

KYOTO

29.8 - 2.9

Organizing Committee,  
Sixth International Symposium  
on Night and Shift Work,  
Institute for Science of Labour,  
1544 Sugao, Miyamae-ku,  
Kawasaki 213 Japan

25 October 1982

Dear Colleague,

It was very exciting and delightful to exchange ideas about research in so friendly an atmosphere. We are most grateful for your co-operation in the Kyoto Symposium. All of us gained a great deal from this meeting and we trust you did so, too.

We enclose some photographs taken by our cameraman Dr. T. Ohta during the sessions and social events.

Now we are editing the papers of the Symposium. We hope to publish it by April or May next year as Supplement of the Journal of Human Ergology. When published, we will be sending you a copy.

Let us thank you again for your co-operation. We look forward to the pleasure of seeing you again in the near future, in the next shiftwork meeting or even earlier than that.

With best regards from all the members of the Organizing Committee,

Yours sincerely,



K. Kogi and Y. Saito  
for the Organizing Committee.



MINISTÈRE DES UNIVERSITÉS  
**CONSERVATOIRE NATIONAL DES ARTS ET MÉTIERS**

Département des Sciences de l'Homme au Travail  
PHYSIOLOGIE DU TRAVAIL — ERGONOMIE

Paris, le 8 Janvier 1982

Monsieur le Professeur KOGI  
Division of Work Physiology and  
Psychology  
INSTITUTE FOR SCIENCE OF LABOUR  
1544 Suago Takatsu-ku  
KAWASAKI 213 (JAPON)

*travail*  
Cher ami,

Je vous remercie beaucoup de vos bons vœux. J'en forme d'excellents à l'intention de vous-même, de votre famille si sympathique et de votre oeuvre.

J'ai un peu tardé à fixer mon programme de l'été prochain car j'ai eu quelques ennuis de santé bénins, mais prenant du temps. J'ai aussi collaboré très activement au grand mouvement de remise en route de la recherche, voulu par notre nouveau gouvernement.

Vous trouverez, ci-joint, mon nouveau programme. Comme vous le verrez, il est assez différent du précédent du fait de ma participation au Colloque d'OSAKA auquel le Pr SUGIYAMA m'a invité, du fait que Mr SPYROPOULOS souhaite ma présence au Colloque BIT de SINGAPORE qui suivra le Congrès de Médecine du Travail dont vous m'aviez parlé et du fait que l'Université des Philippines où j'ai enseigné il y a 3 ans souhaite me revoir car nous avons maintenant établi une collaboration avec un excellent chercheur philippin qui travaille au laboratoire. De même, le Pr MANUABA compte nous confier quelque temps l'un de ses collaborateurs.

Je serais très heureux que vous me confirmiez l'invitation que vous m'avez faite oralement au séminaire sur le travail posté que vous organisez à KYOTO. Je pourrais présenter une communication sur une récente recherche du laboratoire réalisée dans une agence internationale d'information et qui montre que l'intensité du travail de soirée ou de nuit (sur écran de visualisation d'ordinateur : V.D.T.) agit directement sur la quantité et la qualité du sommeil consécutif. Il faut donc, à nos yeux, ajouter beaucoup d'importance à la charge cognitive dans l'organisation du travail posté. Le titre de la communication pourrait être : "Cognitive load and quality of the following sleep in relation with shift work".

.../...

Bien que ma demande soit maintenant plus restreinte, j'ai toujours l'intention de loger à TOKYO dans la résidence que vous m'avez signalée du samedi 21 au dimanche 29 Août. S'il y avait des difficultés, je tâcherais de trouver une chambre d'hôtel près du lieu du Congrès, mais cela sûrement beaucoup moins bien.

Recevez, je vous prie, l'expression de mes sentiments très amicaux.

A handwritten signature in cursive script, appearing to read 'A. Wisner'.

A. Wisner

Vous trouverez avec cette lettre quelques documents que j'adresse à nos collègues japonais :

- projet de voyage
- curriculum vitae
- résumé de communication
- lettre à SUGIYAMA
- lettre à OSHIMA



MINISTÈRE DES UNIVERSITÉS

CONSERVATOIRE NATIONAL DES ARTS ET MÉTIERS

Département des Sciences de l'Homme au Travail  
PHYSIOLOGIE DU TRAVAIL — ERGONOMIE

Paris, le 8th January 1982

*Copie adressée au P. Davis  
H. Andlauer  
H. de Keyser*

Monsieur le Professeur Oshima  
Secretary general Japan Ergonomics  
Research Society  
Institute for Medical Electronics  
Faculty of Medicine, University of  
Tokyo,  
HONGO TOKYO (Japan)

Dear Pr Oshima,

I am very happy to have been informed that Mrs de Keyser and myself, respectively president and secretary for international matters of the SELF are kindly invited as reporters at the IEA congress you are organizing in August.

I confirm that the title of my report is "language and computer systems - work analysis and cognitive load". It is both the title that I have proposed to IEA general secretary H.L. Davis and that he has confirmed after your acceptance and the title I have suggested on my reply card for the topic "Psycholinguistics and computers" (A<sub>1</sub> and/or A<sub>0</sub>).

You shall find under the same cover 5 copies of the abstract, my curriculum vitae and a provisional travel schedule. I am sorry to send them only now, but SELF has received very late the answer to its request to have reporters to the IEA congress.

It would be very kind of you to let me know if you intend to give me time for a short communication, for a full report or for the introduction to a round table.

It is really a great pleasure to visit your country for the first time and to have a good opportunity to learn a lot about the Japanese ergonomic science and practice.

With my personal regards.

Truly yours.

A. Wisner



MINISTÈRE DES UNIVERSITÉS  
CONSERVATOIRE NATIONAL DES ARTS ET MÉTIERS

Département des Sciences de l'Homme au Travail  
PHYSIOLOGIE DU TRAVAIL — ERGONOMIE

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With my personal regards.

Truly yours.

A. Wisner

## CURRICULUM VITAE OF A. WISNER

---

A. WISNER, M.D., Sc D., Psych.Dipl., works in the field of ergonomics since 30 years and as created the first unit of ergonomics in french industry. A.W. was from 1954 to 1962 head of the laboratory of physiology and biomechanics of the REGIE RENAULT for the comfort and safety of cars. From 1962 to 1966, A.W. was assistant director of the laboratory of work physiology at the CNRS (National Scientific Research Center) A.W. is since 1966 professor at the Conservatoire National des Arts et Métiers, director of the laboratory of work physiology and ergonomics of the C.N.A.M. (40 persons) and director of the french doctorate of Ergonomics (since 1976).

Secrétaire general of the SELF (french speaking ergonomics society) at its creation, A.W. was two time its president and is now its delegate for international affairs.

Former treasurer the IEA for six years, A.W. is now member of the council. He is also a former member of the council of the E.R.S. and fellow of the H.F.S.

Adviser of different agencies of C.E.E. and U.N., he is mainly involved with the PIACT (International program for better working conditions) of the ILO and is preparing the meeting of experts of ergonomics in developing nations (1983) on behalf of I.L.O., W.H.O. and I.E.A.

The program of the laboratory of ergonomics of the CNAM is oriented toward psychological and physiological aspects of mental load in modern technology in relation with human resources. For these reasons A.W. is president of the French Society of Psychology, member of the council of I.A.A.P. (International Association of applied psychology) and president of the french committee of work psychopathology.

The recent publications of A.W. are oriented towards aging, shift work, mental load and mental health, anthropotechnology.

PROVISORY PROGRAM OF A. WISNER TRAVEL TO ASIA.

(August - September 1982)

August 13	Departure from PARIS
" 14-17	SEOUL working conditions seminar
17-21	OSAKA Symposium on microelectronics
21-29	TOKYO I.E.A. Congress
August 29	
Sept. 4	KYOTO seminar on shift work
4-12	MANILA Teaching at U.P.
12-17	SINGAPORE ILO seminar
17-20	DENPASAR teaching at BALI University (?)
21	Return to PARIS.

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## LANGUAGE AND COMPUTER SYSTEMS

### Work analysis and cognitive load

The expanding number of computers used in tertiary activities has raised working conditions problems. Usually, these questions have been approached from the view point of the qualities of the screen and environmental conditions. The different teams of the work physiology and ergonomics laboratory of the CNAM have mainly considered the cognitive activity, using the concepts of psycholinguistics and information processing in relation with some behavioral and physiological measurements such as those of eye movements and evoked potentials.

If some aspects of the work at computer terminals have been studied in laboratory, most of the researches have been performed in real situations : different journals printing shops, an international news agency, the french census analysis center, a new telecommunication terminal, the control room of an oil refinery ...

All these studies have shown a very wide range of cognitive loads explaining why some situations are rather easily accepted by the workers and why others need such an hyperexcitation of the brain that some neurotic phenomena can be observed and some effects on consecutive sleep demonstrated.

A very precise relation can be established between the density of the text read, measured by linguistic techniques and the frequency of eye fixations and between the complexity of the codification and the duration of eye fixations. With the same type of techniques it is possible to show why the redaction of news agency dispatches are different when V.D.T. are used from the former redaction with paper and pencil.

More "intelligent" V.D.T. may help to come back to a better redaction quality taking in account the different macrostructures of the original papers from which the dispatch is built.

Semantics is another important question to be considered not only for the professional users but also for the public who will use more and more complex computer systems. How far the semantic field prepared inside the memory of the computer is analogous to the semantic fields of the different users and how the very special retrieval mechanism of human memory can be simulated in the future computers ?

Lot of answers have been elaborated in this new field of relations between linguistics and ergonomics.

---

WISNER Alain M.  
Professor of work physiology and ergonomics  
Conservatoire National des Arts et Métiers  
41 rue Gay-Lussac 75005 PARIS FRANCE  
Tél. 354.18.27

Research Institute of Industrial Hygiene  
Ministry of Railway  
People's Republic of China

**LI NAN YANG**  
*Research Assistant*

Yang Fang Dian. Beijing  
Tel: 8642029

Permanent Committee, Society of Public Health  
Chinese Medical Association  
Deputy Director Research Institute of Industrial Hygiene  
Ministry of Railway  
People's Republic of China

**XIA WEI**

Yang Fang Dian. Beijing  
Tel: 8642179

Research Institute of Industrial Hygiene  
Ministry of Railway  
People's Republic of China

**SONG ZI ZHONG**  
*Research Assistant*

Yang Fang Dian. Beijing  
Tel: 8642029

Studies in Shiftwork

TAYLOR FRANCIS 1980

Section IV Effects on performance efficiency

p 185-196

-- En dépit de l'apparente parallélisme entre <sup>les rythmes de la</sup> température et <sup>de la</sup> performance il est bien de noter comme FOLKARD et MONK (Lecture 23) nous le rappellent que la prédiction du niveau d'efficacité de la performance à attendre lors d'une ~~tranche~~ <sup>tranche</sup> donnée ne peut pas être nécessairement obtenue simplement par le déroulement de l'état de rythme physiologique circadien car [cette efficacité] dépend de façon considérable des demandes de la tâche. Cette observation est particulièrement pertinente pour la conception des systèmes de postes dans les industries "nouvelles" telles que ~~par~~ <sup>les</sup> ~~travaux~~ [celles qui impliquent] les opérations sur ordinateurs, où ~~les tâches~~ <sup>les tâches</sup> ~~sont~~ <sup>sont</sup> ~~très~~ <sup>très</sup> ~~différentes~~ <sup>différentes</sup> de celles des professions traditionnellement citées.

The day and night performance of teleprinter night debranch operators BROWN E

En temps de guerre, les télégraphistes ont un délai de réponse le jour 2 fois plus court le jour que la nuit (2-3 de l'après-midi  $m = 10,4$ , de l'opération  $m = 20,3$ ) ~~soit~~ <sup>soit</sup> ~~la~~ <sup>la</sup> ~~mesure~~ <sup>mesure</sup> forte charge de travail ne change guère le délai l'après-midi mais jour la nuit (0-39 appels 23,3, 40-79 appels 21,1 + de 80 appels 17,5)

FOLKARD S, MUNK T.H.

# Shiftwork and performance

( HUMAN FACTORS 1979. 21 483-492 )

## RESUME

L'accroissement recent de la fréquence du travail posté s'est accompagné d'un changement du type de tâche réalisées typiquement par le travailleur posté. Les progrès technologiques qui ont produit ces 2 effets ont par effet ~~de charger~~ <sup>de placer</sup> plus souvent le travailleur posté des tâches exigeantes du point de vue cognitif que les tâches de l'époque précédente ~~de~~ ayant d'abord prédominé une nature ~~perceptivo-motrice~~ perceptivo-motrice. La recherche contemporaine sur les effets du sommeil de la journée sur l'efficacité de la performance a montré que ces changements de tâches peuvent avoir une importance cruciale dans la détermination de la performance de chaque poste et par la suite le choix de l'individu et de systèmes de postes les plus convenables. Les résultats publiés sont étudiés quand ils portent sur les exigences des tâches, les effets des divers systèmes de postes et le rôle des différences individuelles. ~~Un modèle~~ <sup>Un modèle</sup> descriptif ~~est~~ dans lequel la performance sur deux le poste est considérée comme dépendant du type de tâche, du type de système de poste et du type de personne; les 3 facteurs interagissent par l'intermédiaire des divers systèmes individuels du travailleur.

## INTRODUCTION

Cet article est relatif aux facteurs affectant la <sup>performance</sup> performance du travailleur posté --- [! !!]

D'autres résultats montrent que la performance dans la  
 tâche à forte charge de mémorisation s'ajuste plus vite  
 que celle relative aux tâches à faible charge <sup>si que la limitation n'est pas (5 jours)</sup> dans les  
 ont été obtenus dans une autre expérience dans laquelle  
 2 sujets travaillaient en équipe de nuit pendant 21 jours consécutifs (MONT, KNAUTH, FOLKARD  
 RUTENFRANZ 1978) [voir la dernière]

Organizing Committee,  
Sixth International Symposium on  
Night- and Shift-work,  
Institute for Science of Labour,  
1544 Sugao, Takatsu-ku,  
Kawasaki 213, Japan.

14 July 1982.

Dr. A. Wisner,  
Laboratoire de Physiologie du  
Travail-Ergonomie du C.N.A.M.,  
Paris,  
France.

Dear Dr. Wisner,

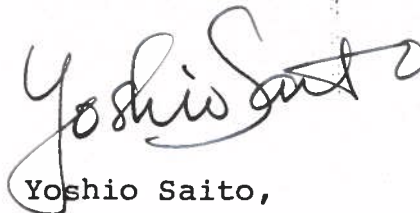
We acknowledge with thanks receipt of your full text  
for the Sixth International Symposium on Night- and Shift-  
work, Kyoto, 30 August-1 September 1982.

The program of the Symposium will be sent to you soon.

We look forward to seeing you in Kyoto.

With best wishes,

Yours sincerely,

A handwritten signature in cursive script, reading "Yoshio Saito". The signature is written in dark ink and is positioned above the typed name.

Yoshio Saito,

Secretary, Organizing Committee,  
Sixth International Symposium on  
Night- and Shift-work.

Organizing Committee,  
Sixth International Symposium on  
Night- and Shift-work,  
Institute for Science of Labour,  
Sugao 1544, Takatsu-ku,  
Kawasaki 213, Japan.

14 July 1982

Dear Colleague,

We are pleased to send you the tentative program of the Kyoto Symposium on Night- and Shift-work.

As you see in the program, there will be about 50 papers for the seven sessions. To allow for lively discussions, we would like you to present your paper in about 12 minutes (about 20 minutes in the case of an introductory paper). A projector for 50 x 50 mm slides will be available.

The venue of the Symposium, New Miyako Hotel, is easy to locate. It is on the right-hand side when you come out from the Hachijo-guchi West Exit (Bullet-train side exit) of Kyoto Station.

Your hotel rooms at New Miyoko Hotel in Kyoto are reserved in the name of the International Symposium for Night- and Shift-work. Please do not forget to mention the Symposium name when you or your friends are sending mail in care of the hotel.

We should be grateful for your informing us of the date and the flight of your arrival in Japan, the name of the hotel you will be staying at in Tokyo, and the date of your arrival at Kyoto.

We would appreciate your sending us your full text as soon as possible, in case you have not sent it yet.

We look forward to seeing you soon in Kyoto.

With best wishes,

Yours sincerely,



Yoshio Saito,

Secretary, Organizing Committee,  
Sixth International Symposium on  
Night- and Shift-work.

Organizing Committee,  
Sixth International Symposium  
on Night- and Shift-Work,  
Institute for Science of Labour,  
1544 Sugao, Takatsu-ku,  
Kawasaki 213 Japan

1 June 1982

To Participants of the Sixth International  
Symposium on Night- and Shift-Work,  
-----  
Kyoto, Japan, 30 August-1 September  
-----

Dear Prof. Wisner,

We are pleased to inform you that there will be more than 70 participants and about 40 papers at the Kyoto Symposium. The preliminary programme will be sent to you later.

Some of you asked us what a 'full text' should mean which you would be submitting by the end of June. This full text is not the text for oral presentation (say, for the interpreter), but the manuscript to be printed in the proceedings of the Symposium. We are planning to distribute reproduced manuscripts of all the papers to the participants at the beginning of the Symposium, and to print them later, after editing work, in the form of the Symposium proceedings.

As you may have seen in the 'Instructions for Authors' which we included in our previous circular, the manuscript should be rather short, preferably not exceeding about 3000 words. We attach another copy of these instructions.

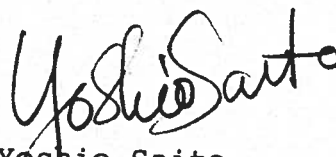
As for the oral presentation, it should last for about 10-15 minutes, as we will have about 20 minutes for each presentation including discussions.

We confirm reservation for you of a single room at the New Miyako Hotel in Kyoto from 29, August till the morning of 3, September.

Enclosed please find a leaflet of the New Miyako Hotel and a brochure about Kyoto.

Looking forward to seeing you soon in Kyoto,

Yours sincerely,



Yoshio Saito,  
Secretary, Organizing Committee,  
Sixth International Symposium  
on Night- and Shift-Work.



W

SCIENTIFIC COMMITTEE ON SHIFT WORK  
PERMANENT COMMISSION AND INTERNATIONAL  
ASSOCIATION ON OCCUPATIONAL HEALTH

SIXTH INTERNATIONAL SYMPOSIUM ON  
NIGHT AND SHIFT WORK

30 August — 1 September 1982

Thursday Bus to airport  
y. 25

KYOTO JAPAN

14 persons

President  
Muller

# THE SIXTH INTERNATIONAL SYMPOSIUM ON NIGHT AND SHIFT WORK

FRG □

US □

UK L

**Place:** New Miyako Hotel, Yomeiden Hall (Basement 1)  
17 Nishikujo-in-machi, Minami-ku, Kyoto 601, Japan  
(Tel. 075-661-7111)

J □ □ □ -

**Registration:** Sunday, 29 August 1982 18.00-20.00  
Monday, 30 August 1982 8.00-9.00

FIN -

INDI -

**Begin of the opening session:** Monday, 30 August 1982 9.00

PH -

**End of the last session:** Wednesday, 1 September 1982 17.15

K 1-

**Sunday evening:** 20.00 Informal Gathering

MAL -

**Monday evening:** 19.00 Reception

INDO -

**Tuesday afternoon:** Departure for excursion (dinner included)

BG DTSN -

Scientific Committee on Shift Work of the Permanent Commission  
and International Association on Occupational Health

TH -

BRAD -

President: J. Rutenfranz (F.R.G.)

S LANG -

Secretary: W. P. Colquhoun (U.K.)

SING -

Local Organizing Committee

B F -

Representatives: S. Kajiwara, K. Kogi, T. Miura, H. Saito

F L -

Members: H. Aoyama, S. Horino, T. Ishibashi, T. Kuroe,

N -

K. Mori, M. Morioka\*, A. Nishioka, Y. Saito

(A N -

**Secretariat:** Sixth International Symposium on Night and Shift Work,  
Institute for Science of Labour,  
1544 Sugao, Miyamae-ku, Kawasaki 213, Japan.  
(Tel. 044-977-2121)

CHINA -

IS -

SW -

NETH -

JAPAN	1/3
Ind Div Comt	1/4
Europe	1/3
US/Am	1/8

14  
11-12 AMO  
23  
50  
papers

Japan	16
USA	5
FRG	4
BELGIUM	3
UK	2
FRANCE	2
KOREA	2

16 others 7

ASIA 27 (J 16)

AMER 7 (US 5)

EUROPE 16

(FRG 4)

- 1 -

Ind Div Committee 12

CHAIR RUTENFRANZ  
 PH REVERENTE  
 J KOGI  
 B VERHALEN  
 IN MANUABA  
 TH WONGPHANICH  
 KO LEE

## SCIENTIFIC PROGRAM

Monday, 30 August 9.00-9.20

### Opening of the Symposium

✓ X Prof. S. Kajiwara Organizing Committee  
 ✓ X Dr. R. Murray President of the Permanent Commission  
 ✓ X Prof. J. Rutenfranz President, Scientific Committee  
 A.A.I. WEDDERBURN *Edinburgh meeting*  
 Monday, 30 August 9.30-12.00

### Session 1: Adaptation to Shiftwork and Individual Differences

Chairperson: J. Rutenfranz (F.R.G.)

