTR special section & that there is some flexibility over it. I suppose a target of 8-12 good quality papers is excellent. You must have received my previous letter with names & contacts by now. What news of the guest editors? If you confirm about guest editors, I will get cracking on writing personal letters to the possible authors encouraging them to send their best - and early! This is besides the 'formal' letter from the guest editors and/or Current Science.

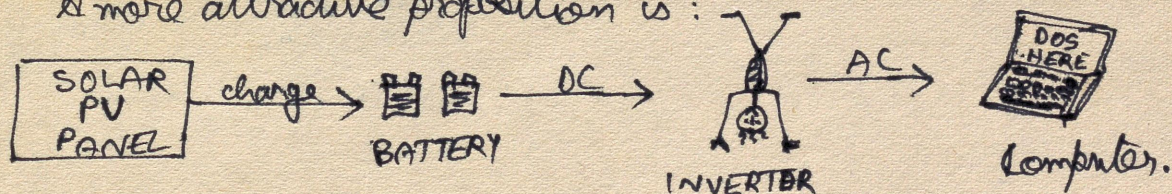
Thank you also for the details about the 'energy scene' here. I'm afraid I hadn't thought of motorcycle batteries and, in fact, they may be just what the Doctor (Goshi!) ordered!! Having a set of 4-6 may not be too expensive (I'm enquiring around) & as you say they are portable.

The direct DC-in option for the computer may not be possible however. The laptop requires an input of 18V, 1.6 Amps. Right now I have an adapter which takes in the 240V AC input from the mains & converts to reqd. DC & feeds in thru' customised connector jack.

So, besides batteries some alternator/UPS is needed as you point out. You said you were checking on this - what did you find?

I enquired about a small generator. The smallest is a 650W Honda job that costs Rs 19,500/- and uses ~ 2 litres petrol/hour. I don't like the idea too much!

A more attractive proposition is:



HB No	HB Name	Pa Sci Name	Pg (HB)
1411	Red-breasted Flycatcher	Muscicapa parva	491
PK No	PK Name	PK Sci Name	Pg (PK)
1017	Red-throated Flycatcher	Ticedula parva	1017

## I. O. NOTES

Blackish tail with white base of outer rectrices - flicks tail often.

Call: a 'chick-chick' a jarring alarm note, a 'wheet, wheet, -wheet'.

♀: wt throat, ♂-rufous throat. (subrubra ♀ → variable amt of rufous thr, darker; ♂-blk border <sup>on thr, dist</sup>)

N.B. Migrant from Palaearctic winters in Subcontinent. Arrives as ~~resident~~ <sup>of this dist</sup> Kashmir.

~~Red-breasted flyc. (M. subrubra) leave for England.~~

## OBSERVATIONS:

- 22/11/94: One female on low branches of a small tree near R.O. Tail bobbed displaying wt.
- 25/11/94: One ♀ (or imm ♂) around RH plots from low branches of trees to perches on rocks, small shrubs near ground. Tail constantly ↓, wings drooping. Call: a soft cheer, cheer or 'chir'.
- 26/11/94: One ♀ on grass in O-S J.
- 29/11/94: One male atop tree in 10 for D'itang near tree fall gap. Rufous throat, greyish underparts & flanks but for whitish stripe down centre. Dark tail. Flyc. like behaviour.
- 12/12/94: Near Seirei lui 1 ♀. 16/12/94. Along Rha Rd. ♀.
- 12/1/95: Eats worm M. Blotm

HABITAT  
CHECK BOARD

5-5J	✓	6
5-10J	✓	6
10+J		
10H	✓	
10V		
AD	✓	✓
20		
RAV		
REJ	✓	
WATER	✓	
HABU	✓	
PANTN	✓	M.
VAAAG		

I believe a 12V motorcycle battery costs ~ Rs 600/- apiece. I also have a second-hand jeep battery (my jeep's old one) available.  
So a potentially 'ideal' scenario may be as illustrated! What I really need to know is:

- ① What kind/size of panel is required to charge say 1 jeep battery + 2 lorry batteries to full charge ~~over~~ <sup>in</sup> one sun-day?  
- I enclose the material obtained from a local supplier for your reference about panel shapes, size, V, I, W, and Rs!
- ② What <sup>sort of</sup> inverter is needed to convert power from 1 jeep + 2 lorry batteries into 240V, AC for using the computer say 1-3 hours a day?  
& how much will it cost.

With some reliable advice on this I can get going on the purchase & rigging-up of this system. [Or would a place like CEDT come up with a fitted-up trial unit for field testing??].  
That's about all for now. Please do let me know what you find / think about all this.

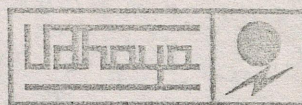
Much thanks & regards  
TR Shanker Rao.

P.S.: An article written by me on the rainforests of KMTR has been accepted for publication in The Hindu (Sunday Magazine). Do look out for it - especially the photographs! And I hope it will heighten your interest to make a visit here!

PPS: I also enclose copies of two papers published recently - one in JBNHS & a short note in Forbetail (journal of the Oriental Bird Club, UK) that you may find interesting / amusing!

Also encl.: Copy of letter to Chairman, regarding Mr. K. Manavalan.

## Udhaya Solar P V Panels



S.No.	MODEL		PEAK WATTS	PRICE PER UNIT
1.	USP	5	4	1,356
2.	UGP	9	10	2,478
3.	USP	10-6	10	2,411
4.	USP	36	36	7,800
5.	USPS	9-6V	10	2,578
6.	USPS	9-12V	10	2,733
7.	USPS	18	20	4,711
8.	USPS	36	45	9,833
9.	UGPS	36	50	11,056

### TERMS & CONDITIONS:

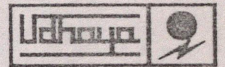
PRICE	:	F.O.R. COIMBATORE
VALIDITY	:	EFFECTIVE FROM JAN.1. 97 PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE
TAXES & DUTIES	:	AT THE MOMENT EXEMPTED BY GOVT. HOWEVER TAXES IF ANY ON THE DATE OF DESPATCH SAME WILL APPLY
PAYMENT	:	25% ALONG WITH YOUR ORDER AND BALANCE 75% BEFORE DESPATCH OF GOODS. ALL PAYMENTS ARE TO BE MADE BY DD PAYABLE AT COIMBATORE.
DELIVERY	:	3-5 WEEKS ON RECEIPT OF YOUR ORDER.

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# PRICE LIST IN RUPEES



## SPV MODULES :

S.No.	MODEL	PEAK WATT	UNIT PRICE
1.	USP 5	4	1,356/-
2.	UGP 9	10	2,478/-
3.	USP 10-6	10	2,411/-
4.	USP 36	36	7,800/-
5.	USPS 9-6V	10	2,578/-
6.	USPS 9-12V	10	2,733/-
7.	USPS 18	20	4,711/-
8.	USPS 36	45	9,833/-
9.	UGPS 36	50	11,056/-

## SPV LANTERN :

S.No.	MODEL	UNIT PRICE
1.	UL 784	4,862/-
2.	UL 760	3,477/-
3.	UL 524	2,766/-

## SPV STREET LIGHTING SYSTEM :

S.No.	MODEL	UNIT PRICE
1.	USL 11106 (LMLA)	21,146/-
2.	USL 11112	32,239/-
3.	USL 11206	32,430/-
4.	USL 11212	44,586/-

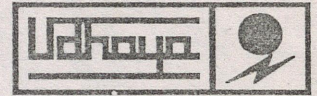
## SOLAR GENERATOR :

S.No.	MODEL	UNIT PRICE
1.	1SG05	91,400/-
2.	2SG1	1,56,300/-
3.	4SG2	2,86,185/-

## INDOOR LIGHTING SYSTEM:

Sl.No.	MODEL	UNIT PRICE
1.	UCL05112	18,370-00
2.	UCL05206	19,580-00
3.	UCL05304	20,680-00
4.	UCL05604	35,310-00
5.	UCL07110	18,370-00
6.	UCL07205	19,580-00
7.	UCL07335	20,680-00
8.	UCL07635	35,310-00
9.	UCL09109	18,370-00
10.	UCL09245	19,580-00
11.	UCL09303	20,680-00
12.	UCL09535	34,210-00
13.	UCL11107	18,370-00
14.	UCL11112	29,370-00
15.	UCL11206	30,580-00
16.	UCL11304	31,790-00