- ① X D. I. Tepas (U.S.A.)  
 Introduction: Adaptation to shiftwork: fact or fallacy?
- ② X S. Bennett, P. Smith and A. A. I. Wedderburn (U.K.) *EDINBURGH*  
 Towards a synthesis of research findings for application with shiftworkers.
- ③ X K. Mori (Japan) **F** *KAWASAKI NISHI*  
 Circadian variation of cortisol and catecholamines following shifted wake-sleep schedules.  
*10470*  
 (coffee 10.40-10.55)
- ④ X M. I. Härmä, J. Ilmarinen and I. Yletyinen (Finland) *KUOPIO*  
 Circadian variation of physiological functions in physically fit and unfit dayworkers.
- ⑤ X **F** M. Saito, K. Kishida and T. Hasegawa (Japan) *TOKYO*  
 Ocular accommodation variability of visual inspection workers in shift work system.  
*en bureau de pliage*
- ⑥ X R. N. Sen (India) *CALCUTTA*  
 Individual differences in adapting to shiftwork.  
*11455*  
 (lunch 12.00-13.30)

Monday, 30 August 13.30-15.30 *Ym*

### Session 2: Health Measures for Night- and Shiftworkers

Chairperson: B. R. Reverente (Philippines)

- ⑦ X J. Rutenfranz (F.R.G.) *DORTMUND*  
 Introduction: Occupational health measures for night- and shift-workers.
- ⑧ S. H. Lee and K. S. Cho (Korea) *Call Med Col SEOUL*  
 Shift work and coalmine accidents in Korea.

↓ job related diseases

- ⑨ T. Itani, T. Ohta, H. Aoyama and K. Taniguchi (Japan) O KAYAMA  
Analysis of health records of day and shift furnace maintenance workers.
- ⑩ M. H. Smolensky, D. Mott and M. Colligan (U.S.A.) HOUSTON  
A health profile of American flight attendants (FA).  
*(transmission de labor)*
- ⑪ Y. Aizawa, M. Hitosugi, T. Takata, K. Nakamura and K. Mori (Japan) KITASATO  
Effects of night work on immunological circadian rhythm.
- ⑫ Y. Nakano, T. Miura, I. Hara, H. Aono, N. Miyano, K. Miyajima, T. Tabuchi and H. Kosaka (Japan) OSAKA prefecture  
The effect of shift work on cellular immune function.

(coffee 15.30-15.45)

Monday, 30 August <sup>18<sup>h</sup>25</sup> 15.45-18.30

**Session 3: Shiftwork in Industrially Developing Countries**

Chairperson: K. Kogi (Japan) ISL KAWASAKI

- ⑬ R. Mahathevan (Malaysia) KUALA LUMPUR  
Introduction: Overview of shift work in developing countries.
- ⑭ A. Manuaba (Indonesia) DENPASAR  
Shiftwork at hotels in Bali.
- ⑮ A. Khaleque and A. Rahman (Bangladesh) DACCA → VERHOEFEN  
Sleep disturbances and health complaints of shift workers.
- ⑯ M. Wongphanich (Thailand), H. Saito, K. Kogi and Y. Temmyo (Japan) BANGKOK  
Shift and day work systems on working life conditions of women textile workers in Thailand. MAHIDOL  
ISL KAWASAKI
- ⑰ F. M. Fischer (Brazil) SAO PAULO  
Working conditions of the shift workers of the metropolitan area São Paulo, Brazil.
- ⑱ B. R. Reverente and L. Ariosa (Philippines) MANILA  
Sickness-absence among shift workers in an industrially developing country.
- ⑲ S. E. G. Perera (ILO Regional Office) BANGKOK  
Shift and night work practices in Asian developing countries.
- ⑳ C. N. Ong and B. T. Hoong (Singapore) UNIV → KOGI  
Shift work in manufacturing industries in Singapore.

	R	V	C	
1	24	24	52	%
2	47	21	32	%

← 3

	R	V	C
21	5	5	11
19	9	5	6

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 | 1  
 V V  C V  C C V  C C C C C V  C  C  
 R 5  
 V = 5  
 C = 10  
 AUGUST  
 31  
 1 - 19

Monday, 30 August 19.30-21.00

Reception at the New Miyako Hotel, Yomeiden Hall (B1)

Tuesday, 31 August 9.00-12.40

Session 4: Sleep Problems in Night and Shift Work

Chairperson: P. Verhaegen (Belgium)

(21)

K. Kogi (Japan) *ISL HAWASAKI*  
 Introduction: Sleep problems in night and shift work.

(22)

S. Torii, N. Okudaira, H. Fukuda, H. Kanamoto, Y. Yamashiro, M. Akiya, K. Nomoto, N. Katayama, M. Hasegawa, M. Sato, M. Hatano and H. Nemoto (Japan) *TOKYO*  
 Effects of night shift on sleep patterns of nurses.

(23)

H. Fukuda, S. Endo, T. Yamamoto, Y. Saito and K. Nishihara (Japan) *TOKYO*  
 Changes of sleep architecture associated with acute split-sleep.

(24)

P. Naitoh, C. E. Englund and D. Ryman (U.S.A.)  
 Restorative power of naps in designing continuous work schedules.

*NAVY SAN DIEGO*

(25)

K. Matsumoto, T. Matsui, M. Kawamori and K. Kogi (Japan)  
 Effects of nighttime naps on sleep patterns of shiftworkers.

*NAGOYA ISL*

(coffee 10.40-10.55)

(26)

W. J. Price and D. C. Holley (U.S.A.) *CALIFORNIA*  
 Abnormal sleep reduction: a possible contributor to the crash of Pacific Southwest Airlines Flight 182.

(27)

B. Pavard, A. Vladis, J. Foret and A. Wisner (France)  
 Age and long term shiftwork with mental load: their effects on sleep.

(28)

Z. Vokac and L. Lund (Norway) *OSLO*  
 Patterns and duration of sleep in permanent security night guards.

(29)

T. Ishibashi, T. Miura, M. Kitagawa and H. Tainaka (Japan) *OSAKA japan*  
 Sleep patterns and fatigue symptoms in permanent night workers and shift workers.

(30)

D. I. Tepas (U.S.A.) *CHICAGO*  
 Shiftworker sleep strategies.

(lunch 12.40-13.40)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20  
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Tuesday, 31 August 14.00-20.00

**Excursion** Departure by bus from the hotel entrance at 14.00  
Visit to a traditional weaving mill;  
Dinner at Restaurant "Ran-tei", Arashiyama Hills.

Wednesday, 1 September 9.00-12.20

**Session 5: Development of Criteria for the Design of Shiftwork System**

Chairperson: A. Manuaba (Indonesia)

- 2/3
- (31) P. Knauth and J. Rutenfranz (F.R.G.) *DORTMUND*  
Introduction: Development of criteria for the design of shift work systems.
- (32) R. J. Kelley and M. F. Schneider (Canada) *TORONTO*  
The twelve-hour shift revisited: recent trends in the electric power industry.
- (36) R. Moog and G. Hildebrandt (F.R.G.) *HARBURG* *ADLER*  
Comparisons between autorhythmometric methods and a baseline measurement of circadian rhythms in night workers.
- (34) <sup>F</sup> Xia W., Song Z. Z. and Li N. Y. (People's Republic of China)  
Physiological limits of locomotive drivers on successive night shifts in the People's Republic of China.
- (35) Y. Saito (Japan) *NACHIJOJI* *BEIJING*  
A permanent night work system in the electronics industry.

*BEELGIUM BRUXELLES* (coffee 10.40-10.55)

- 3/4
- (33) A. Adler and Y. Roll (Israel)  
Characterising shiftwork patterns by the off-time-distribution.
- (37) K. Sakai, K. Kogi, A. Watanabe, N. Onishi and H. Shindo (Japan) *ISL*  
Location-and-time budget in working consecutive night shifts.
- (38) C. Besseyre des Horts (France) *ESSBC*  
Continuous shift working in process industries: does firm efficiency imply high human costs?
- 4/5
- (39) P. Knauth, P. Schwarzenau, W. Brockmann and J. Rutenfranz (F.R.G.) *DORTMUND*  
Computerized construction of shift systems for continuous production which meet physiological, social and legal requirements.

(lunch 12.20-13.40)

Lihani 10<sup>H</sup> - 17<sup>H</sup>

Wednesday, 1 September 13.40-15.00

**Session 6: Special Considerations for Shiftwork of Women and Elderly Workers**

Chairperson: M. Wongphanich (Thailand)

40 B. Kolmodin-Hedman (Sweden)

Introduction: Shift work in women and in elderly. *UMEA*

41 M. Meulenbergs and P. Verhaegen (Belgium) *LIUVEN*

Quantitative and qualitative aspects of sleep in 50-56 years old self-selected shift workers.

42 T. Uehata, N. Sasakawa, and K. Sakai (Japan) *TOKYO*

The fatigue and maternity disturbances of night workwomen. *152*

43 D. Brown (U.K.) *HULL*

Shiftwork, equality and women.

(coffee 15.00-15.15))

Wednesday, 1 September 15.15-17.15

**Session 7: Social Support for Night- and Shiftworkers**

Chairperson: S. H. Lee (Korea)

44 H. Thierry (Netherlands) *AMSTERDAM*

Introduction: Social support for night and shift workers.

45 C. B. Dumont (ILO) *GENEVA*

Introduction: Conditions of work and life of shift workers in industry in developing countries.

46 O. Natsuhara and A. Shimizu (Japan) *TOKYO SYND*

Measures suggested for improving working life of shift workers in Japan.

47 T. J. Lee, W. K. Moon and K. S. Cho (Korea)

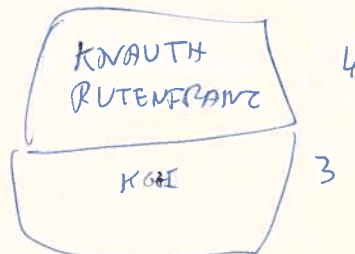
Sociological observation of effects of shift work on the functions of the family.

48 N. Ohashi (Japan) *TOKYO Catholic University SEOUL*

Medical telecommunication support to crews on ocean-going vessels.

**Closing of the Symposium 17.00-17.15**

Dr. H. Saito Organizing Committee



## GENERAL INFORMATION

### Presentation Time and Visual Aid

Each speaker will have about 12 minutes for presentation. The speaker of an introductory paper will have about 20 minutes. How to allocate time to discussions is left to the chairperson's discretion.

A slide projector for 50×50 mm frames is prepared.

### Meeting Together

Come to the Informal Gathering on Sunday evening. This will be in room 156, 10th floor, from 19.00 to 21.00.

All the participants and their accompanying persons are invited to attend the reception on Monday evening and the dinner at the end of the excursion on Tuesday evening.

### Accompanying Persons' Program

On Monday, following the opening of the Symposium, there will be a city tour program for accompanying persons. This will include visits to places of interest, attendance at a tea ceremony and guided shopping.

### Lunch

On each of the three days of the Symposium, a lunch is served free of charge in the room next to the meeting hall. Those who want to have a special meal are requested to contact the Registration Desk in front of the meeting hall.

### Contact with the Secretariat

The Secretariat members are staying at room 182, 10th floor. They are ready to help you on any matter. Contact the symposium reception desk when the sessions are open.

### Reprints of Abstracts and Papers

Reprints of the abstracts and the papers are available on registration.

The Proceedings of the Symposium will be later published. Each speaker will get one copy.

### How to get the Hotel

The New Miyako Hotel is near the Hachijoguchi-Exit of the Kyoto Station. Coming out of the station southward under the Sinkansen bullet train line, you will see it on your right.

From the city, area of Kyoto, tell your taxi driver either "Kyoto-Station Sinkansen" or "New Miyako Hotel". (Note the hotel name in Japanese is "SHIN-MIYAKO-HOTEL".)

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9/10 43  
11/12 44  
14/15 45  
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47



Vu les délibérations des conseils municipaux de Trouy et Plaimpied-Givaudins en date des 1<sup>er</sup> décembre 1981 et 8 janvier 1982, et la délibération du conseil général du Cher en date du 16 décembre 1981;

Vu le procès-verbal de clôture de la conférence mixte à l'échelon central en date du 17 mars 1982;

Le Conseil d'Etat (section des travaux publics) entendu,

Décète :

Art. 1<sup>er</sup>. — Sont déclarés d'utilité publique, conformément au plan au 1/10 000 annexé au présent décret (1), les travaux de construction dans le département du Cher :

De l'échangeur de Bourges de l'autoroute A 71;

D'une voie nouvelle dite Rocade Sud de Bourges comprise entre la route nationale 151 et la route nationale 76, d'une longueur de 9,510 km.

Art. 2. — Les expropriations éventuellement nécessaires à l'exécution des travaux définis à l'article 1<sup>er</sup> devront être réalisées dans un délai de sept ans à compter de la publication du présent décret.

Art. 3. — Le maître d'ouvrage sera tenu de remédier, dans les conditions prévues par l'article 10 de la loi du 8 août 1962 susvisée, aux dommages causés aux exploitations agricoles.

Art. 4. — Le statut autoroutier est conféré à l'échangeur susmentionné.

Art. 5. — Le caractère de route express nationale est conféré à la voie nouvelle définie à l'article 1<sup>er</sup>.

Art. 6. — L'accès à la route express est interdit en permanence :

Aux piétons ;

Aux cavaliers ;

Aux cycles ;

Aux animaux ;

Aux véhicules à traction non mécanique ;

Aux véhicules à propulsion mécanique non soumis à immatriculation, notamment aux cyclomoteurs ;

Aux tracteurs, matériels agricoles et matériels de travaux publics visés à l'article R. 133 du code de la route ;

Aux véhicules automobiles ou ensembles de véhicules qui ne seraient pas capables, par construction, d'atteindre en palier une vitesse minimum de 40 kilomètres par heure à l'exception des convois exceptionnels.

Le stationnement est interdit sur la route express, sauf en cas de nécessité absolue sur les accotements, notamment sur les bandes d'arrêt.

Toutefois, ces interdictions de circulation ou de stationnement ne s'appliquent pas aux personnels et aux matériels des administrations publiques, des organismes concessionnaires ou permissionnaires autorisés à occuper temporairement le domaine public de la route express et des entreprises appelées à y travailler, lorsque leur mission nécessite la présence de ces personnels ou de ces matériels sur la route express.

Art. 7. — Le ministre d'Etat, ministre des transports, est chargé de l'exécution du présent décret, qui sera publié au *Journal officiel* de la République française.

Fait à Paris, le 27 juillet 1982.

PIERRE MAUROY.

Par le Premier ministre :

Le ministre des transports,

CHARLES FITERMAN.

(1) Il peut être pris connaissance de ce document à la direction départementale de l'équipement du Cher à Bourges.

## MINISTÈRE DE LA RECHERCHE ET DE L'INDUSTRIE

Décret n° 82-650 du 27 juillet 1982 relatif aux sections du comité national de la recherche scientifique.

Le Premier ministre,

Sur le rapport du ministre d'Etat, ministre de la recherche et de l'industrie, et du ministre de l'éducation nationale,

Vu l'ordonnance n° 45-2632 du 2 novembre 1945 réorganisant le centre national de la recherche scientifique ;

Vu le décret n° 79-778 du 10 septembre 1979 portant organisation du centre national de la recherche scientifique ;

Vu le décret n° 81-723 du 28 juillet 1981 relatif aux attributions du ministre de la recherche et de la technologie ;

Après avis du comité consultatif des personnels du centre national de la recherche scientifique,

Décète :

Art. 1<sup>er</sup>. — Les sections du comité national de la recherche scientifique comprennent chacun vingt-cinq membres :

1° Seize membres élus au scrutin de liste à la représentation proportionnelle, à bulletin secret, conformément aux dispositions des articles 5 et 6 du présent décret, à raison de :

Trois par le collège électoral A 1 ;

Trois par le collège électoral A 2 ;

Quatre par le collège électoral B 1 ;

Deux par le collège électoral B 2 ;

Quatre par le collège électoral C.

2° Neuf personnalités qualifiées, nommées par le ministre chargé de la recherche, après avis du directeur général du centre national de la recherche scientifique.

Art. 2. — Les personnes qui, à une date fixée par arrêté du ministre chargé de la recherche, entrent dans l'une des catégories définies à l'article 3 ci-dessous ont vocation à être inscrites sur la liste électorale de l'une des sections du comité national au titre du collège dont elles relèvent.

Art. 3. — Le corps électoral constitué pour les élections aux sections du comité national est composé de la manière suivante :

I — Collège électoral A 1 :

a) Les directeurs et maîtres de recherche du centre national de la recherche scientifique, ainsi que les personnes appartenant aux corps créés par les décrets n° 59-1403 et n° 59-1404 du 9 décembre 1959 ;

b) Les chercheurs à temps plein qui ont, dans un autre organisme, un grade assimilable à celui de directeur ou de maître de recherche du centre national de la recherche scientifique, travaillant dans une formation propre du centre national de la recherche scientifique ou dans une unité de recherche soutenue par lui ou qui l'a été depuis moins de trois ans, ou encore bénéficiant ou ayant bénéficié depuis moins de trois ans d'une aide individuelle du centre.

II — Collège électoral A 2 :

a) Les membres de l'académie des inscriptions et belles lettres, de l'académie des sciences, de l'académie des sciences morales et politiques, ainsi que les professeurs du Collège de France ;

b) Les professeurs et maîtres de conférences des universités et instituts nationaux polytechniques ainsi que les personnes qui ont une responsabilité équivalente dans un service public ou dans un établissement public ou reconnu d'utilité publique exerçant une mission de recherche, de formation, de documentation ou d'animation scientifiques ou technologiques, travaillant dans une formation propre du centre national de la recherche scientifique ou dans une unité de recherche soutenue par lui ou qui l'a été depuis moins de trois ans, ou encore bénéficiant ou ayant bénéficié depuis moins de trois ans d'une aide individuelle du centre ;

c) Les personnes mentionnées au b ci-dessus ne remplissant pas l'une des conditions prescrites de lien avec le centre national de la recherche scientifique mais ayant fait l'objet, dans les limites indiquées ci-après, d'une demande d'inscription sur les listes électorales formulée par le conseil scientifique de l'établissement dont ces personnes relèvent ou de l'instance en tenant lieu.

Ces inscriptions sont limitées à dix personnes pour chaque université ou institut national polytechnique, ainsi que pour l'école des hautes études en sciences sociales, l'institut national des langues et civilisations orientales, la fondation nationale des sciences politiques, le Conservatoire national des arts et métiers, le Muséum national d'histoire naturelle, chaque école normale supérieure et chaque institut national des sciences appliquées.

Elles sont limitées à trois personnes pour chaque unité d'enseignement et de recherche assurant une formation d'ingénieur et pour chaque institut universitaire de technologie, en ce qui concerne les organismes relevant des universités. Elles sont également limitées à trois personnes pour chacune des sections de l'école pratique des hautes études et pour les autres institutions mentionnées au b ci-dessus exerçant une mission de recherche, de formation, de documentation ou d'animation scientifiques ou technologiques, en ce qui concerne les organismes ne relevant pas des universités.

Les limites de dix et de trois personnes mentionnées ci-dessus ne peuvent s'appliquer cumulativement. Elles s'entendent pour l'ensemble des sections du comité national.

d) Des personnalités qualifiées en raison de leur compétence scientifique ou technique, en nombre au plus égal, pour chaque section, à 20 p. 100 du nombre des personnes inscrites au titre

du collège A 1 et des catégories a, b et c du collège A 2 ; ces personnalités sont désignées à titre personnel par décision du directeur général prise après avis des directeurs scientifiques du centre.

### III. — Collège électoral B 1 :

a) Les chargés et attachés de recherche du centre national de la recherche scientifique ;

b) Les chercheurs à temps plein qui ont, dans un autre organisme, un grade assimilable à celui de chargé ou d'attaché de recherche du centre national de la recherche scientifique, travaillant dans une formation propre du centre national de la recherche scientifique ou dans une unité de recherche soutenue par lui ou qui l'a été depuis moins de trois ans, ou encore bénéficiant ou ayant bénéficié depuis moins de trois ans d'une aide individuelle du centre.

### IV. — Collège électoral B 2 :

a) Les maîtres-assistants des universités et instituts nationaux polytechniques, les assistants des universités et instituts nationaux polytechniques titulaires d'un doctorat de troisième cycle ou d'un titre universitaire au moins équivalent, ainsi que les personnes qui ont une responsabilité et des diplômes au moins équivalents au doctorat de troisième cycle dans un service public ou dans un établissement public ou reconnu d'utilité publique exerçant une mission de recherche, de formation, de documentation ou d'animation scientifiques ou technologiques, travaillant dans une formation propre du centre national de la recherche scientifique ou dans une unité de recherche soutenue par lui ou qui l'a été depuis moins de trois ans, ou encore bénéficiant ou ayant bénéficié depuis moins de trois ans d'une aide individuelle du centre ;

b) Les personnes mentionnées au a ci-dessus ne remplissant pas l'une des conditions prescrites de lien avec le centre national de la recherche scientifique mais ayant fait l'objet, dans les limites indiquées ci-après, d'une demande d'inscription sur les listes électorales formulée par le conseil scientifique de l'établissement dont ces personnes relèvent ou de l'instance en tenant lieu.