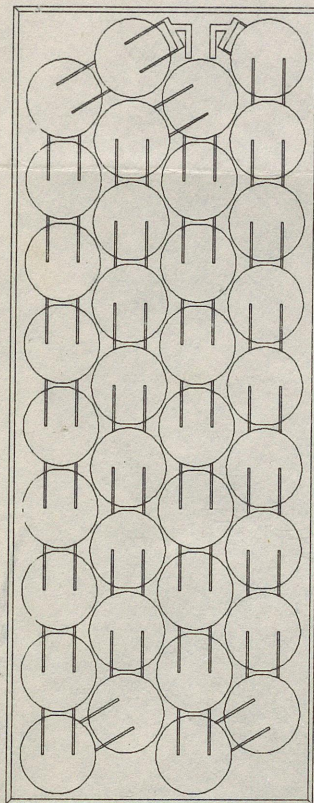
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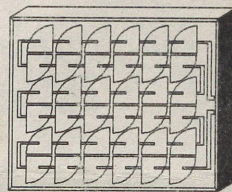
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DESPATCH SAME WILL APPLY.  
ALSO IF EXCISE DUTY IS  
IMPOSED ON SILICON  
WAFERS THE NET EFFECT OF  
THE SAME WILL BE TO YOUR  
ACCOUNT.
- PAYMENT : 25% ALONG WITH YOUR  
ORDER AND BALANCE 75%  
BEFORE DESPATCH OF  
GOODS ALL PAYMENTS ARE  
TO BE MADE BY DD PAYABLE  
AT COIMBATORE.
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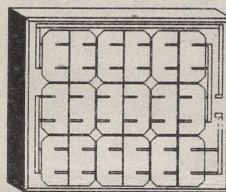
# Udhaya Solar P V Modules:



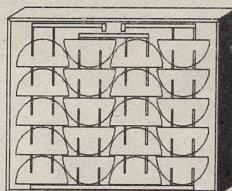
USP 36



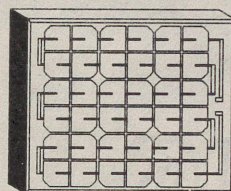
USP 9



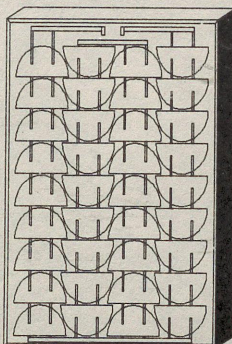
USPS 9-6V



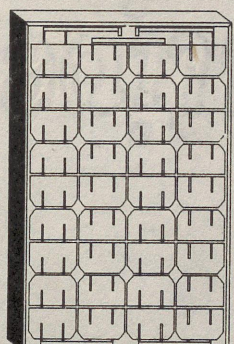
USP 10



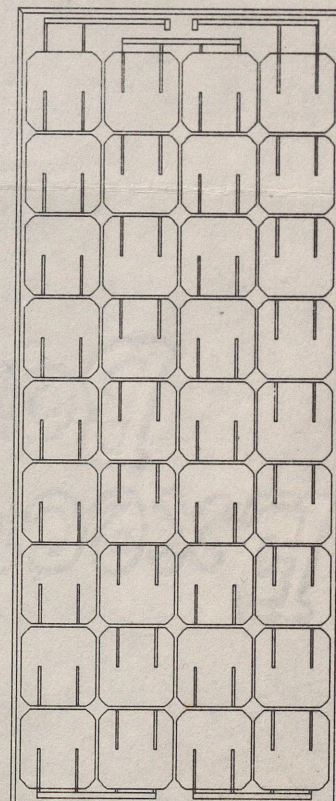
USPS 9-12V



USP 18



USPS 18



USPS 36

## Technical Specifications:

Operating conditions

- AIRMASS 1.5

100 mW / cm<sup>2</sup>

Temperature = 25° C

S.No	Module	V <sub>oc</sub> (V)	I <sub>sc</sub> (A)	V max (V)	I max (A)	P max (W)	Dimensions (mm)
1.	USP 5	10.5	0.58	8.0	0.52	4.00	312 x 232 x 38
2.	USP 9	21.0	0.58	16.5	0.52	8.50	407 x 317 x 38
3.	USP 10	11.7	1.15	9.0	1.05	9.00	407 x 317 x 38
4.	USPL 18	20.5	1.10	15.0	1.00	15.00	537 x 407 x 38
5.	USP 18	21.0	1.15	16.5	1.05	17.30	537 x 407 x 38
6.	USPL 36	20.5	2.00	15.5	1.93	30.00	1012 x 407 x 38
7.	USPM 36	21.0	2.05	16.2	1.96	32.00	1012 x 407 x 38
8.	USP 36	21.0	2.30	16.5	2.10	35.00	1012 x 407 x 38
9.	USPS 9-6V	10.5	1.45	8.3	1.21	10.00	407 x 347 x 38
10.	USPS 9-12V	21.0	0.72	16.6	0.60	10.00	407 x 347 x 38
11.	USPS 18	21.0	1.45	16.6	1.21	20.00	537 x 437 x 38
12.	USPS 36	21.6	2.90	16.6	2.70	45.00	1012 x 437 x 38
13.	M USPS 36	21.0	2.6	16.5	2.18	36.00	1012 x 437 x 38
14.	M USPS 18	21.0	1.3	16.5	1.09	18.00	537 x 437 x 38

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PROF. R. Gadagkar  
Chairman  
Centre for Ecological Sciences  
Indian Institute of Science  
Bangalore - 560 012.

25 October 1998

Dear Sir,

Earlier this year, I had approached you regarding problems related to delayed receipt of project funds in the field. At that time, following the advice of yourself and Dr. R. Sukumar and with the help of Mr. K. Manavalan, I was able to evolve a more streamlined accounts submission and processing procedure.

I am happy to inform you that since then I have been getting my bills reimbursed on time. This letter is to place on record my appreciation of Mr. K. Manavalan's prompt and efficient handling of accounts. On occasions when I needed money urgently, he made special efforts to send me funds immediately. This has been invaluable for running the field station and executing my work smoothly.

Sincerely,

  
(T. R. Shankar Raman)

cc: Dr. R. Sukumar & Dr. N. V. Joshi

T. R. Shankar Raman  
Researcher  
Sengaltheri Field Station  
P. O. Kalakad - 627 501  
Tirunelveli District  
Tamil Nadu

of the households still depend on *jhum* for their livelihood (D. Singh unpublished report).

Dampa Tiger Reserve ( $\approx 500 \text{ km}^2$ ,  $23^\circ 20'$  to  $23^\circ 47'$  N and  $92^\circ 15'$  to  $92^\circ 30'$  E), the study area, is located in western Mizoram, bordering Bangladesh. The altitude ranges from 250 to 1100 m above mean sea level (a.s.l.). The natural vegetation comprises tropical evergreen forests in the moist valleys to semi-evergreen vegetation on the higher slopes (Champion & Seth 1968; see 'successional strata'). Secondary-successional vegetation occurs in areas cleared for shifting cultivation (locally known as *jhum* or *lo*). *Jhum* cultivation usually involves clearing secondary bamboo forests of undergrowth and small trees (only rarely are primary forests cleared) during January–February, drying the slash on the hill slopes for 1–1½ months, then burning it during March–April. Crops are sown with the first rains in April. Generally intercropping of at least 15–20 crops is carried out in plots that are 1–4 ha in area. A detailed account of agricultural practices and village ecosystems in the hill tracts of north-east India is given by Ramakrishnan (1992).