Ces inscriptions sont limitées à vingt personnes pour chaque université ou institut national polytechnique, ainsi que pour l'école des hautes études en sciences sociales, l'institut national des langues et civilisations orientales, la fondation nationale des sciences politiques, le Conservatoire national des arts et métiers, le Muséum national d'histoire naturelle, chaque école normale supérieure et chaque institut national des sciences appliquées.

Elles sont limitées à six personnes pour chaque unité d'enseignement et de recherche assurant une formation d'ingénieur et pour chaque institut universitaire de technologie, en ce qui concerne les organismes relevant des universités. Elles sont également limitées à six personnes pour chacune des sections de l'école pratique des hautes études et pour les autres institutions mentionnées au a ci-dessus exerçant une mission de recherche, de formation, de documentation ou d'animation scientifiques ou technologiques, en ce qui concerne les organismes ne relevant pas des universités.

Les limites de vingt et de six personnes mentionnées ci-dessus ne peuvent s'appliquer cumulativement. Elles s'entendent pour l'ensemble des sections du comité national.

### V. — Collège électoral C :

a) Les ingénieurs, techniciens et agents administratifs du centre national de la recherche scientifique rémunérés sur un emploi budgétaire du centre ou de l'un de ses instituts nationaux ;

b) Les ingénieurs, techniciens et agents administratifs rémunérés sur emplois budgétaires autres que ceux du centre et de ses instituts et travaillant dans une formation propre du centre national de la recherche scientifique ou dans une unité de recherche soutenue par lui.

Art. 4. — Seules sont éligibles les personnes appartenant au corps électoral défini à l'article 3 ci-dessus et ayant fait acte de candidature.

Elles peuvent être élues par l'un quelconque des collèges électoraux de la section dans laquelle elles sont classées.

Nul ne peut se voir confier plus de deux mandats consécutifs au sein du comité national, que ce soit par voie de nomination ou par voie d'élection. Cette règle ne s'applique toutefois que si la durée cumulée des deux mandats est supérieure à six ans.

Art. 5. — Les listes de candidature, établies à raison d'une liste par collège, comportent un nombre de candidats au plus égal au nombre de sièges à pourvoir. Les candidats y sont classés par ordre préférentiel. Nul ne peut se porter candidat sur plus d'une liste.

Les électeurs peuvent procéder à la suppression ou à l'adjonction de noms de candidats, dans la limite du nombre de sièges à pourvoir.

Chaque liste a droit à autant de sièges que le nombre de voix recueilli au total par ses candidats contient de fois le quotient électoral. Les sièges restant éventuellement à pourvoir sont attribués suivant la règle de la plus forte moyenne. Dans le cas où plusieurs listes ont la même moyenne et où il ne reste qu'un siège à pourvoir, ce siège est attribué par tirage au sort.

Art. 6. — Les candidats sont proclamés élus dans l'ordre de présentation de la liste.

Toutefois, c'est le candidat qui a obtenu le plus grand nombre de voix qui est proclamé élu, si le nombre des voix obtenues par celui-ci dépasse d'au moins 5 p. 100 le nombre des voix obtenues par le candidat le mieux placé dans l'ordre de présentation de la liste, abstraction étant alors faite du ou des candidats dont l'élection est déjà acquise. Dans ce cas, lorsque plusieurs candidats ont obtenu, à égalité, le plus grand nombre de voix, la désignation du candidat élu est faite dans l'ordre où ces candidats figurent sur la liste.

Art. 7. — La durée des fonctions de membre d'une section du comité national est fixée à quatre ans, tant pour les membres élus que pour les membres nommés. Cette durée peut être réduite ou prolongée d'un an au maximum par arrêté du ministre chargé de la recherche.

Art. 8. — Tout membre d'une section qui, sauf cas de force majeure, s'est abstenu de siéger pendant deux sessions consécutives, perd sa qualité de membre de la section.

Lorsqu'un membre élu ou nommé d'une section ne peut plus siéger, pour quelque cause que ce soit, il doit être remplacé pour la durée du mandat restant à courir. En ce qui concerne le remplacement d'un membre élu, le siège vacant est attribué au candidat le mieux placé de la même liste non encore désigné comme membre. Lorsqu'une telle désignation n'est pas possible, la section concernée élit un nouveau membre parmi les personnes ayant fait acte de candidature à cette fin.

Art. 9. — Les sections se réunissent au moins deux fois par an sur convocation du directeur général du centre.

Lors de leur première réunion après un renouvellement, les sections élisent leur président. Elles pourvoient ultérieurement à son remplacement s'il y a lieu.

Nul ne peut être président d'une section au cours de deux mandats consécutifs ni cumuler cette présidence avec celle d'une section du conseil chargé des carrières des corps universitaires ou avec celle d'une commission de l'institut national de la santé et de la recherche médicale.

Lorsque la délibération porte sur des questions individuelles, le vote a lieu au scrutin secret. Les personnes appartenant au collège C ne se prononcent pas sur le recrutement et les promotions des chercheurs. Les personnes appartenant aux collèges B 1 et B 2 ne se prononcent pas sur les mesures concernant les directeurs et maîtres de recherche.

Tout membre de la section intéressé à titre personnel ou comme membre d'une unité de recherche ne peut participer aux délibérations le concernant ou concernant cette unité de recherche.

Les autres règles de fonctionnement des sections du comité national sont définies en tant que de besoin par le directeur général, après avis du conseil d'administration.

Art. 10. — Un arrêté du ministre chargé de la recherche précise les modalités d'inscription sur les listes électorales et d'organisation des scrutins.

Art. 11. — Le décret n° 79-780 du 10 septembre 1979 modifié relatif au comité national du centre national de la recherche scientifique est abrogé.

#### Dispositions transitoires.

Art. 12. — Le mandat du comité national en fonction à la date de publication du présent décret prendra fin à l'expiration d'un délai de huit mois à compter de la date de cette publication.

Art. 13. — Le ministre d'Etat, ministre de la recherche et de l'industrie, et le ministre de l'éducation nationale sont chargés, chacun en ce qui le concerne, de l'exécution du présent décret, qui sera publié au *Journal officiel* de la République française.

Fait à Paris, le 27 juillet 1982.

PIERRE MAUROY.

Par le Premier ministre :

Le ministre d'Etat,  
ministre de la recherche et de l'industrie,  
JEAN-PIERRE CHEVÈNEMENT.

Le ministre de l'éducation nationale,  
ALAIN SAVARY.

#### Organisation des élections au comité national de la recherche scientifique.

Le ministre d'Etat, ministre de la recherche et de l'industrie,  
Vu le décret n° 81-723 du 28 juillet 1981 relatif aux attributions du ministre de la recherche et de la technologie ;  
Vu le décret n° 82-650 du 27 juillet 1982 relatif aux sections du comité national de la recherche scientifique,

Arrête :

Art. 1<sup>er</sup>. — Les élections des membres des sections du comité national de la recherche scientifique, ont lieu conformément aux dispositions du décret du 27 juillet 1982 susvisé et dans les conditions fixées par le présent arrêté.

#### TITRE I<sup>er</sup>

##### COMMISSION ÉLECTORALE

Art. 2. — Une commission électorale est chargée d'organiser les élections.

Elle se compose de :

- Un président et quatre vice-présidents ;
- Deux membres de chacune des sections actuelles du comité national ;
- Un représentant de chacune des organisations syndicales représentatives des personnels du centre national de la recherche scientifique et des enseignements supérieurs.

Les personnes mentionnées aux a et b ci-dessus sont nommées par décision du directeur général du centre national de la recherche scientifique.

Art. 3. — Sur proposition de son président, la commission définit les modalités de son fonctionnement.

Art. 4. — Le secrétariat général de la commission électorale est assuré par le secrétaire général du comité national de la recherche scientifique.

Le secrétaire général de la commission électorale peut être assisté par des personnes désignées par le président de la commission électorale. Le siège du secrétariat général est situé 23, rue du Maroc, à Paris (19<sup>e</sup>).

#### TITRE II

##### LISTE ÉLECTORALE

Art. 5. — La commission électorale procède à l'inscription sur la liste électorale des personnes qui, à la date fixée par arrêté du ministre chargé de la recherche, entrent dans l'une des catégories mentionnées à l'article 3 du décret du 27 juillet 1982 susvisé.

Les personnes mentionnées aux I b, II b, III b, IV a et V b dudit article doivent, pour être inscrites, justifier auprès de la commission électorale du fait qu'elle remplissent l'une des conditions prescrites par le décret du 27 juillet 1982 susvisé. Cette justification doit parvenir au secrétaire général de la commission électorale avant une date fixée par le directeur général du centre national de la recherche scientifique. Les personnes mentionnées au V b du même article doivent procéder à cet envoi sous couvert du responsable de l'unité de recherche où elles travaillent.

Les personnes autres que celles mentionnées au II d du même article peuvent indiquer dans quelle section elles estiment devoir être inscrites.

Art. 6. — Les personnes inscrites en application de l'article 5 ci-dessus sont avisées individuellement de cette inscription.

Toute personne n'ayant pas reçu cet avis d'inscription à une date fixée par décision du directeur général du centre national de la recherche scientifique pourra, dans les dix jours suivant cette date, saisir la commission électorale d'une réclamation assortie de toutes justifications utiles.

Art. 7. — La commission peut classer un électeur dans une section différente de celle souhaitée par l'intéressé. Celui-ci peut contester cette décision dans les huit jours qui suivent sa notification. Le choix arrêté par la commission après nouvel examen du cas est alors définitif.

Art. 8. — En ce qui concerne les personnalités qui peuvent être inscrites à titre personnel en application de l'article 3-II du décret du 27 juillet 1982 susvisé, la commission électorale présente des propositions au directeur général du centre national de la recherche scientifique.

Art. 9. — La liste électorale est arrêtée par le directeur général du centre national de la recherche scientifique. Elle est déposée au secrétariat général de la commission électorale où elle peut être consultée par toute personne intéressée. Mention de ce dépôt est faite au *Journal officiel* de la République française.

Les réclamations contre cette liste doivent être adressées au président de la commission électorale dans les quinze jours suivant la publication de cette mention au *Journal officiel*.

Les rectifications décidées font l'objet de la même publicité.

#### TITRE III

##### DÉPÔT DES CANDIDATURES

Art. 10. — Les listes de candidatures, accompagnées de l'accord écrit des candidats, doivent être déposées auprès de la commission électorale avant une date fixée par décision du directeur général du centre national de la recherche scientifique.

Nul ne peut être élu sans avoir ainsi fait acte de candidature.

#### TITRE IV

##### DÉROULEMENT DES ÉLECTIONS

Art. 11. — La date des élections ainsi que les dates et délais prévus aux articles 5, 6, 10 et 14 du présent arrêté sont fixés par décisions du directeur général du centre national de la recherche scientifique publiées au *Bulletin officiel* du ministère de l'éducation nationale et au *Journal officiel* de la République française.

Art. 12. — La surveillance des opérations électorales incombe au président de la commission électorale, qui prend toutes dispositions nécessaires pour en assurer la régularité.

Art. 13. — La commission électorale adresse à chacun des électeurs l'ensemble des documents de vote, notamment :

- Une enveloppe, dite enveloppe n° 1, ne portant aucune indication permettant d'en déterminer l'origine ;
- Une enveloppe, dite enveloppe n° 2, portant mention de la nature du scrutin et sur laquelle sont inscrits les nom, prénom, section de vote, collège et numéro de l'électeur ;
- Les listes de candidats.

Art. 14. — Le scrutin a lieu par correspondance à bulletin secret. A cette fin, l'électeur insère son bulletin de vote dans l'enveloppe n° 1. Il place ensuite cette enveloppe préalablement cachetée dans l'enveloppe n° 2. Ce pli, également cacheté et sur lequel l'électeur appose sa signature, doit parvenir au président de la commission électorale dans le délai prescrit par décision du directeur général du centre national de la recherche scientifique.

A peine de nullité, le vote doit être exprimé à l'aide d'un seul bulletin ne comportant pas de signe de reconnaissance. Tout bulletin comportant plus de noms que de sièges à pourvoir est déclaré nul.

Art. 15. — Les bulletins de vote sont dépouillés par la commission électorale. Les résultats des élections sont proclamés par le président de la commission électorale et déposés au secrétariat général de la commission où ils peuvent être consultés par toute personne intéressée.

Art. 16. — L'arrêté du 21 novembre 1979 relatif à l'organisation des élections au comité national du centre national de la recherche scientifique est abrogé.

Art. 17. — Le directeur général du centre national de la recherche scientifique est chargé de l'exécution du présent arrêté, qui sera publié au *Journal officiel* de la République française.

Fait à Paris, le 27 juillet 1982.

JEAN-PIERRE CHEVÈNEMENT.



TEXTILE'S  
**KAWASHIMA**

KAWASHIMA BUNKA JIGYODAN CO.,LTD  
**Kawashima Textile School**

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### An Invitation to Creativity

While our modern civilization has made our lives bountiful, it has also robbed us of our humanity. We are trapped in a world in which it is increasingly difficult to mold our own lives according to our own ideas and with our own hands. In short, we are confronted with the sad reality that handicraft has nearly disappeared from our lives and from society.

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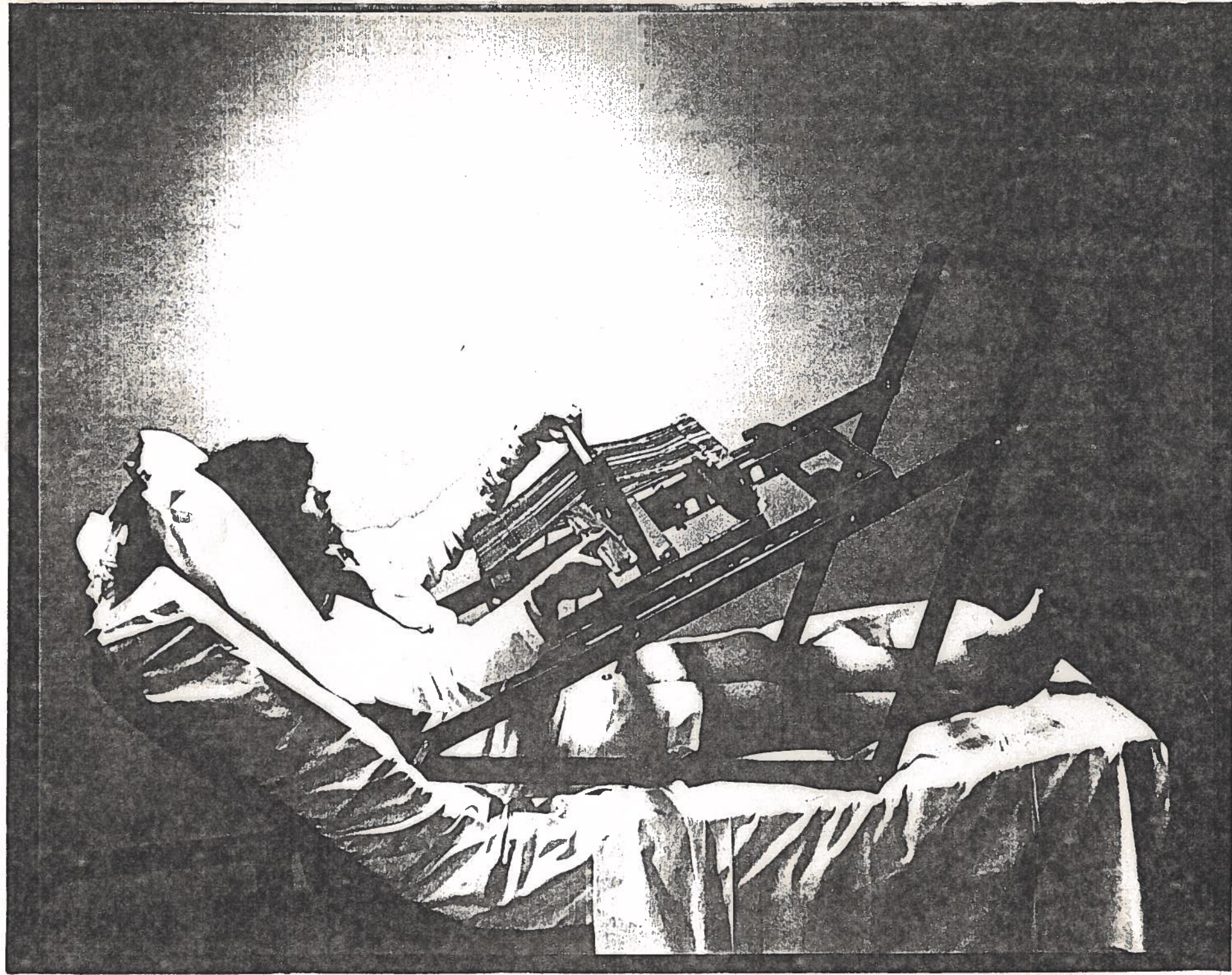
facilities....

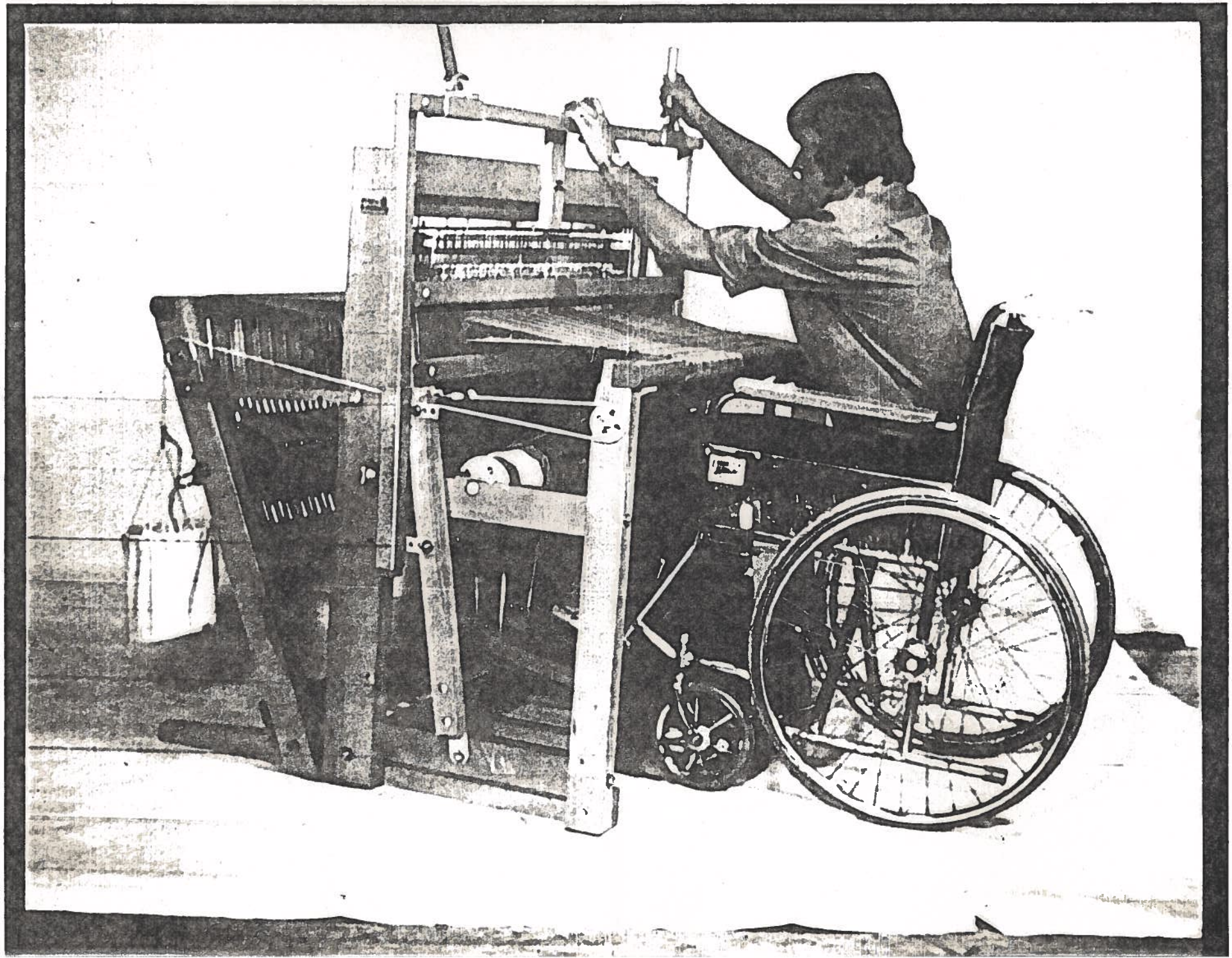
We have a wide range of equipment and materials for weaving and dyeing. There is sufficient space & equipment for each student to concentrate in depth on his/her own work.

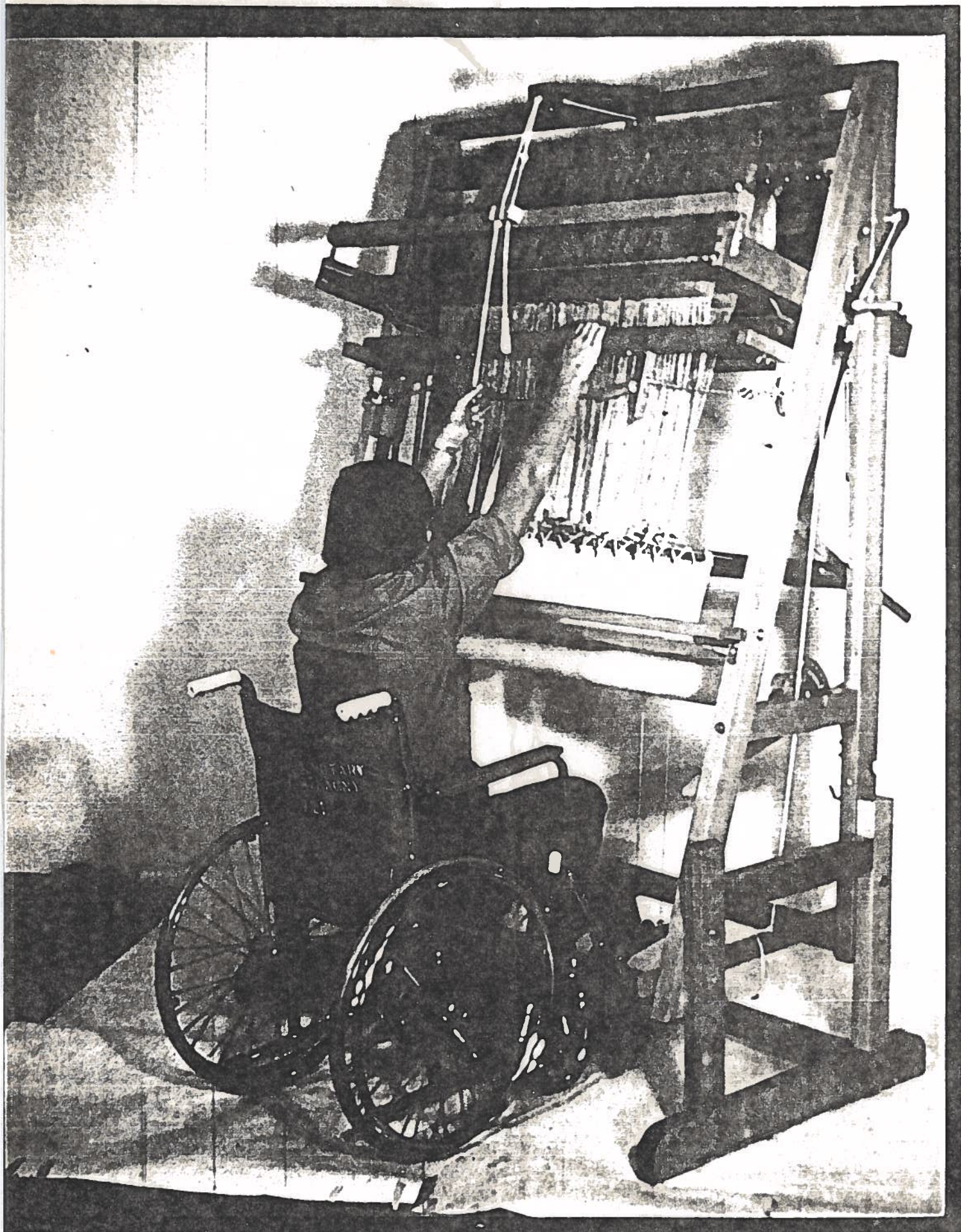
A dormitory is connected to the school building by an underground tunnel.

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In addition to these magnificent articles, we have developed over the last hundred years interior fabrics of exceptional workmanship and design. Our Kawashima drapery, upholstery, and wall-covering have reigned supreme in the interior textile field. Designing, dyeing, and twisting are carried by in our own mills together with the weaving, a combination which is rarely found in the textile world.

An outstanding feature of our mills, and an essential ingredient of our success, is the beautiful natural surrounding at the foot of the mountains which brings the peace and spiritual calm so needed to maintain the highest standard of quality.



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1 September 1982

Sixth International Symposium  
on Night and Shift Work  
Kyoto, 30 August-1 September 1982

Publication of the Proceedings and  
the Final Version of Your Paper

The Proceedings of the Symposium will be published as a Supplement issue of the Journal of Human Ergology.

We hope to publish this issue early 1983. You will get one copy. We will appreciate your helping us distribute the copies as widely as possible.

Should you wish to change part of your manuscript, already submitted to us, please let us know about the changes by 20 October 1982 at the latest.

Thank you for your cooperation.

- - - - -

Meeting together has meant printing new impressions on our heart. We hope this fresh heartprint of friendship will continue to foster our future collaboration!

# RECORD OF PURCHASE OF FOREIGN MEANS OF PAYMENT

New Miyako Hotel

DATE	31.8.82	<input type="checkbox"/> TOURIST	<input checked="" type="checkbox"/> ON BUSINESS	PASSPORT NO	75 026381
ROOM NO	168			NATIONALITY	FRANCAIS
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HOME ADDRESS	(IN BLOCK)	22 RUE EDIPE DUBOIS 75.014 FRANCE PARIS			

IC 200022  
 530 02  
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T/C	\$	YEN	¥ 60.000 -		<input type="checkbox"/> AMERICAN EXPRESS CO <input type="checkbox"/> BANK OF AMERICA NT & SA <input type="checkbox"/> FIRST NATIONAL CITY BANK <input checked="" type="checkbox"/> THOS. COOK & SON LTD <input type="checkbox"/> BARCLAY'S BANK INT'L LTD	
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<p><b>Remarks:</b></p> <p>If you want to re-convert the unused part of your yen money back into foreign currency in an amount that exceeds U. S. \$ 1,000 or its equivalent, you are required to present this record to an authorized foreign exchange Bank or an authorized money changer at the time of re-conversion. Such re-conversion can be done only once when you leave Japan. Please, therefore, keep this until your re-conversion.</p> <p style="text-align: right;">NEW MIYAKO HOTEL</p>	<p>担当者</p>
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## AN APPEAL TO HALT WORSENING LABOR CONDITIONS

### The Issue:

A research council functioning under the auspices of the Japanese Ministry of Labor has recommended a repeal of the labor protection laws for women allegedly for the purpose of creating greater equality of employment between male and female workers.

Although equality is the expressed objective the actual aim of this proposed change is suspension of the present laws prohibiting all-night work and limiting over-time for women.

These changes in the protection provisions will greatly affect textile, electronics, food processing and precision instrument



industries which depend heavily on female labor. Such revision of the law favors only the employers and provides the legal basis for 24-hour operations, extension of working hours for office workers, sales people, and various other service workers.

### Implications for Other Asian Women Workers:

As multinational corporations, Japan's textile and electronics industries operate in many places in Asia. Instead of respecting the labor laws of the host country, they employ women workers under extremely poor conditions. Indigenous voices in these countries cry out: "They allow labor conditions here which Japanese workers in Japan would not tolerate." The revision of the protection provisions for women would only justify further administrative oppression and would have a detrimental effect on the labor laws in other countries of Asia.

### Historical Background of the Labor Law:

In the process of Japan's industrialization women workers in particular suffered excessively long working hours under poor conditions for very low wages. This became a serious social problem. After a 40-year struggle to limit working hours, the first "factory law" was established in 1911 and passed in 1916. However, the prohibition of all night work did not go into effect until 1930. The law did not mean much in traditional Japanese society. Actual working conditions were far out of step with regulations set forth in the law. The suffering of women workers continued until 1947 when the enactment of the present labor law brought prohibition of all-night work and guaranteed maternity rights.

## Women Workers at Present:

From 1974 to 1975, 21,000 women workers lost their jobs while 360,000 men were hired. Between 1976 and 1979, 1,170,000 women workers were hired as day laborers while 600,000 men were added to the work force as full-time employees. More than 65.5 percent of the 12 million women workers are married and the majority of them are part-time or day laborers without the benefit of labor unions nor the protection of labor laws. A woman's average salary is 56.2 percent of a man's and in textile factories 44.2 percent of a man's.

Among working women only 24 percent belong to unions with most of them being company unions which do not accept the role of protecting women's rights. Regarding labor-management relationships, it is very difficult to improve working conditions beyond the level of the present labor laws. This is especially true for female workers in such industries as textiles as they must work in two shifts between 5:00 a.m. to 10:30p.m. Many workers are troubled with health and family problems similar to those seen in all-night workers, but these women cannot bargain for better working conditions through their labor unions.

In general, labor intensity has increased rather than decreased and the quality of work has been lowered to monotonous and unnatural mechanical repetition.

### Protest:

The labor ministry research council asks that the proposed change in the labor laws follow the spirit of the International Women's Year as a first step in realizing equality among working people. But laws giving legal sanction to unlimited over-time work will ultimately force working women to leave their jobs and will destroy the few rights that women now have. Such a move would be a complete reversal of the principle of equality encouraged by International Women's Year. The ultimate result of the proposed change would be the lowering of labor conditions for both men and women.



This change must be prevented in order to sustain a measure of humanity and dignity in the daily lives of all working people, whether male or female.

## Working Women Speak Out:

### 36 Year-old Woman

I have been working for 18 years in the same electronics company. Since last year the company has been on two shifts requiring me to work on alternating schedules. I have two children aged five and ten living with my husband's mother. My husband's company is on a three shift system and it is impossible to get any help with the household work from him. Before I got used to working the second shift I became sick and now I am suffering from asthmatic bronchitis. I have requested work during regular working hours but the company does not allow such. I want to work. Please understand at least how difficult it is to work the two shift system.

### 42 Year-old Woman

For financial reasons I started to work in a food processing company. In the beginning, while I had good health, I felt the work-day was short. But when the company started to use a new assembly line system the pressure in all positions in the work line increased enormously. We need a longer rest now since the labor intensity is so great.



### 28 Year-old Woman

I work in a textile company. Four years ago the company went on two shifts, from 5:00 a.m. to 10:30 p.m. It is difficult to find time to even go to the bathroom since we do not have enough workers. My job requires the use of a microscope in the finishing process. Everybody complains of tired eyes. After four years work my eye sight which was at a level of 0.8 points decreased to 0.1. After two years work most people decrease from a level of 1.0 points to 0.6.

### 35 Year-old Woman

I work in the production line of a women's wear factory. Since women's fashions change quickly the type of work can change within two or three weeks. Sometimes the same work continues only two to three days. But, our work demands continuous over-time and requires intensive concentration. I have experienced two miscarriages. I have to get up at five o'clock every morning and take care of my husband and child. In the same factory five out of 10 married women have had miscarriages. The doctor commented that the vibration of the machines and the dust are the cause of our ill-health.

### 42 Year-old Woman

I was divorced four years ago, when my daughter was 12 and my son was nine years old. For the past five years I have been working at a food processing company in Hiroshima. Wearing a white cap and a face mask, I sit beside

The Women's Association of the National Christian Council in Japan has joined in support of opposition to the revision of the law with forty-seven other major women's groups in Japan.

Rev. Iseko Kawase (Chairperson), Miyoko Shiozawa  
and Aiko Carter  
Christian Center, NCCJ  
24, 2-3-18 Nishiwaseda, Shinjuku-ku, Tokyo

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(Working Women Speak Out. cont...)

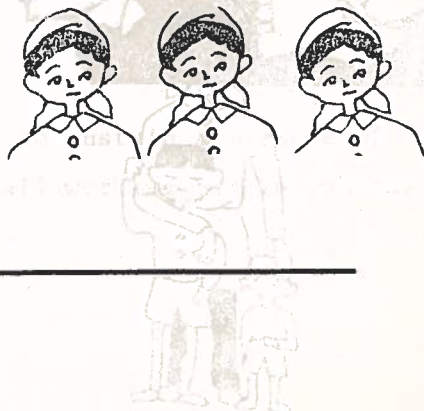
a noisy conveyer-belt and place aluminum tops on 80 bottles per minute. Besides this fast work I have to catch misplaced or misprinted labels on the bottles.

My working hours are from 8:15 a.m. to 4:15 p.m. six days a week. I get up at five o'clock and make lunches for my children. I leave the house at 6:30 a.m. Besides my monthly income of ¥88,200 (\$400) I receive ¥3,095 (overtime work), ¥1,500 (family allowance), ¥8,600 (transportation allowance) and ¥3,795 (lunch allowance). I pay my group health insurance, social security and other work insurance out of my total income of ¥105,190 (\$487). Thus, my actual net income is ¥85,000 (\$386).

In addition I receive ¥28,000 (\$127) children's aid from the government. Out of this I pay my daughters high school tuition which is ¥15,000 plus ¥5,000 transportation. Public housing costs ¥5,400. Other expenses are gas (¥5,227), electricity (¥2,615) and telephone (¥2,500). Thus, ¥65,000 (\$295) is left for three people's food and clothing.

I want to do over-time since I need money for living. But what I do now is already too much. Since I am so tired everyday I go to bed at 8:00. The other day I over-heard the children talking together, saying not to wake me up but to leave a note for me instead. We hardly have time to talk to each other, and I am worried that this will cause delinquency or other problems for the children. Right now I am just bringing in enough money for my family to eat. My backache is bad. Sometimes I feel I would be better off if I got seriously ill and received government aid. If the women's protection laws are lifted I may lose my job or my family will suffer since I may have to work the night shift.

(This person is an atomic bomb victim and suffers from thyroid and hernia as well.)





## Problems related to shift work

# A field study of Swedish railroad workers with irregular work hours

by BIRGITTA KOLMODIN-HEDMAN, M.D., and ÅKE SWENSSON, M.D.<sup>1</sup>

KOLMODIN-HEDMAN, B. and SWENSSON, Å. Problems related to shift work: A field study of Swedish railroad workers with irregular work hours. *Scand. j. work environ. & health* 1 (1975) 254—262. A group of 132 engineers from the north of Sweden was included in the study. A subsample of about 50 subjects was selected for further laboratory investigations during a light and warm summer period and a dark and cold winter period. The mean for the hours of sleep noted on the sleep records was significantly lower for night work than for day work. The amount of sleep during night work was significantly less during the light period than during the dark period as was the amount of sleep during the day off. Body temperature measured during work followed a daytime pattern and had a low amplitude. Potassium excretion and the blood levels of cortisol displayed a stable circadian rhythm with a daytime pattern. Many environmental factors made the results of catecholamine data difficult to interpret. The frequency of reported peptic ulcers was higher in the engineer group than in some other groups.

*Key words:* shift work, catecholamines, sleep, circadian rhythm.

Many different types of shift work, e.g., two-shift and three-shift, and their influence on the health and well-being of workers have been studied. Shift work can be regarded not only as work during two or three 8-h periods in 24 h with a defined rotation of blocks of different shifts but also as regular night work and quite irregular work schemes in which night work is included. These types of work may give rise to special problems with medical, psychological, and social natures. Investigations of workers with regular shift work are numerous. Not many studies of night workers have been made, and only a few investigations of workers with irregular hours have been published (6, 33).

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Reprint requests to: Dr. Birgitta Kolmodin-Hedman, National Board of Occupational Safety and Health, Division of Occupational Medicine, S-104 01 Stockholm 60, Sweden.

In an early study of a group of Swedish railroad workers, Bjerner et al. (6) found a higher frequency of peptic ulcers than in the general population. The increase in comparison with the general population was even greater than for groups doing regular shift work (1, 3, 5). The importance of factors other than shift work per se is, however, indicated by the fact that in some investigations no such increase in the frequency of peptic ulcers was demonstrated (12, 34). One important factor in this connection is sleep deprivation. Bjerner et al. (5, 6, 7) found that workers with sleep deprivation complained of many symptoms, such as tiredness, irritability, difficulties in concentration, and headache, when working at night. Wedderburn (36) suggested that a short work period would be more suitable for preventing the development of sleep deficiency. Sleep debts during shift work were also reported by Tune (35).

One of the factors discussed in connec-

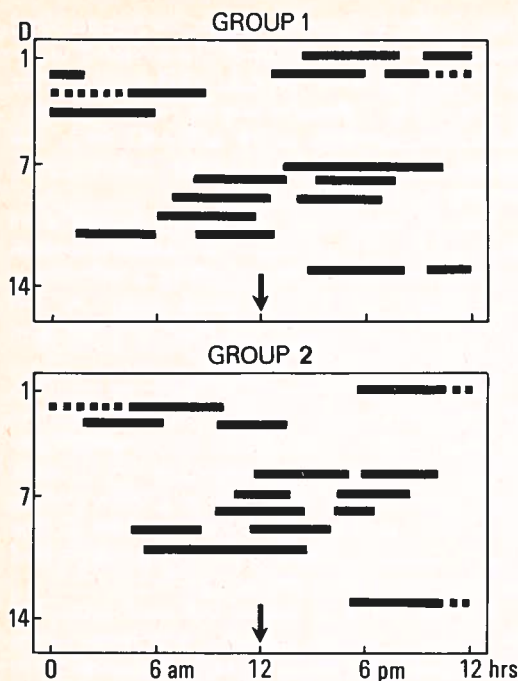


Fig. 1. Work hours for two groups of engineers during a 12-day period.

tion with the ill-effects of shift work and/or nighttime work and/or work at irregular hours is the disturbance of circadian rhythms. In animals the change from light to darkness and from darkness to light is a very strong synchronizer (19) or "Zeitgeber" (4). In man, on the other hand, social relations seem to be still more important (6, 27). A great number of social complications were reported in shift workers when the family and community followed a daytime pattern (32). Many biological parameters, as body temperature (28, 29), sodium and potassium excretion (11, 25, 26), and blood levels of 11-OH-cortisol (10), display rhythmic variations. Urinary excretion of catecholamines also shows rhythmic variations (18, 24). However, when interpreting catecholamine levels, one must remember that many environmental factors affect the levels, e.g., smoking, coffee and tea drinking, physical exercise, and a high or low ambient temperature (2, 16). Stress factors and their relationship to catecholamine excretion have been studied in an in-

dustrial group of paper mill workers on a continuous three-shift schedule (18) and also in experimental situations (15, 17).

## PURPOSE

In this investigation we studied a group of workers with irregular work hours who did the same type of work during the day and night. As the group chosen could also be studied during a light and warm summer period and a dark and cold winter period, we included a study of the effects of light and darkness on the parameters used. The following questions were posed: (a) Is a circadian rhythm maintained? (b) How does work during the day and at night influence the sleep pattern? (c) Are there differences between summer and winter periods in laboratory test results or in the amount of sleep recorded? (d) Does this type of work influence the state of health and well-being?

## METHODS

Questionnaires for information concerning the sense of well-being, social adaptation, lodgings, sleep disturbances, and previous illness were completed at home after oral information had been given by the investigators.

Sleep records were filled out at home for a 12-day working period. Hours asleep and awake were noted for each day and night.

Body temperature was measured every other hour during a work shift with a thermometer placed under the tongue for 10 min. Measurements were not made immediately after physical exercise or coffee drinking. The results were noted on a form by the subject himself.

Sodium and potassium in urine were determined by an atomic absorption method (Perkin Elmer).

Adrenaline and noradrenaline in urine were analyzed according to the method of von Euler and Lishajko (14).

Blood 11-OH-cortisol was analyzed according to Mattingly (31).

A self-rating of symptoms and feelings was made on a 10-grade scale. This was done in the same period as the urine sampling. The items rated were: irrita-

tion, fatigue, restlessness, stress, boredom, depression, power of concentration, muscular pain, tension, headache, anger, nervousness, calmness, and sleepiness.

## SUBJECTS

One special group of Swedish railroad workers was selected, i.e., railroad engineers and engineer assistants who transported iron ore between Kiruna (a town in the very north of Sweden) and Vassijaure at the Norwegian border. This work is the same during the day and night, unlike other types of industrial work. Two examples of work rotation are shown in fig. 1. The questionnaires were given to 132 engineers and assistants and, for comparison, to 51 persons doing three-shift work (railroad service personnel). From the total group of engineers a sample was chosen for the laboratory investigation so that work hours at different times of the day and night were covered.

The investigation was performed during a warm and light period of the summer (A) and a cold and dark period of the winter (B). During the summer the midnight sun gives light for 24 h, whereas in December and January it is dark for 24 h. Forty-nine persons participated in period A; and 52 persons, in period B. Unfortunately, the same persons could not always be followed during these two periods, and therefore only group results from the various time periods could be evaluated. The subjects served as their own controls during a test day when they were free from work.

## EXPERIMENTAL DESIGN

Trains starting early in the morning and returning in the afternoon, trains leaving in the afternoon and returning early at night, and trains leaving around midnight and returning in the morning were followed. Thus the whole cycle of day and night was included (fig. 2).