#### SUCCESSIONAL STRATA AND TRANSECTS

A chronosequence of successional sites was chosen over a restricted altitudinal range of 250–750 m a.s.l. Site histories were determined directly from interviews with local cultivators and village elders and Forest Department records. The successional strata and the years when they were cultivated and abandoned are given below. Botanical nomenclature in this paper follows Haridasan & Rao (1985) and was verified from Bennet (1987).

- (i) 1-year fallows (1994): this was composed chiefly of grasses, dry stalks of harvested rice *Oryza sativa* plants, dense clumps of weeds such as *Eupatorium adenophorum* and *Mikania micrantha*, a few burnt and dead trees, bamboo sprouts, and surviving crop plants such as tomato *Lycopersicon esculentum*, chilli *Cap-sicum annum* var., brinjal *Solanum melongana*, creepers, gourds (Cucurbitaceae), bananas (*Musa sp.*), and tobacco *Nicotiana tabacum*. The vegetation was almost entirely confined to within 2 m of the ground.
- (ii) 5-year fallows (1989): dominated by dense bamboo culms (mostly *Melocanna bambusoides*, locally called *Mautak*), bananas, pioneer trees such as *Macaranga indica*, *M. denticulata*, *Callicarpa arborea*, *Trema orientalis* and a few tall trees that survived the *jhuming* operations.
- (iii) 10-year fallows (1985): these were similar to the 5-year fallows, except for the greater stature attained by bamboos and trees. Superficially, the 5- and 10-year fallows appeared as almost monotypic bamboo (*M. bambusoides*) forests.
- (iv) 25-year fallows (1969): here, the regeneration was visually impressive—bamboos reached a height of 15–25 m and, along with trees, established a closed

canopy. The trees were of noticeably broader girth than in the 10-year fallows and often were taller than the bamboos.

(v) 100-year-old forest (1895–1900) and disturbed primary forest: the former represents the site of a former village abandoned on Dampatlang about 100 years ago; the latter site is contiguous with the former. The two areas were considered as a single stratum because of their similarity in vegetation and bird community composition (see Results). The forest had a dense, multi-storey appearance, with mostly woody plants and trees such as *Schima wallichii*, *Castanopsis indica* and *Mesua ferrea*. Tree-fall gaps occurred, but emergents appeared to be rare.

(vi) Primary forest: this was characterized by woody plants as in the 100-year forest, large lianas, canes (*Calamus* spp.) and tall emergents such as *Michelia champaca*, *Tetrameles nudiflora* and *Terminalia Myriocarpa*. ≠

Two sites, located 1.5–6 km apart within each of the six successional strata, were chosen to mark 500-m long line transects. The exception was the pair of transects placed 150–200 m apart in the only patch of 25-year fallow in the study area. The 10- and 25-year fallows had remained uncultivated for that duration due to resettlement programs and creation of the reserve, and not because they were unsuitable for cultivation. Transects were marked from random starting points along existing animal trails or by clearing a narrow path. Within the landscape, all transects were within a spread of about 10 km<sup>2</sup> and contiguous with large areas of successional as well as mature forest vegetation in a 0–4 km range.

#### VEGETATION SAMPLING

Vegetation sampling was based on Daniels, Joshi & Gadgil (1992) slightly modified to suit the needs of this study. The following attributes were quantified along each transect: tree density, woody plant (tree and shrub) species richness, bamboo density, canopy cover, vertical stratification and leaf litter depth. Tree (stems > 20 cm girth at breast height, GBH) density and woody plant species richness were determined in 100 m<sup>2</sup> circular plots per transect. The centres of the plots were alternately located 10 m to the left and right of points regularly spaced 50 m apart on the transect line. Bamboo culms were counted in 25 m<sup>2</sup> circular plots nested within the above plots. δ  
tenk  
δ

The extent of canopy cover was scored as 0 when there was none overhead, 1 when canopies of adjacent trees or tall (> 5 m) bamboo culms barely met, 2 when adjacent canopies overlapped with the sky still showing through, and 3 when the sky was no longer visible through the overhead leaves. A total of 100 points was scored thus at 5-m intervals along the transect line (the points were located 1 m away from the line successively alternating on each side). The depth of leaf litter on the forest floor was measured to the