The train going from Kiruna to the border carries the iron ore. After arriving in Vassijaure the engineers rest for 1-2 h and then return to Kiruna with another train without ore. In the figure the starting point is marked K and the border station Vj.

A control period, when subjects had their day off, comprised the hours 6:30-9:30 a.m., 5:30-8:30 p.m., and midnight to 3 a.m. The subjects stayed in the examination room but were allowed to walk about indoors, listen to the radio, read, smoke, and drink coffee.

An attempt was made to standardize the effect of caffeine on catecholamine levels. Coffee was prepared in a standardized way, and 150 ml were given to the subjects every hour both during work and during the control periods.

Before the start of the trip, on arrival at the border station, and after the return, a blood sample was drawn into heparinized tubes. Plasma was separated by centrifugation at 2,500 rpm and was then frozen at  $-20^{\circ}\text{C}$  until the analyses could be made. Blood samples were taken at the start and at the end of each control period.

During a train run urine was collected in plastic bottles without a preservative. Urine was voided into bottle I immediately before the start of the run (the exact time was noted) so that the subjects would have empty bladders at the exact starting point. Bottle II was used in the middle of the run and represented an approximate time of 90 min; the exact time was noted. Urine was voided into bottle III at the end of the trip, and the exact time was noted. During the control periods, urine was collected for periods of 90 min in each of the subperiods described above. At the stations the laboratory staff received the bottles and recorded volumes, pH, and specific gravity. The samples for catechol-

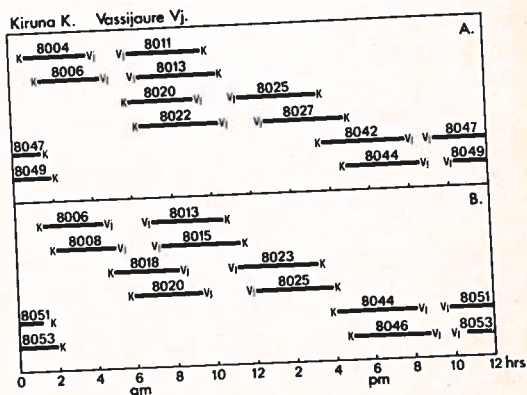


Fig. 2. Schematic diagram of the timetables for the train runs followed during the light period (A) and the dark period (B).

Table 1. Percentage frequency of reports concerning comfort at and attitudes toward work.

Group	N	Wish to change jobs	No wish to change jobs	No decision	Sense of well-being at work	Discomfort at work	No decision
Engineers	121	37	50	12	40	39	12
Workers doing three-shift work	51	69	29	2	41	47	10

Table 2. Percentage frequency of reports on impairment of social functions.

Group	N	Family contacts	Social contacts	Possibility to follow educational courses	Shopping and similar activities	Visits to the theater and the movies
Engineers	121	76	55	81	12	62
Workers doing three-shift work	51	63	53	71	14	61

Table 3. Percentage frequency of reports on present and/or previous illnesses.

Group	N	Coronary heart diseases	Peptic ulcers	Gastritis	Nervousness
Engineers	121	0	13	26	12
Workers doing three-shift work	51	0	8	29	22

Table 4. Percentage frequency of reports on sleep disturbances during the day and night.

Group	N	Undisturbed day sleep	Disturbed day sleep	Undisturbed night sleep	Disturbed night sleep
Engineers	121	24	76	73	27
Workers doing three-shift work	51	20	80	59	33

amine analysis were acidified to pH 3 and then frozen. The urine for the electrolyte analysis was frozen directly and stored frozen at  $-20^{\circ}\text{C}$ . An analogous procedure was used for the control periods.

## RESULTS

### Questionnaire

The questionnaire forms were given to 132 engineers or engineer assistants. The forms were filled out properly by 121,

Table 5. Means  $\pm$  standard errors of hours of sleep during different time routines for 66 railroad workers.

Time of work	Light period (A)	Dark period (B)
Day off	$8.1 \pm 0.10$	$8.7 \pm 0.10$
Day work	$7.5 \pm 0.12$	$7.6 \pm 0.15$
Afternoon work	$7.8 \pm 0.14$	$8.0 \pm 0.13$
Late afternoon work	$6.6 \pm 0.16$	$7.1 \pm 0.16$
Night work	$5.2 \pm 0.21$	$6.3 \pm 0.26$
Early morning work	$5.1 \pm 0.20$	$5.3 \pm 0.12$

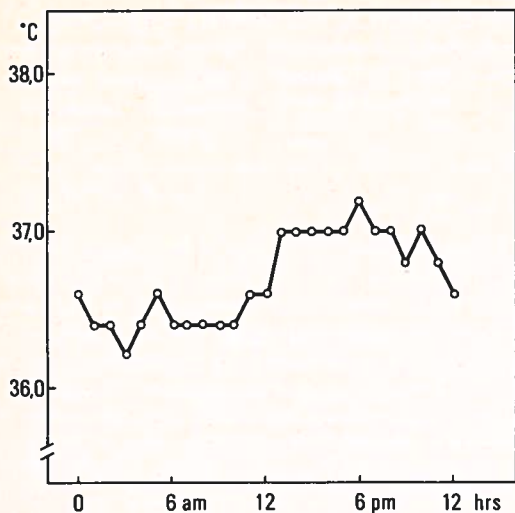


Fig. 3. Mean values of the body temperatures of the engineers during the day and night.

inadequately by 4, and left unanswered by 7. Sixty-eight per cent of the men were between 40 and 50 years of age. Fifty-one subjects doing three-shift work were used as controls. They worked at one station as service personnel. Thirty-nine per cent were between 40 and 50 years of age. Table 1 shows data on comfort at and attitudes towards work. In the engineer group, 40 % felt at ease, but the same percentage did not, and 37 % wanted to change jobs, but 50 % did not. In the three-shift group, 41 % felt at ease, 47 % did not, 69 % wanted to change to work with regular hours, and only 29 % wanted to continue with the same work.

Some negative effects of the work at irregular hours, as reported by the two groups, are listed in table 2.

Table 3 shows the frequency of previous and present illnesses in the two groups. None of the persons questioned had had anginal chest pain or a myocardial infarction. Peptic ulcers, verified by X-ray, were found in 13 % of the engineers and in 8 % of the three-shift group. In addition 40 % of the engineers and 21 % of the three-shift workers had or had had incapacities due to joint disorders and back trouble.

As pointed out in the introduction, problems often arise when a man has to sleep in the daytime. Table 4 gives the results of the questionnaire investigation

for the engineer and the three-shift groups. Sleep during the day was disturbed for 76 and 80 %, respectively, as against 27 and 33 %, respectively, for night sleep. The major disturbing factors were traffic in general, railroad traffic, and the noise from playing children.

#### *Sleep records*

It can be seen from table 5 that the mean of the sleep hours calculated from the sleep records kept during night work and work with the starting point late at night or early in the morning differed significantly ( $p < 0.001$ ) from the mean of the sleep hours recorded for daytime work or on a day off. It was also found that the amount of sleep before starting night work was less than that before work in the daytime. Sleep during the daytime and during the day off in the light summer period was significantly less than that during the dark winter period ( $p < 0.001$  and  $p < 0.001$ , respectively). It should be noted that there were no differences in the mean number of sleep hours between dark and light periods when the workers did daytime work.

#### *Body temperature*

A diagram of the mean body temperature during day and night for a work period is given in fig. 3. It can be seen that a daytime pattern is obtained. However, the amplitude is low. Physical activity may have had an influence on the temperature during the night.

#### *Electrolyte excretion*

Fig. 4 shows the 24-h excretion curve for potassium calculated for all the data (periods A and B), followed both for the periods of work and for the day off. A circadian rhythm is clearly seen in the data. This was not the case for the sodium and chloride excretion data.

#### *Excretion of adrenaline*

The results of the excretion of adrenaline are summarized in fig. 5, which gives the pooled data from periods A and B for

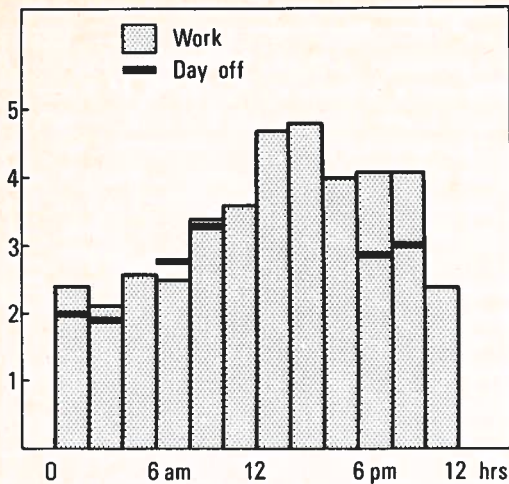


Fig. 4. Mean values for the excretion of potassium in urine (mg/min) followed for 24 h during a work period and during a day off. Data from periods A and B are pooled.

hours of work and the described periods of the day off. The most striking effect is the high level as a whole and the higher value for the corresponding control period. However, the differences are not statistically significant. We could not find any difference in the adrenaline excretion between the summer and winter investigations. The mean ambient temperature was  $+9.5^{\circ}\text{C}$ , and  $-9.3^{\circ}\text{C}$ , respectively.

#### Excretion of noradrenaline

The results of the excretion of noradrenaline are recorded in tables 6 and 7 for periods A and B, respectively. Generally, the noradrenaline levels were higher in the winter than in the summer period. There were generally no differences between the excretion values during the work period and the day off.

#### Levels of cortisol (11-OH-cortisol)

The results are summarized in fig. 6. A circadian rhythm of a daytime pattern was found with the highest level at 6 a.m. and the lowest at midnight. No difference could be found between the values from work periods and from leisure time. In spite of

the fact that railroad workers also work during night hours a daytime pattern is retained.

#### Rating of symptoms and feelings

The only two parameters which showed measurable variations were sleepiness and fatigue. As expected, the subjective feeling of sleepiness and fatigue was highest at night from 12 p.m. to 5 a.m., whether rated during the control period or during work. The same was the case when the train started early in the morning or returned after a night period of work. Thus a discrepancy was found between the rated degree of fatigue and the excretion level of adrenaline in urine, which was generally high.

A comprehensive description and more details have been given in a Swedish report (23).

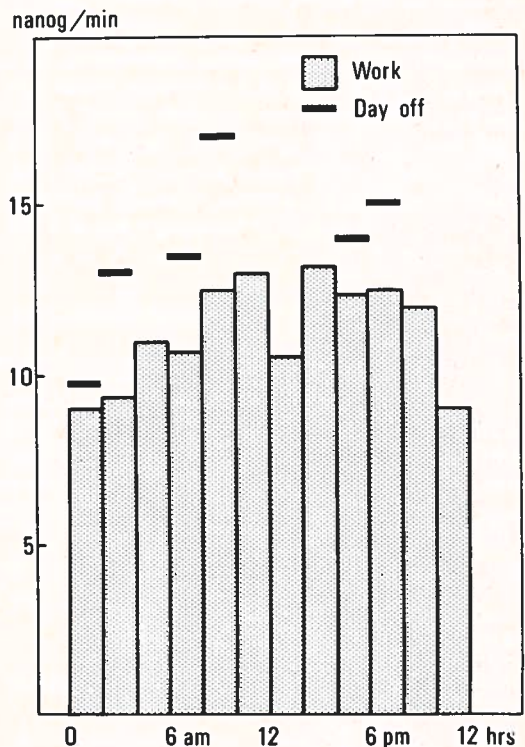


Fig. 5. Mean values for the excretion of adrenaline in urine (nanog/min) during the day and night. Data from periods A and B are pooled.

## DISCUSSION

A discrepancy in the frequency of the wish to change jobs and discomfort at work indicates that other factors might be components of satisfaction with this type of work. Furthermore, access to other types of work is limited in such a small town. Economic factors, such as extra pay for traveling work, might also compensate to some extent for negative factors.

Concerning the information about previous or present illness, the frequency of joint disorders and back trouble is low when compared with that reported for other Swedish materials (20, 21). The engineers had more symptoms in the loco-

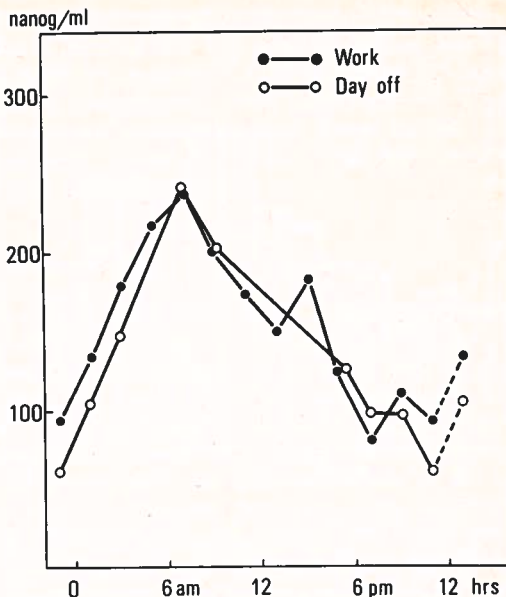


Fig. 6. Mean values for the levels of cortisol in blood (nanog/ml) during the day and night. Data from periods A and B are pooled.

Table 6. Means and standard errors ( $M \pm SE$ ) for the excretion of noradrenaline in urine (nanog/min) during a work period and a day off in 2-h sampling periods (Summer—period A).

Hours	Work period		Day off	
	N	$M \pm SE$	N	$M \pm SE$
12 p.m.—01:59 a.m.	21	$29.1 \pm 2.1$	44	$32.1 \pm 2.0$
2:00 — 3:59 a.m.	26	$31.7 \pm 1.7$	44	$32.2 \pm 1.9$
4:00 — 5:59 a.m.	15	$35.9 \pm 7.2$	—	—
6:00 — 7:59 a.m.	12	$32.0 \pm 3.4$	42	$34.7 \pm 2.6$
8:00 — 9:59 a.m.	27	$36.2 \pm 2.0$	42	$34.5 \pm 2.2$
10:00 — 11:59 a.m.	18	$32.6 \pm 2.7$	—	—
12 a.m.— 1:59 p.m.	2	$21.2 \pm$	—	—
2:00 — 3:59 p.m.	4	$30.8 \pm 7.3$	—	—
4:00 — 5:59 p.m.	21	$33.7 \pm 3.2$	—	—
6:00 — 7:59 p.m.	13	$28.4 \pm 2.0$	42	$36.8 \pm 2.3$
8:00 — 9:59 p.m.	15	$25.7 \pm 1.5$	42	$34.1 \pm 2.1$
10:00 — 11:59 p.m.	—	—	—	—

Table 7. Means and standard errors ( $M \pm SE$ ) for the excretion of noradrenaline in urine (nanog/min) during a work period and a day off in 2-h sampling periods (Winter—period B).

Hours	Work period		Day off	
	N	$M \pm SE$	N	$M \pm SE$
12 p.m.—01:59 a.m.	32	$39.1 \pm 3.7$	48	$36.1 \pm 2.4$
2:00 — 3:59 a.m.	32	$39.0 \pm 3.2$	48	$42.4 \pm 3.4$
4:00 — 5:59 a.m.	26	$42.7 \pm 2.4$	—	—
6:00 — 7:59 a.m.	26	$49.0 \pm 4.2$	47	$39.6 \pm 2.3$
8:00 — 9:59 a.m.	46	$46.7 \pm 3.1$	48	$47.9 \pm 3.9$
10:00 — 11:59 a.m.	22	$39.0 \pm 3.5$	—	—
12 a.m.— 1:59 p.m.	10	$53.0 \pm 8.8$	—	—
2:00 — 3:59 p.m.	24	$47.3 \pm 4.7$	—	—
4:00 — 5:59 p.m.	21	$44.1 \pm 3.7$	—	—
6:00 — 7:59 p.m.	20	$43.7 \pm 3.2$	48	$39.0 \pm 2.6$
8:00 — 9:59 p.m.	24	$37.3 \pm 3.7$	48	$41.3 \pm 2.9$
10:00 — 11:59 p.m.	7	$46.6 \pm 13.9$	—	—

motor system than the three-shift control group. Draft, a common complaint from the engineers, is a possible explanation. There was no report of anginal chest pain or myocardial infarction. This result might be due to selection in the engineer group. The factors of selection could not be studied in the present investigation. The same frequency of peptic disorders was reported by Jørgensen (22) in an investigation of miners from the same town, Kiruna. There 20 % of the persons had long-standing peptic disorders, and 10 % had been away from work for this reason. We found peptic ulcers in 13 % and gastritis in 26—29 %, respectively. This frequency is higher than what has been found for other groups, e.g., dock workers (30), but it is in accord with the findings of Bjerner et al. (6), who found that traveling railroad personnel had more peptic ulcers than Swedes in general.

The reported decrease of sleep during work at night may be a risk factor with respect to safety at work, as a decreased amount of sleep is expected to affect the alertness of the subject (8, 9). Bjerner et al. (5) found longer reaction times on a multiple-choice reaction test and an increase in error-making after sleep deprivation.

The measurements for studying a circadian rhythm showed a daytime pattern. This held true for body temperature, potassium excretion, and 11-OH-cortisol in blood. Conroy et al. (10) found a reversed pattern in which the highest value occurred at 1 p.m. just before awakening in workers with constant night work. Whether the daytime pattern of blood cortisol is of any disadvantage in work during the night is not known at present. Van Loon (29) found that night work for 1 week gave an inverse pattern at the end of the week and noted individual differences in such a response. Furthermore, he found that a very rapid return to a daytime pattern occurred after 1 or 2 days away from work. The pattern of potassium excretion in urine follows a stable circadian rhythm with a lower excretion during the night than during the day (11, 25, 26). This rhythm is not so easily affected by the intake of food and beverages as is that for sodium and chloride excretion.

Many environmental factors may affect

catecholamine excretion. Åstrand et al. (2) showed that coldness evoked an increased adrenaline excretion in fishermen. An increase in adrenaline and to some extent noradrenaline, due to coffee drinking, was reported by Fröberg et al. (16). Indubitably the effect of caffeine increased the adrenaline level in our investigation in both test situations. The unfamiliar test situation on the day off and the extra load of work on the train run under study might also have had a stressor effect and might have raised the adrenaline values. In laboratory investigations, in which the same technique of analysis was employed, the adrenaline excretion level was 5—10 nanog/min (18); and under resting conditions, 2—3 nanog/min (13). The same technique was used in the different test periods, and it is therefore unlikely that a method artifact would have caused abnormally high values. One critical point is that sampling should ideally be done at an acid pH. In the present investigation the urine was acidified at the end of the sampling period. (The delay was 1.5—2 h.) One effect of this delay, however, would be lower catecholamine values.

A somewhat astonishing fact was that the rated amount of fatigue and the adrenaline levels did not correlate. A correlation between intensity in emotions and adrenaline excretion has been described by Fröberg and his coworkers (17, 18, 24) and by Frankenhaeuser (15).

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A B S T R A C T

In this field study, we analyzed the effects of a permanent mental shiftwork on sleep of 141 journalists working in a press agency.

The task is characterized by a high mental and cognitive activity. We found that dephasing between sleep-waking cycle and internal biological rhythms was followed by an alternation of quality and quantity of sleep. These effects increase with ~~aging~~. *age*

Ten journalists have been observed during a week. The stress induced by their work has been evaluated from their linguistic production. A sleeping report established day by day for each night provided us with a rather precise image of the quality and quantity of sleep. Our results show that the treatment before sleep of high loaded cognitive tasks of processing type (translation - synthesis, etc...) delays the onset of sleeping. In average, if the total time of text processing is doubled (1 to 2 hours) between 9 p.m. and 12 p.m., the onset of sleeping will be delayed of about 2 hours.

In the other hand, as we know that awakening time is only slightly influenced by the onset of sleeping, the total sleep time is shorter.

A significant correlation was found between work amount during evening shift (6.30 p.m. - 0.30 a.m.) and sleep onset time.

A descriptive model is proposed in which performance rhythm interacts with the circadian rhythms of biological variables which might control sleep.

AGE AND LONG TERM SHIFTWORK WITH MENTAL LOAD : THEIR EFFECTS ON SLEEP

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INTRODUCTION

The subject of this paper, is the effects of a long term shiftwork with mental load upon journalists having a text processing activity.

Many studies have been carried out on the effects of alternating working schedules (shiftwork) on sleep. In contrast, the effects of shiftwork with permanent schedules are much less documented (TELEKY, 1943; CONROY et al., 1970; PATKAY et al., 1977; LORTIE et al., 1979)

The journalists of the present study worked five days in a row, and got two days off. They usually kept going with the same shift and only exceptionally change.

The working schedules were as follows :

- 06.00 a.m. - 06.30 p.m. (morning)
- 12.00 a.m. - 06.30 p.m. (afternoon)
- 06.00 a.m. - 00.30 a.m. (evening)
- 00.00 a.m. - 06.30 a.m. (night)

X X  
X

They were given a questionnaire in order to obtain 1) Habitual sleep schedules during working periods and vacations 2) Subjective assessment of sleep quality, a description of sleep difficulties, use of hypnotics. This questionnaire was filled out by journalists waking on the four different shifts.

A more exhaustive study was performed to measure to what extent presleep mental activities of evening shift journalists (06.00 p.m. - 00.30 a.m.) influenced the characteristics of the sleep.

## METHOD

### 1. Questionnaire.

#### Subjects

Out of a total staff of 161 persons concerned, 141 answered the questionnaire. The number of journalists in the various shifts was :

- morning shift : N = 25
- afternoon shift : N = 41
- evening shift : N = 45
- night shift : N = 30

In contrast with most european shiftworkers, the journalists of the present study permanently worked on the same schedules.

#### Content

It was partly based upon procedures used in other studies (HORNE et ÖSTBERG, 1976; LORTIE et al., 1979; FORET et al., 1980; SCHNEIDER, 1980).

The areas probed were : journalists identity, family life conditions, professional activity, seniority in the service and in the agency, nutritional habits, use of sleeping pills, schedules and subjective quality of sleep and physical fitness during working time and holidays.

The questionnaire was first tested on five journalists. As a result of the test, 44 questions were drawn up taking into account the specific, nature and working conditions of the population. A t-test was performed on the averages across age groups and shifts.

### 2. "Sleep logs" and work analysis

#### Subjects

A sample of journalists was selected in order to homogenize the factors of age, experience in that job and to weed out individual health problems. Out of this simple, 10 people (8 male and 2 female) volunteered. Their characteristics were :

- age :  $30 \pm 1$  year (range 27-32 years)
- seniority in the shift :  $10 \text{ months} \pm 2$
- nature of work : desk editing (with identical specialization)

### Sleeping and nutrition logs

Prior to the observations, a "sleep log" was created to obtain the daily schedules of activity and sleep :

- work leaving time
- home arrival time
- bedtime
- sleep duration (approximate)
- waking time
- rising time
- main meal times

Journalists estimated the number of wakings during the night, as well as sleep quality (good - passable), and its length (sufficient - not sufficient).

In addition, the journalists filled out questionnaires regarding subjective alertness and tiredness during the waking period.

---

### Work analysis

The observations were made during the 3 last hours of work of the evening shift (09.30 p.m. - 00.30 a.m.).

As some results suggest that the closer an activity is to sleep time, the more significant its effect on the characteristics of sleep, the evening shift was chosen (9.30 p.m. - 0.30 a.m.). Also, with that shift, the journalists could go home quickly and start to sleep without external interferences (such as noise). The chances that difficulties in falling asleep were caused by external factors were minimized. X

### RESULTS

Duration of sleep, age and shiftwork (questionnaire data)

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Insert Fig. 1 - 3  
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Figure 1 shows the sleep length as a function of age of journalists and of shifts.

Whatever the schedule, sleep length is a decreasing function of age. The difference of sleep length between afternoon shift and morning and evening shift increases with age.

The sleep length of the journalists over 50 who work the evening and night shifts is significantly different from that of the 20-30 years old and 30-40 years old group ( $p < .01$ ). Therefore, age and work schedules seem to have cumulative effects, in terms of sleep length (difference between afternoon shift and night shift : 1 hour 40' in the 20-30 years old group vs. 2 hours in the group over 50).

#### Use of hypnotics and opinion of journalists

On Figure 4 are displayed the different kinds of complaints expressed by the subjects with regard to sleep, as well as the use of sleeping pills.

Sleeping pills use is more frequent for journalists working the night and evening shifts. The same journalists report the highest frequency of difficulties in falling asleep. But journalists working the morning shift (06. a.m. - 12.30 a.m.) report the largest sleep deficit, although with the smallest frequency of difficulties at sleep onset.

As a whole, the morning shift is regarded as the most difficult one. Without question, the sleep of journalists of the afternoon shift (12.00 - 06.30- appears to be the least disturbed by working conditions.

#### Naps

The percentage of journalists taking a nap depends in the shift (36 % for morning, 48 % for night, 16 % for evening and 0 % for afternoon shifts). Morning shift and night shift journalists take a nap of approximately 1 hour 30'.

#### Nutritional habits

Night shift journalists declared to have only a dinner. That dinner was their only solid meal of the day. At lunch time, they eat only sandwiches.

#### Work-sleep relation

Relation between work duration and sleep onset hour was analysed. Among the 10 journalists having participated in the study, 7 have declared in the questionnaire having recurring sleep problems (Fig. 3A) and 3 have declared having none (Fig. 3B).

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Insert Fig. 3A

Insert Fig. 3B

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5  
6

Each regression line was drawn from 5 observations corresponding to 5 days of work.

Analysis of covariance (assuming the same common slope for each curve) of Fig. 3A indicated that the sleep onset time is an increasing function of working duration ( $F = 14,4$ ;  $df = 1,38$ ;  $p < .0005$ ).

There is no correlation observed for the 3 journalists who declared having no sleep problems.

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Insert Fig. 4 7 - 8

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Fig. 4 shows that, for journalists the shorter the total sleep duration ( $F = 14,3$ ;  $df = 1,58$ ;  $p < .0001$ ) the more delayed is sleep onset.

#### DISCUSSION AND CONCLUSION

The diagrams showing sleep duration presented in this paper as a function of working schedules can be compared with those of other studies on shiftwork.

Night shift and morning shift result in dramatically reduced sleep duration (5 hours 35' and 6 hours 24' vs 8 hours 10' in afternoon shift).

According to all the questions related to sleep, afternoon shift appears to be the best and morning shift the most difficult one. Therefore, these results as a whole are consistent with the studies on shiftworkers (mostly with alternative schedules) (FORET et al., 1980; KNAUTH and RUTENFRANZ, 1980). They are also consistent with most of the studies on the relationship between age and sleep duration (WEBB, 1972; FORET and WEBB, 1980).

Even though it can be assumed that a longer experience in the job makes the task easier, it is of note that the factors "age" and "nightworker" still compound their effects to decrease sleep quality of nightworkers and to increase the difficulties in carrying out a job outside the normal hours.

In summary, although the task of the journalists is substantially different from jobs performed by the subjects generally studied in the literature on shiftwork, the effects of round-the-clock working schedules, even if they are permanent, appear to be the same.

Our results point out a negative correlation between duration of sleep and amount of mental work prior to sleep time: the larger the amount of work, the more delayed is the onset time.

← during the 3  
last hours  
9.30 pm to 0.30 am



A lot of experiments have been realized to obtain a description of the circadian rhythmicity of mental performances.

For KLEITMAN (1963), mental performances covary with central temperature, a maximum being observed at the end of the afternoon. But recently, FOLKARD et al. (1976) have shown that the circadian curves of performances are different when the cognitive and storage loads of a task are at diverse levels. In the case of high storage load, the peak appears in the morning with a monotonous decrease during the day.

Little is known about the opposite relation, that is the influence on following sleep, and specially on sleep onset time, of the quantity and quality of cognitive activity prior to the normal sleep onset time.

One may remark that the day hour at which the night shift journalists we studied have to perform eventually heavy cognitive tasks, is situated in the nycthemere nearly at the opposite of the performance peak described by FOLKARD et al. It is the contrary of what these authors have suggested for work organization (FOLKARD and MONK, 1979).

In the case of our journalists, it seems that the conflict between circadian rhythmicities and task demands is violent enough to disturb the sleep propensity. It is classical to consider that the latter is function of the relative position of sleep onset time in the circadian temperature variation curve. But, if we know, after FOLKARD <sup>et al.</sup> (1976) that cycle adaptation to night shift is two times quicker for high loaded cognitive task performance than it is for central temperature and low loaded cognitive task performances, this phenomenon cannot be taken in account for journalists who are working permanently on night shift and who are submitted from time to time to high loaded tasks.

In fact, it is interesting to note that a low loaded cognitive task realized during evening shift does not seem to provoke the same conflict. The sleep onset time is not modified. In this case, the work period is much nearer to the moderate loaded cognitive task circadian peak.

As COLQHOUN and RUTENFRANZ (1980) pointed : these questions are "particularly pertinent to the design of shift systems of "new" industries, such as computer operations, where the job is quite different from the one in the "traditional" shift working occupations".

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sleep duration (HOURS)

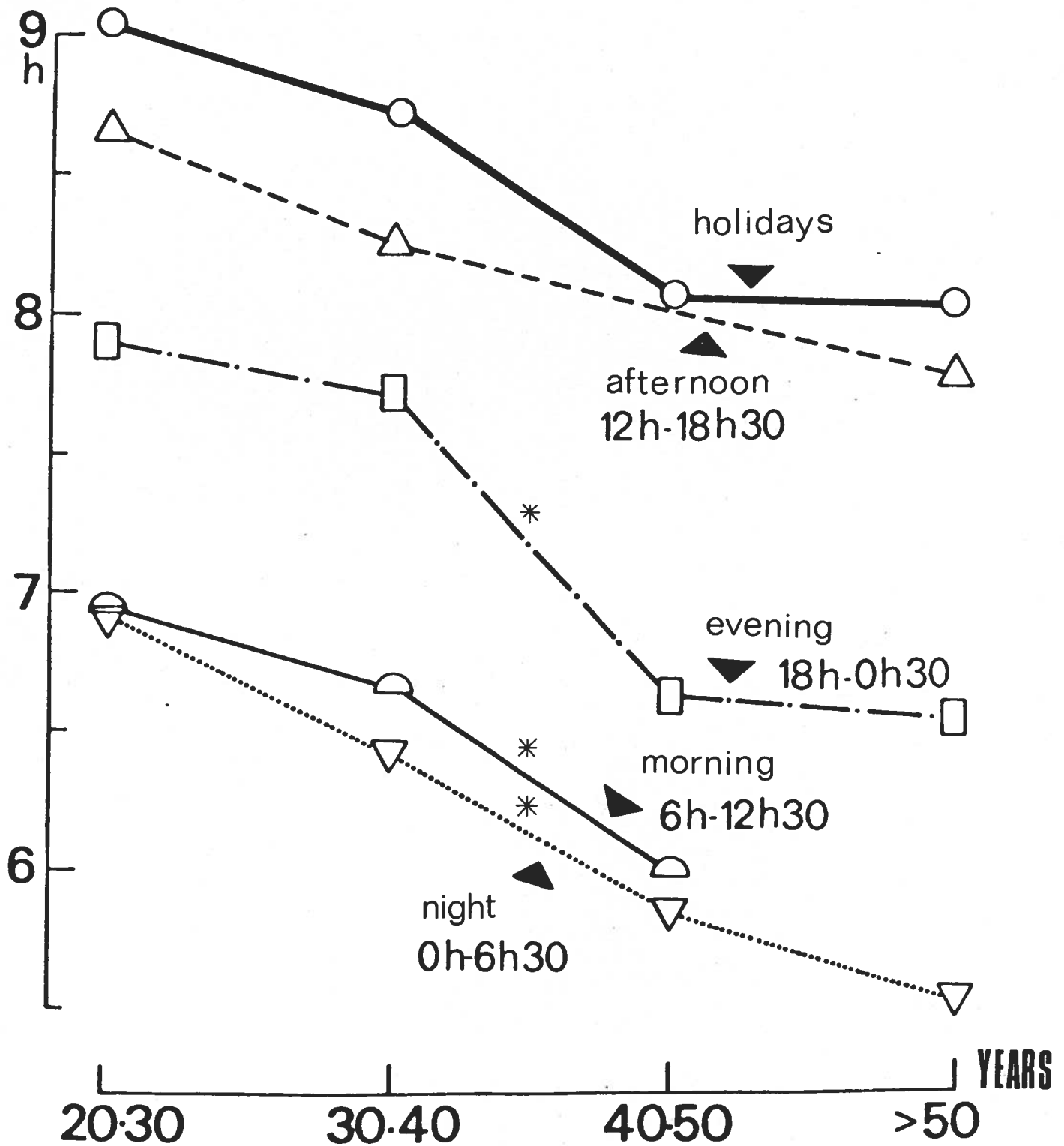


Fig. 1 - Mean sleep duration in terms of age for journalists. For the 30-40 years old group, the standard deviations are :  $\pm 60'$  during holidays;  $\pm 40'$  Morning;  $\pm 52'$  afternoon;  $\pm 39'$  Evening and  $\pm 65'$  for the Night. Asterisks indicate level of significance for differences between shifts (two tailed t-test  $p < .05$ )

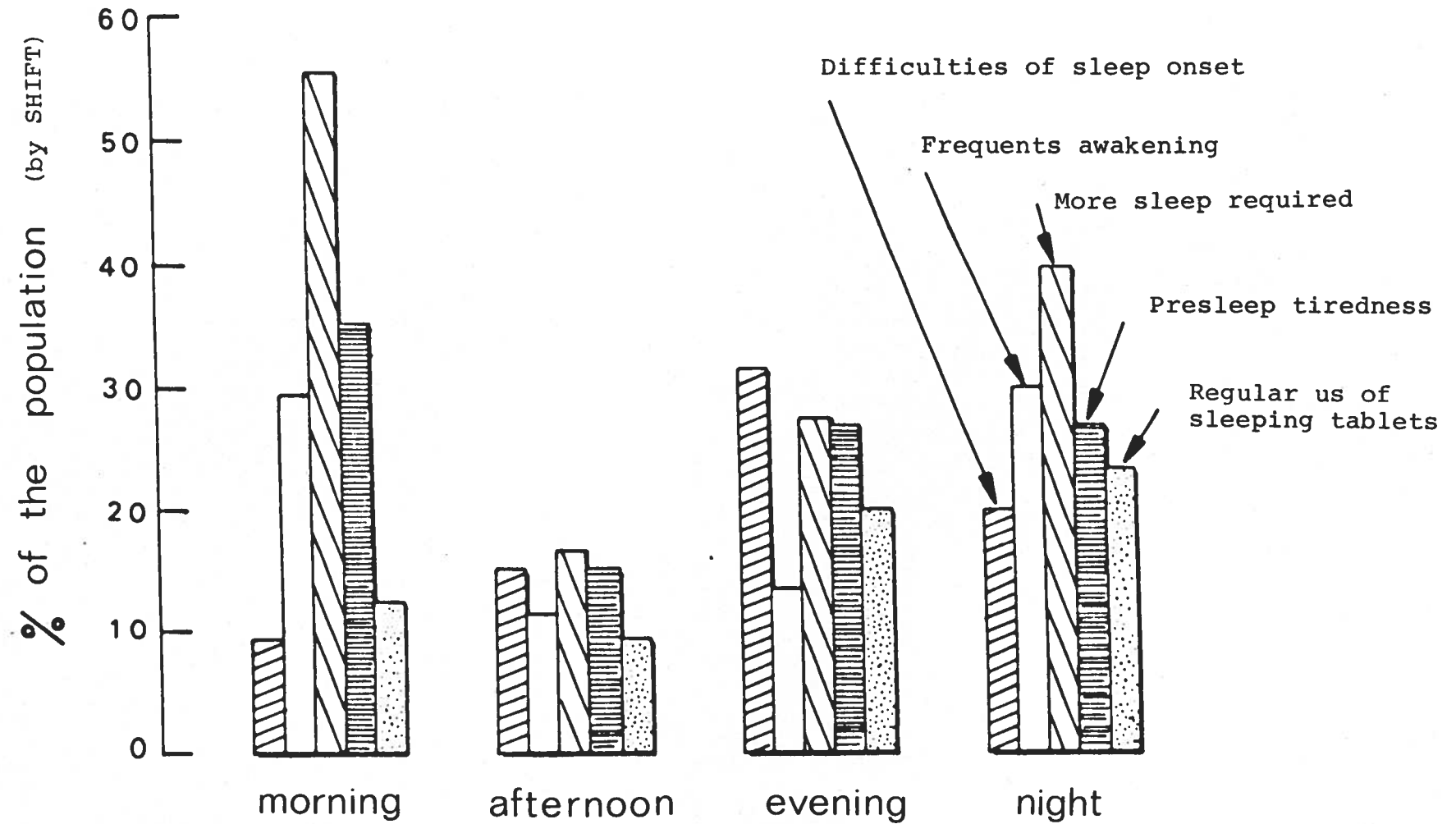


Fig. 2 - Percentage of journalists having problems during their sleep (difficulties at sleep onset, insufficient length of sleep, tiredness) in relation with the type of shift

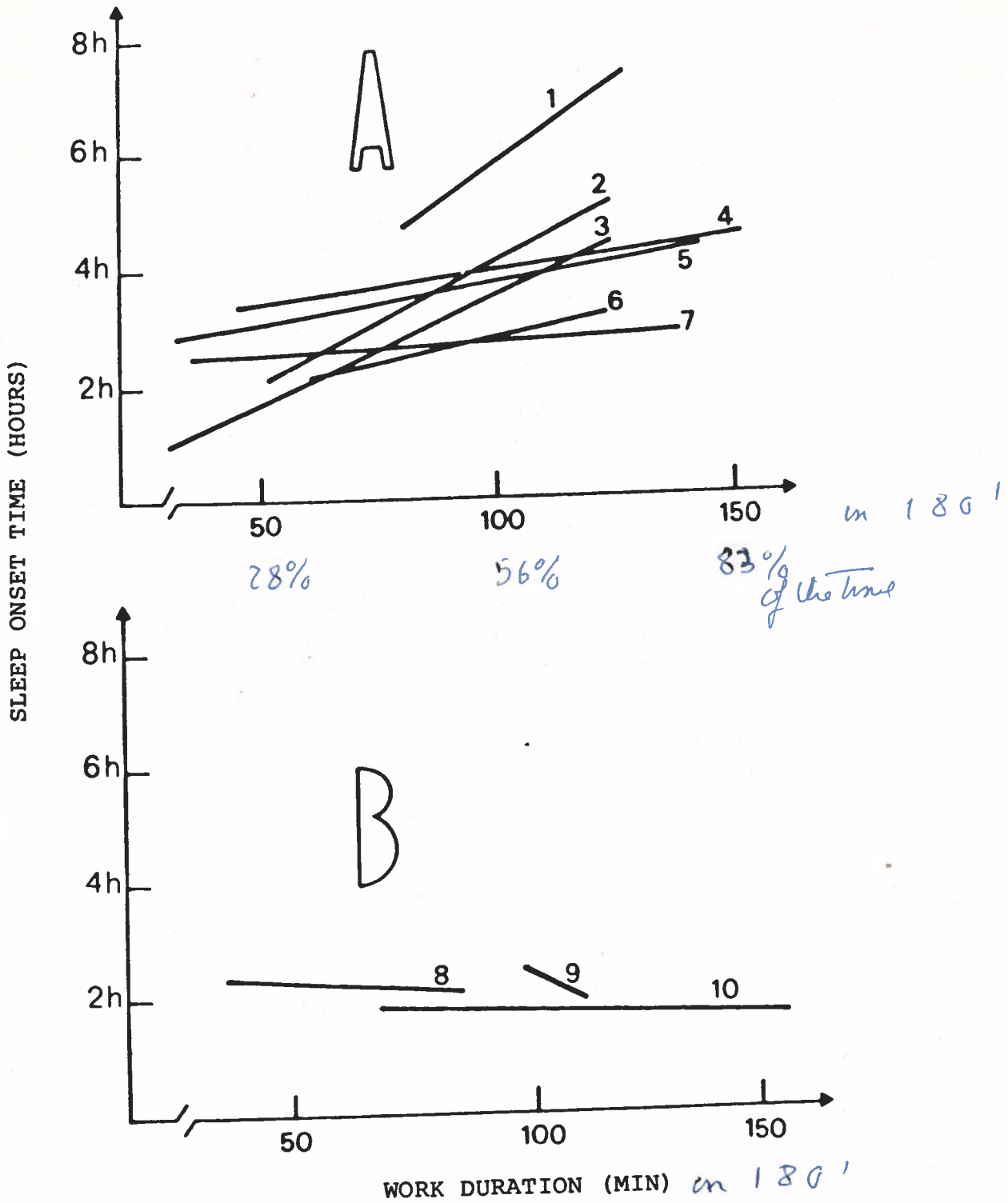


Fig. 3 - Individuals correlations between sleep onset time and presleep work duration. A - 7 shiftworkers that complains about sleep in the questionnaire design. B - 3 shiftworkers that declared to have no sleeping problems

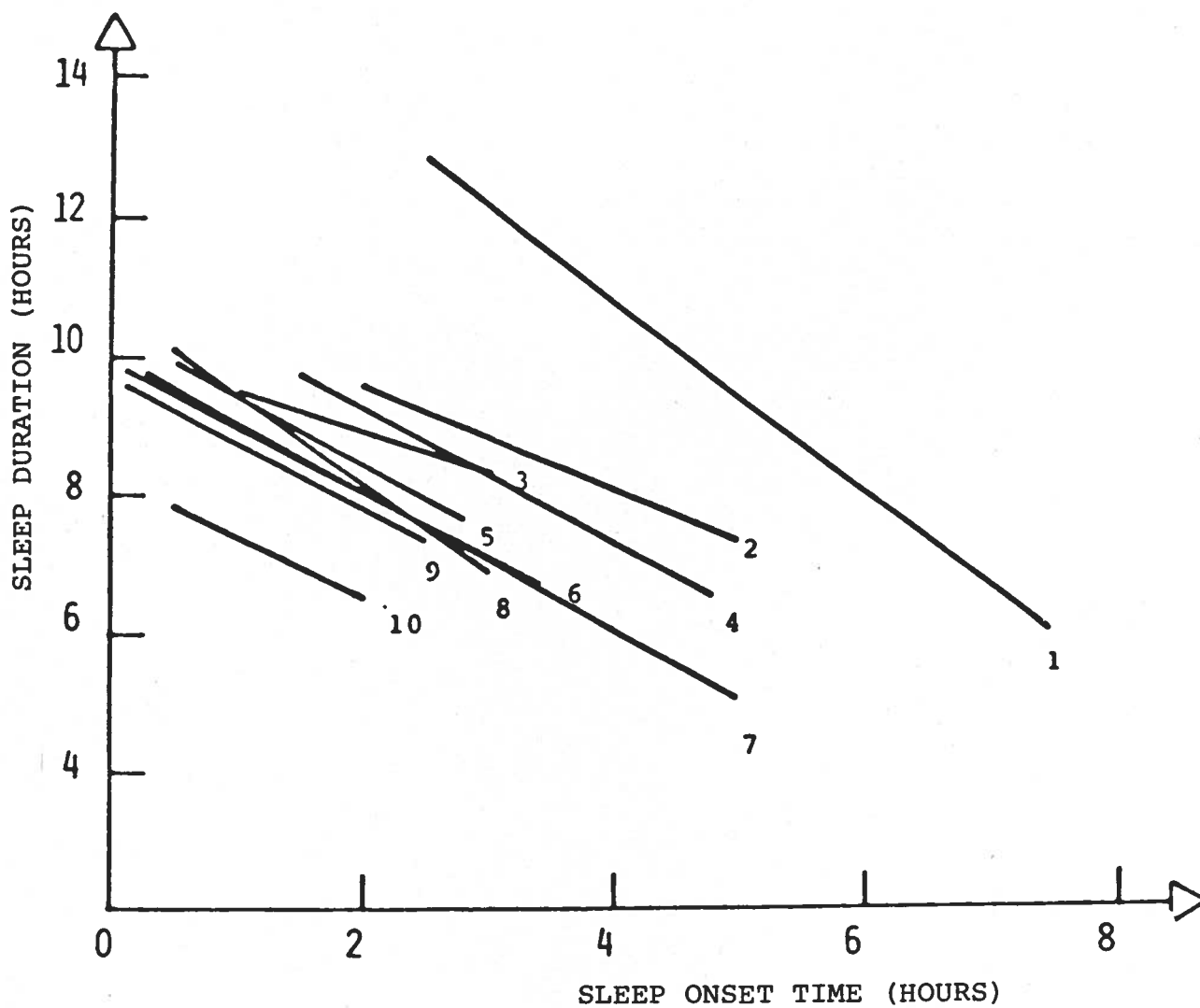


Fig 4. - Individual correlations between sleep duration and sleep onset time. Each regression line has been drawn from five consecutive observations (one week)



KYOTO


# RECORD OF PURCHASE OF FOREIGN MEANS OF PAYMENT

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HOME ADDRESS	(IN BLOCK) 22 RUE EMILE DUBOIS 75.014 PARIS FRANCE			

T/C	\$	¥ 50.000			<input type="checkbox"/> AMERICAN EXPRESS CO <input type="checkbox"/> BANK OF AMERICA NT & SA <input type="checkbox"/> FIRST NATIONAL CITY BANK <input checked="" type="checkbox"/> THOS. COOK & SON LTD <input type="checkbox"/> BARCLAY'S BANK INT'L LTD
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担当者  


(フ・ホ・ヘ・エ・K)



THE SIXTH INTERNATIONAL SYMPOSIUM  
ON NIGHT- AND SHIFT-WORK

30 August-1 September 1982, Kyoto, Japan

Scientific Committee on Shift Work  
Permanent Commission and International  
Association on Occupational Health

TENTATIVE PROGRAM

Place : New Miyako Hotel, Yomeiden Hall (Basement 1)

17 Nishikujo-in-machi, Minami-ku, Kyoto 601, Japan  
(Tel. 075-661-7111)

Language : English

Registration : Sunday, 29 August 1982 18.00-20.00  
Monday, 30 August 1982 8.00- 9.00

Sunday, 29 August 1982 20.00-21.00

Informal Gathering (Place announced at the Information Board)

Monday, 30 August 1982 9.00- 9.20

Opening of the Symposium

Prof. S. Kajiwara, Organizing Committee  
Dr. R. Murray, President of the Permanent Commission  
Prof. J. Rutenfranz, President, Scientific Committee

Monday, 30 August 1982 9.30-12.30

Session 1 : Adaptation to Shiftwork and Individual Differences

D.I. Tepas (U.S.A.)

Introduction: Adaptation to shiftwork: fact or fallacy?

S. Bennett, P. Smith and A.A.I. Wedderburn (U.K.)  
Towards a synthesis of research findings for application with  
shiftworkers.

N. Tsaneva, I. Hadjiolova, M. Daleva, D. Dalbokova and P. Kolev  
(Bulgaria)  
Changes in organism of light engineering workers during night  
and shift work.

K. Mori (Japan)  
Circadian variation of cortisol and catecholamines following  
shifted wake-sleep schedules.

2.

M. Attia, M. Khogali, N.A. Mahmoud and G. Khalib (Kuwait)  
Work in heat: a function of time of day.

M.I. Härmä, J. Ilmarinen and I. Yletyinen (Finland)  
Circadian variation of physiological functions in physically fit and unfit dayworkers.

M. Saito, K. Kishida and T. Hasegawa (Japan)  
Ocular accommodation variabilities of visual inspection workers in shift work system.

R.N. Sen (India)  
Individual differences in adapting to shiftwork.

Monday, 30 August 1982 13.30-15.30

Session 2 : Health Measures for Night- and Shift-workers

J. Rutenfranz (F.R.G.)

Introduction: Occupational health measures for night- and shift-workers.

S.H. Lee and K.S. Cho (Korea)  
Shift work and coalmine accidents in Korea.

T. Itani, T. Ohta, H. Aoyama and K. Taniguchi (Japan)  
Analysis of health records of day and shift furnace maintenance workers.

Y. Aizawa, M. Hitosugi, T. Takata, K. Nakamura and K. Mori (Japan)  
Effects of night work on immunological circadian rhythm.

Y. Nakano, T. Miura, I. Hara, H. Aono, N. Miyano, K. Miyajima, T. Tabuchi and H. Kosaka (Japan)  
The effect of shift work on cellular immune function.

Monday, 30 August 1982 15.30-18.30

Session 3 : Shiftwork in Industrially Developing Countries

R. Mahathevan (Malaysia)

Introduction: Overview of shift work in developing countries.

A. Manuaba (Indonesia)  
Shiftwork at hotels in Bali.

A. Khaleque and A. Rahman (Bangladesh)  
Sleep disturbances and health complaints of shift workers.

M. Wongphanich (Thailand), H. Saito, K. Kogi and Y. Tenmyo (Japan)  
Shift and day work systems and working life conditions of women textile workers in Thailand.

F.M. Fischer (Brazil)  
Working conditions of the shift workers of the metropolitan area São Paulo, Brazil.

SMOLENSKY

B.R. Reverente and L. Ariosa (Philippines)  
Sickness-absence among shift workers in an industrially  
developing country.

S.E.G. Perera (ILO Regional Office)  
Problems arising from shift work practices in developing  
countries in Asia.

C.N. Ong and B.T. Hoong (Singapore)  
Shiftwork in manufacturing industries in Singapore.

Monday, 30 August 1982 19.30-21.00

Reception at the New Miyako Hotel, Yomeiden Hall (B1)

Tuesday, 31 August 1982 9.00-12.30

Session 4 : Sleep Problems in Night- and Shift-work

K. Kogi (Japan)  
Introduction: Sleep problems in night- and shift-work.

S. Torii, N. Okudaira, H. Fukuda, Y. Kanamoto, Y. Yamashiro,  
M. Akiya, K. Nomoto, N. Katayama, E. Hasegawa, M. Sato, M.  
Hatano and H. Nemoto (Japan)  
Effects of night shift on sleep patterns of nurses.

S. Endo, H. Fukuda, T. Yamamoto, T. Kobayashi, Y. Saito,  
Y. Sakamoto and K. Nishihara (Japan)  
Changes of sleep architecture associated with acute split-period  
sleep.

P. Naitoh, C.E. Englund and D. Ryman (U.S.A.)  
Restorative power of naps in designing continuous work schedule.

K. Matsumoto (Japan)  
Effects of nighttime naps on sleep patterns of shift workers.

W.J. Price and D.C. Holley (U.S.A.)  
Abnormal sleep reduction: a possible contributor to the crash  
of Pacific Southwest Airlines Flight 182.

B. Pavard, A. Vladis, J. Foret and A. Wisner (France)  
Age and long term shiftwork with mental load: their effects on  
sleep.

Z. Vokac and L. Lund (Norway)  
Patterns and duration of sleep in permanent security night guards.

T. Ishibashi, T. Miura, M. Kitagawa and H. Tainaka (Japan)  
Sleep pattern and fatigue symptoms in permanent night-workers and  
shift-workers.

D.I. Tepas (U.S.A.)  
Shiftworker sleep strategies.

4.

Tuesday, 31 August 1982 14.00-20.00

Excursion Departure by bus from the hotel entrance at 14.00  
Visit to a traditional weaving mill;  
Dinner at Restaurant "Ran-tei", Arashiyama Hills.

Wednesday, 1 September 1982 9.00-12.00

Session 5 : Development of Criteria for the Design of Shift  
Work Systems

P. Knauth and J. Rutenfranz (F.R.G.)

Introduction: Development of criteria for the design of shift work systems.

R.J. Kelley and M.F. Schneider (Canada)

The twelve-hour shift revisited: recent trends in the electric power industry.

R. Moog and G. Hildebrandt (F.R.G.)

Comparisons between autorhythmometric methods and a baseline measurement of circadian rhythms in night-workers.

Xia W., Song Z.Z. and Li N.Y. (People's Republic of China)

Physiological limits of locomotive drivers on successive night shifts in the People's Republic of China.

Y. Saito (Japan)

A permanent night work system in the electronics industry.

A. Adler and Y. Roll (Israel)

Characterising shiftwork patterns by the off-time-distribution.

K. Sakai, K. Kogi, A. Watanabe, N. Onishi and H. Shindo (Japan)

Location-time budget in working consecutive night shifts.

C. Besseyre des Horts (France)

Continuous shift working in process industries: does firm efficiency imply high human costs?

P. Knauth, P. Schwarzenau, W. Brockmann and J. Rutenfranz (F.R.G.)

Computerized construction of shift systems for continuous production which meet physiological, social and legal requirements.

Wednesday, 1 September 1982 13.30-15.15

Session 6 : Special Considerations for Shiftwork of Women and  
Elderly Workers

B. Kolmodin-Hedman (Sweden)

Introduction: Shift work in women and in the elderly.

M. Meulenbergs and P. Verhaegen (Belgium)

Quantitative and qualitative aspects of sleep in 50-56 years old self-selected shift workers.

I. Hadjiolova, M. Daleva, D. Dalbokova and N. Tsaneva (Bulgaria)  
Circadian rhythmicity of the urinary excretions of 11-oxy cortico-steroids and catecholamines in shift workers of different age.

T. Uehata and N. Sasakawa (Japan)  
The fatigue and maternity disturbances of night workwomen.

D. Brown (U.K.)  
Shiftwork, equality and women.

Wednesday, 1 September 1982 15.30-17.30

Session 7 : Social Support for Night- and Shift-workers

H. Thierry (Netherlands)

Introduction: Social support for night- and shift-workers.

Dumont (ILO)

Introduction: Social support for night- and shift-workers: ILO experiences.

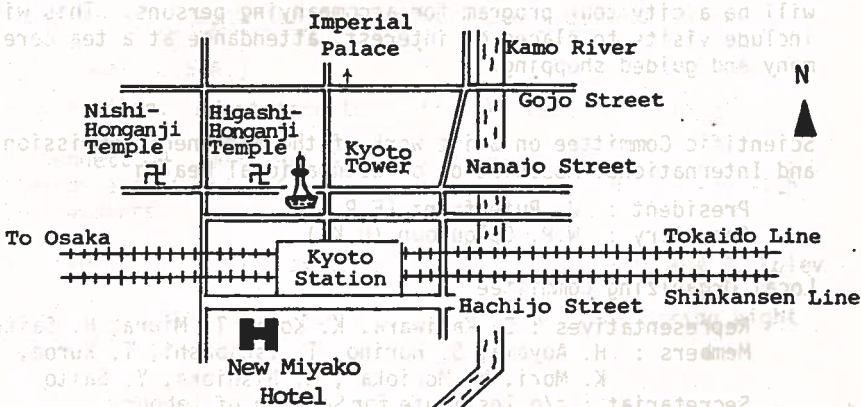
O. Natsuhara and A. Shimizu (Japan)  
Measures suggested for improving working life of shift workers in Japan.

T.J. Lee, W.K. Moon and K.S. Cho (Korea)  
Sociological observation of effects of shift-work on the functions of the family.

N. Ohashi (Japan)  
Medical telecommunication support to crews on ocean-going vessels.

Closing of the Symposium

Dr. H. Saito, Organizing Committee





6.

#### Presentation Time and Visual Aid

Each speaker will have about 12 minutes for presentation. The speaker of an introductory paper will have about 20 minutes. How to allocate time to discussions is left to the chairperson's discretion.

A slide projector for 50x50mm frames is prepared.

#### Lunch

On each of the three days of the Symposium, a lunch is served free of charge in the room next to the meeting hall. Those who want to have a special meal are requested to contact the Registration Desk in front of the meeting hall.

#### Reprints of Abstracts and Papers

Reprints of the abstracts and the papers are available on registration.

The Proceedings of the Symposium will be later published.

#### Transport

The New Miyako Hotel is near the Hachijoguchi-West Exit of the Kyoto Station and easy to locate. This exit is the southward exit under the Shinkansen bullet train line. When you get off the Shinkansen train, just go down to the ground level exit. Coming out of the Kyoto Station southwards, you will see the white 10-storeyed building on your right. Two minutes' walk from the exit.

At the reception desk of the hotel, mention the name of the Symposium so that the receptionist can refer to the participants' list.

#### Meeting Together

Come to the Informal Gathering on Sunday evening. This will be in a suite room to be announced on the Information Board near the hotel reception desk.

All the participants and their accompanying persons are invited to attend the reception on Monday evening and the dinner at the end of the excursion on Tuesday evening.

#### Accompanying Persons' Program

On Monday, following the opening of the Symposium, there will be a city tour program for accompanying persons. This will include visits to places of interest, attendance at a tea ceremony and guided shopping.

#### Scientific Committee on Shift Work of the Permanent Commission and International Association on Occupational Health

President : J. Rutenfranz (F.R.G.)

Secretary : W.P. Colquhoun (U.K.)

#### Local Organizing Committee

Representatives : S. Kajiwara, K. Kogi, T. Miura, H. Saito

Members : H. Aoyama, S. Horino, T. Ishibashi, T. Kuroe,

K. Mori, M. Morioka<sup>+</sup>, A. Nishioka, Y. Saito

Secretariat : c/o Institute for Science of Labour,  
1544 Sugao, Miyamae-ku, Kawasaki 213, Japan.  
(Tel. 044-977-2121)

THE SIXTH INTERNATIONAL SYMPOSIUM  
ON NIGHT- AND SHIFT-WORK

August - 1 September 1982, Kyoto, Japan

DELINE FOR SUBMISSION OF ABSTRACTS

English

es (\*) followed by initial(s) of given name(s).  
Prof., Dr. etc). Full address of the first author.

Capital letters. 5 to 12 words.

The entire abstract (no more than 300 words)  
carefully inside the rectangle. Any reference  
ed in parentheses in the text. Standard abbre-  
e used.

should be as informative as possible :

ific object of study,

ods used, if pertinent,

results obtained,

clusions reached.

equate to state : "The results will be discussed".

on : Please classify your abstract according

s corresponding to the two themes to which your

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7A

2012

Sixth International Symposium  
on Night and Shift Work

New Miyako Hotel, Kyoto  
30 August-1 September 1982

WELCOME TO KYOTO!!

We are very happy to greet you here in Kyoto.

With YOUR arrival, we are now sure the Symposium will be a success. We hope you will have enjoyable days.

- In this kit bag you will FIND:

1. Program of the Symposium;
2. A copy of full texts of papers;
3. Two additional copies of full papers;
4. Abstracts of papers, with a list of participants;
5. A map of Kyoto; and
6. A more than bagfull amount of air of friendship.

- Please TELL US:

- When you will be leaving this hotel;
- Whether you will join the Excursion on Tuesday, 31 August (departure from the hotel entrance at 2 p.m., a dinner at Restaurant Rantei included);
- If your accompanying person(s) will be participating in the Accompanying Persons' Program on Monday, 30 August (a lunch included).

- Please COME TO:

Informal Gathering at Room 156, 10th floor, between 7 p.m. and 9 p.m., Sunday, 29 August;

Reception at the Yomeiden Hall (Symposium room in Basement 1) from 7.30 p.m., Monday, 31 August.  
No additional fees necessary; informal suits.

- Opening of the Symposium:

9.00 a.m., Monday, 30 August at the Yomeiden Hall (Basement 1).

- Coffee and Lunch:

- Coffee or tea is available during each coffee break in the other half of the Symposium room.
- Lunch is served free of charge on each day of the Symposium in the other half of the Symposium room. This is for all the participants. The idea is to save your time and money and promote our friendly relations.

(Those who want to have a special lunch are requested to contact us in advance.)

We are at your disposal. Do not hesitate to contact us on any matter. Please tell us your problem, if any, at the registration desk when the sessions are open or call Room 182, 10th floor.

## ABSTRACT

In this field study, we analyzed the effects of a permanent mental shiftwork on sleep of 141 journalists working in press agency.

The task is characterized by a high mental and cognitive activity. We found that dephasing between sleep-waking cycle and internal biological rhythms was followed by an alternation of quality and quantity of sleep. These effects increase with aging.

A significant correlation was found between work amount during evening shift (6.30 p.m. - 0.30 a.m.) and sleep onset time. A

Ten journalists ~~working in a news agency~~ have been observed during a week. The stress induced by their work has been evaluated from the ~~complexity of their linguistic production~~.

A sleeping report established day by day for each night provided us with a rather precise image of the quality and quantity of sleep.

Our results show that the treatment before sleep of high loaded cognitive tasks of processing type (translation - synthesis ...) delays the onset of sleeping. In average, if the total time of text processing is doubled (1 → 2 hours) between 9 p.m. and 12 p.m. the onset of sleeping will be delayed of about 2 hours.

In the other hand as we know that awakening time is only slightly influenced by the onset of sleeping, the total sleep time is shorter.

A descriptive model is proposed in which performance rhythm interacts with the circadian rhythm of biological variables which might control sleep.

# AGE AND LONG TERM SHIFTWORK WITH MENTAL LOAD : THEIR EFFECTS ON SLEEP

---

PAVARD B. (\*), VLADIS A. (\*), FORET J. (\*\*\*) and WISNER A. (\*)

(\*) Laboratoire de Physiologie du Travail-Ergonomie du C.N.A.M. - PARIS

(\*\*\*) Laboratoire de Physiologie Neurosensorielle - C.N.R.S. - PARIS

## INTRODUCTION

The subject of this paper, is the effects of a long term shiftwork with mental load upon journalists having a text processing activity.

Many studies have been carried out on the effects of alternating working schedules (shiftwork) on sleep. In contrast, the effects of shiftwork with permanent schedules are much less documented (TELEKY, 1943; CONROY et al., 1970; PATKAY et al., 1977; LORTIE et al., 1979)

The journalists of the present study worked five days in a row, and got two days off. They usually kept going with the same shift and only exceptionally change.

The working schedules were as follows :

- 06.00 a.m. - 12.30 p.m. (morning)
- 12.00 a.m. - 06.30 p.m. (afternoon)
- 06.00 a.m. - 00.30 p.m. (evening)
- 00.00 a.m. - 06.30 p.m. (night)

They were given a questionnaire in order to obtain 1) Habitual sleep schedules during working periods and vacations 2) Subjective assessment of sleep quality, a description of sleep difficulties, use of hypnotics. This questionnaire was filled out by journalists waking on the four different shifts.

A more exhaustive study was performed to measure to what extent presleep mental activities of evening shift journalists (06.00 p.m. - 00.30 a.m.) influenced the characteristics of the sleep.

## METHOD

### 1. Questionnaire.

#### Subjects

Out of a total staff of 161 persons concerned, 141 answered the questionnaire. The number of journalists in the various shifts was :

- morning shift : N = 25
- afternoon shift : N = 41
- evening shift : N = 45
- night shift : N = 30

In contrast with most european shiftworkers, the journalists of the present study permanently worked on the same schedules.

#### Content

It was partly based upon procedures used in other studies (HORNE et ÖSTBERG, 1976; LORTIE et al., 1979; FORET et al., 1980; SCHNEIDER, 1980).

The areas probed were : journalists identity, family life conditions, professional activity, seniority in the service and in the agency, nutritional habits, use of sleeping pills, schedules and subjective quality of sleep and physical fitness during working time and holidays.

The questionnaire was first tested on five journalists. As a result of the test, 44 questions were drawn up taking into account the specific nature and working conditions of the population. A t-test was performed on the averages across age groups and shifts.

### 2. "Sleep logs" and work analysis

#### Subjects

A sample of journalists was selected in order to homogenize the factors of age, experience in that job and to weed out individual health problems. Out of this sample, 10 people (8 male and 2 female) volunteered. Their characteristics were :

- age : 30 + 1 year (range 27-32 years)
- seniority in the shift : 10 months + 2
- nature of work : desk editing (with identical specialization)



Sleeping and nutrition logs

Prior to the observations, a "sleep log" was created to obtain the daily schedules of activity and sleep :

- work leaving time
- home arrival time
- bedtime
- sleep duration (approximate)
- waking time
- rising time
- main meal times

Journalists estimated the number of wakings during the night, as well as sleep quality (good - passable), and its length (sufficient - not sufficient).

In addition, the journalists filled out questionnaires regarding subjective alertness and tiredness during the waking period.

Work analysis

The observations were made during the 3 last hours of work of the evening shift (09.30 p.m. - 00.30 a.m.).

Although some results suggest that the closer an activity to sleep time, the more significant its effect on the characteristics of sleep, the evening shift (09.30 p.m. - 00.30 a.m.) was chosen. In fact with that shift, the journalists could go home quickly and start to sleep without external interferences (such as noise). That the chances that difficulties in falling asleep were caused by external factors ~~was~~ minimized. *were*

RESULTS

Duration of sleep, age and shiftwork (questionnaire data)

-----  
Insert Fig. 1  
-----

Figure 1 shows the sleep length as a function of age of journalists and of shifts.

Whatever the work schedule, the sleep length is a decreasing function of age. *the normal afternoon shift to the morning and evening shift*

The difference of sleep lengths from one shift to the next increases with age. *no except for afternoon - evening*

The sleep length of the journalists over 50 who work the evening and night shifts is significantly different from that of the 20-30 years old and 30-40 years old group ( $p < .01$ ). Therefore, age and work schedules seem to have cumulative effects, in terms of sleep length (difference between afternoon shift and night shift : 1 hour 40' in the 20-30 years old group vs. 2 hours in the group over 50).

### Use of hypnotics and opinion of journalists

On Figure 2 are displayed the different kinds of complaints expressed by the subjects with regard to sleep, as well as the use of sleeping pills.

Sleeping pills use is more frequent for journalists working the night and evening shifts. The same journalists report the highest frequency of difficulties in falling asleep. But journalists working the morning shift (06. a.m. - 12.30 a.m.) report the largest sleep deficit, although with the smallest frequency of difficulties at sleep onset.

As a whole, the morning shift is regarded as the most difficult one. Without question, the sleep of journalists of the afternoon shift (12.00 - 06.30) appears to be the least disturbed by working conditions.

### Naps

The percentage of journalists taking a nap depends in the shift (36 % for morning, 48 % for night, 16 % for evening and 0 % for afternoon shifts). Morning shift and night shift journalists take a nap of approximately 1 hour 30'.

### Nutritional habits

Night shift journalists declared to have only a dinner. That dinner was their only solid meal of the day. At lunch time, they eat only sandwiches.

### Work-sleep relation

Relation between work duration and sleep onset hour was analysed. Among the 10 journalists having participated in the study, 7 have declared in the questionnaire having recurring sleep problems (Fig. 3A) and 3 have declared having none (Fig. 3B).

---

Insert Fig. 3A  
Insert Fig. 3B

---

as  
to naps  
included  
in Fig. 1

Each regression line was drawn from 5 observations corresponding to 5 days of work.

Analysis of covariance (assuming the same common slope for each curve) of Fig. 3A indicated that the sleep onset time is an increasing function of working duration ( $F = 14,4$ ;  $df = 1,38$ ;  $p < .0005$ ).

There is no correlation observed for the 3 journalists who declared having no sleep problems.

---

Insert Fig. 4

---

Fig. 4 shows that, for journalists the shorter the total sleep duration ( $F = 14,3$ ;  $df = 1,58$ ;  $p < .0001$ ) the more delayed is sleep onset.

*time after what? after work*

#### DISCUSSION AND CONCLUSION

The diagrams showing sleep duration presented in this paper as a function of working schedules can be compared with those of other studies on shiftwork.

Night shift and morning shift result in dramatically reduced sleep duration (5 hours 35' and 6 hours 24' vs 8 hours 10' in afternoon shift).

According to all the questions related to sleep, afternoon shift appears to be the best and morning shift the most difficult one. Therefore, these results as a whole are consistent with the studies on shiftworkers (mostly with alternative schedules) (FORET et al., 1980; KNAUTH and RUTENFRANZ, 1980). They are also consistent with most of the studies on the relationship between age and sleep duration (WEBB, 1972; FORET and WEBB, 1980).

Even though it can be assumed that a longer experience in the job makes the task easier, it is of note that the factors "age" and "nightworker" still compound their effects to decrease sleep quality of nightworkers and to increase the difficulties in carrying out a job outside the normal hours.

In summary, although the task of the journalists is substantially different from jobs performed by the subjects generally studied in the literature on shiftwork, the effects of round-the-clock working schedules, even if they are permanent, appear to be the same.

Our results point out a negative correlation between duration of sleep and amount of mental work prior to sleep time : the larger the amount of work, the more delayed is the onset time.

(6)

A lot of experiments have been realized to obtain a description of the circadian rhythmicity of mental performances. For KLEITMAN (1953), mental performances covary with central temperature, a maximum being observed at the end of the afternoon. But recently FOLKARD and all. (1976) have shown that the circadian ~~curves~~ <sup>curves</sup> of performance are different when the cognitive and storage loads of the tasks are at diverse levels. In the case of high storage load, the peak appears in the morning with a monotonous decrease during the day.

Little is known about the opposite relation, that is the influence ~~of sleep onset~~ <sup>on sleep onset</sup> on following sleep and specially on sleep onset, of the quantity and quality of cognitive activity prior to the normal sleep onset time. One may remark that the day time when the night shift journalists we have studied have to perform eventually heavy cognitive tasks, is situated <sup>in the nycthemere</sup> nearly at the opposite of the performance peak described by FOLKARD and all. It is the contrary of what ~~these~~ <sup>these</sup> authors have suggested for work organization (FOLKARD and MONK 1979).

In the case of ~~high~~ our journalists, it seems that the conflict between ~~night~~ circadian rhythmicity and the tasks' demands is violent enough to disturb simultaneously the sleep propensity. It is classical to consider that the latter is a function of the relative position of sleep onset time

in the ~~and~~ circadian temperature variation. But, if ~~the~~ we know after HUUDES and FOLKARD (1976) that cycle adaptation to night shift is two times quicker for high loaded cognitive task performance than it is for central temperature and low loaded cognitive task performance, ~~this~~ <sup>this</sup> phenomenon cannot be taken in consideration for journalists who are working permanently on night shift and who are submitted from time to time to highly loaded tasks.

In fact, it is interesting to note that a less loaded cognitive task ~~is~~ realized at the same time of the day (evening shift) does not seem to provoke the same conflict as the sleep onset <sup>time</sup> is not modified. ~~to~~ In this case the ~~results~~ ~~of~~ ~~performance~~ ~~is~~ ~~much~~ ~~nearer~~ ~~to~~ ~~the~~ ~~work~~ ~~period~~ ~~is~~ ~~much~~ ~~nearer~~ ~~to~~ the moderate <sup>load</sup> cognitive task circadian peak.

As COLQUHOUN and RUTENFRANZ (1980) pointed: these questions are "particularly pertinent to the design of shift systems of "new" industries, such as computer operations, where the job is quite different from those in the "traditional" shift working occupations."

We know that performance in different mental tasks shows circadian rhythmicity with a peak generally situated in the afternoon.

In the present case, a heavy task early in the night can play the role of synchronizer, leading to a shift in the subject's personal circadian performance rhythm resulting in a hiatus between that rhythm and temperature rhythm, as already shown by MONK et al. (1978).

It is also well-known that sleep propensity is a function of the relative position of the sleep onset time and the circadian temperature variation.

But it is difficult to hypothesize that late evening work is likely to modify temporal pattern of temperature.

We assume that performance rhythm interacts at higher levels with the circadian rhythm of biological variables which (night) control sleep.

circadian  
in control  
control  
control

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 of memory load in the circadian variation in performance  
~~HUGHES FOLKARD~~

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 in living routine by members of a socially isolated  
 community NATURE 254 432-434

→ (ULLHOON W.P., RUTENFRANZ J.) <sup>(1980)</sup> Studies of shiftwork  
 TAYLOR and FRANCIS and LONDON



sleep duration (HOURS)

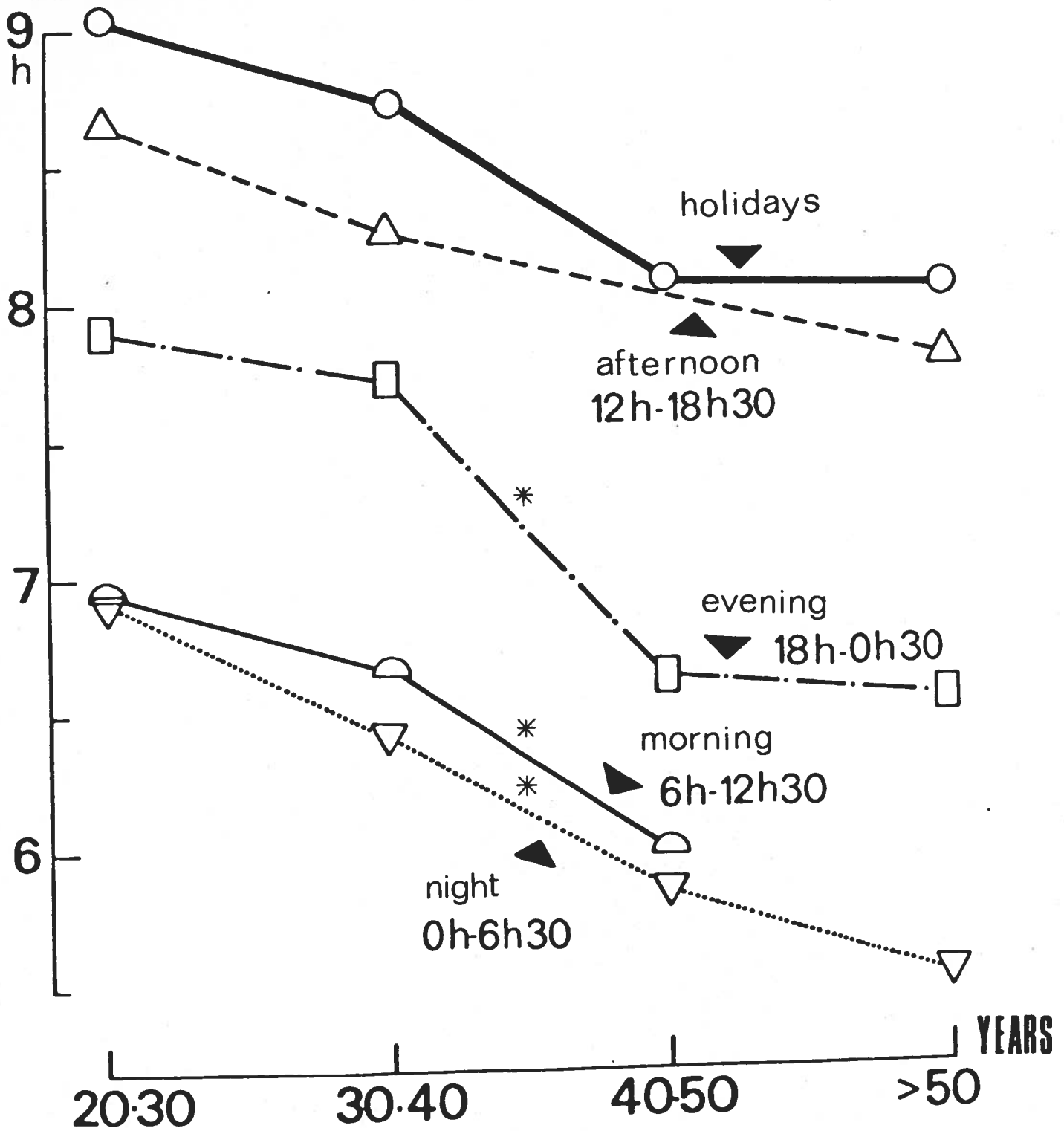


Fig. 1 - Mean sleep duration in terms of age for journalists. For the 30-40 years old group, the standard deviations are :  $\pm 60'$  during holidays;  $\pm 40'$  Morning;  $\pm 52'$  afternoon;  $\pm 39'$  Evening and  $\pm 65'$  for the Night. Asterisks indicate level of significance for differences between shifts (two tailed t-test  $p < .05$ )

*Journalist shift?*

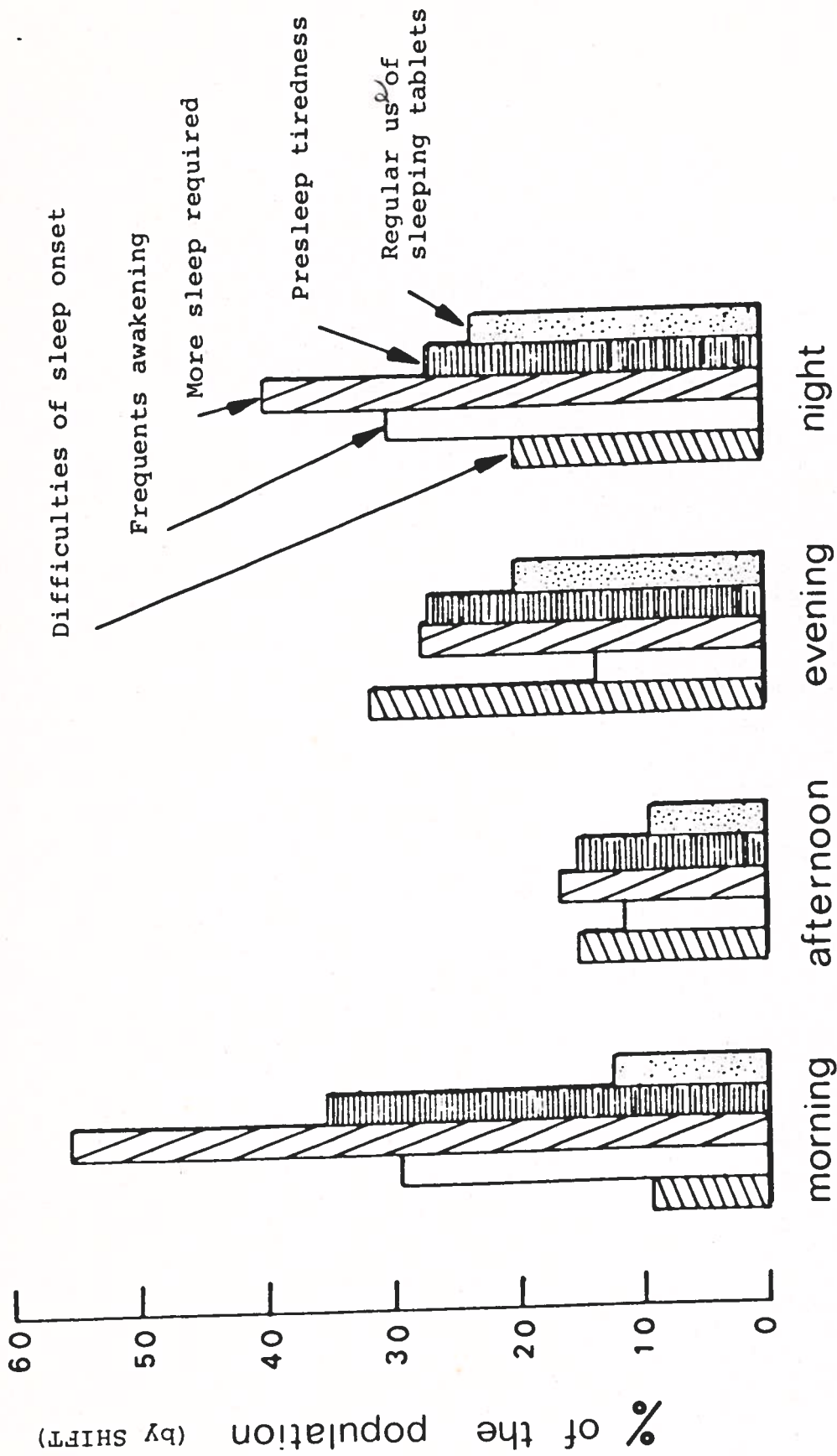


Fig. 2 - Percentage of journalists having problems during their sleep (difficulties at sleep onset, insufficient length of sleep, tiredness) in relation with the type of shift

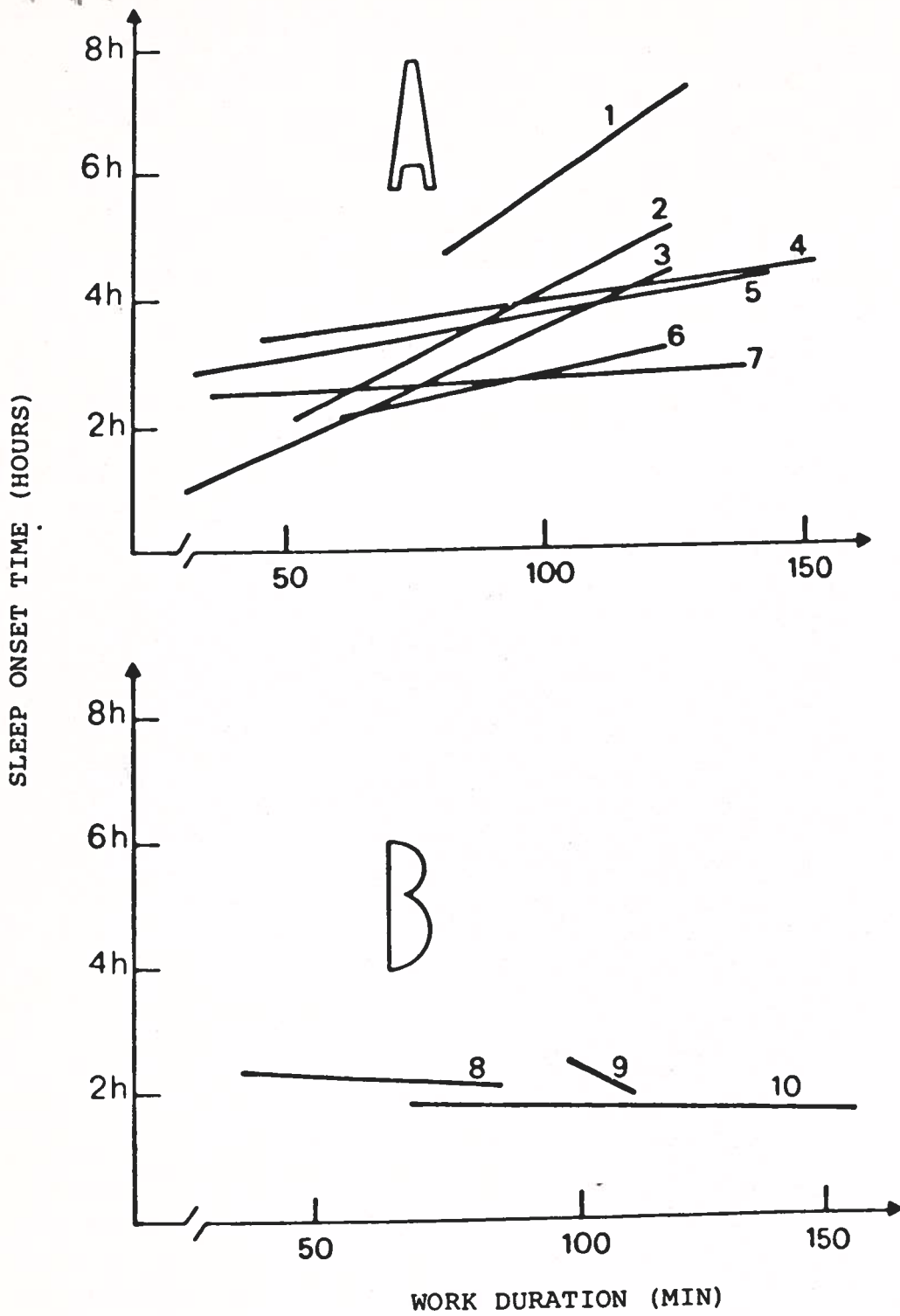


Fig. 3 - Individuals correlations between sleep onset time and presleep work duration. A - 7 shiftworkers that complains about sleep in the questionnaire design. B - 3 shiftworkers that declared to have no sleeping problems

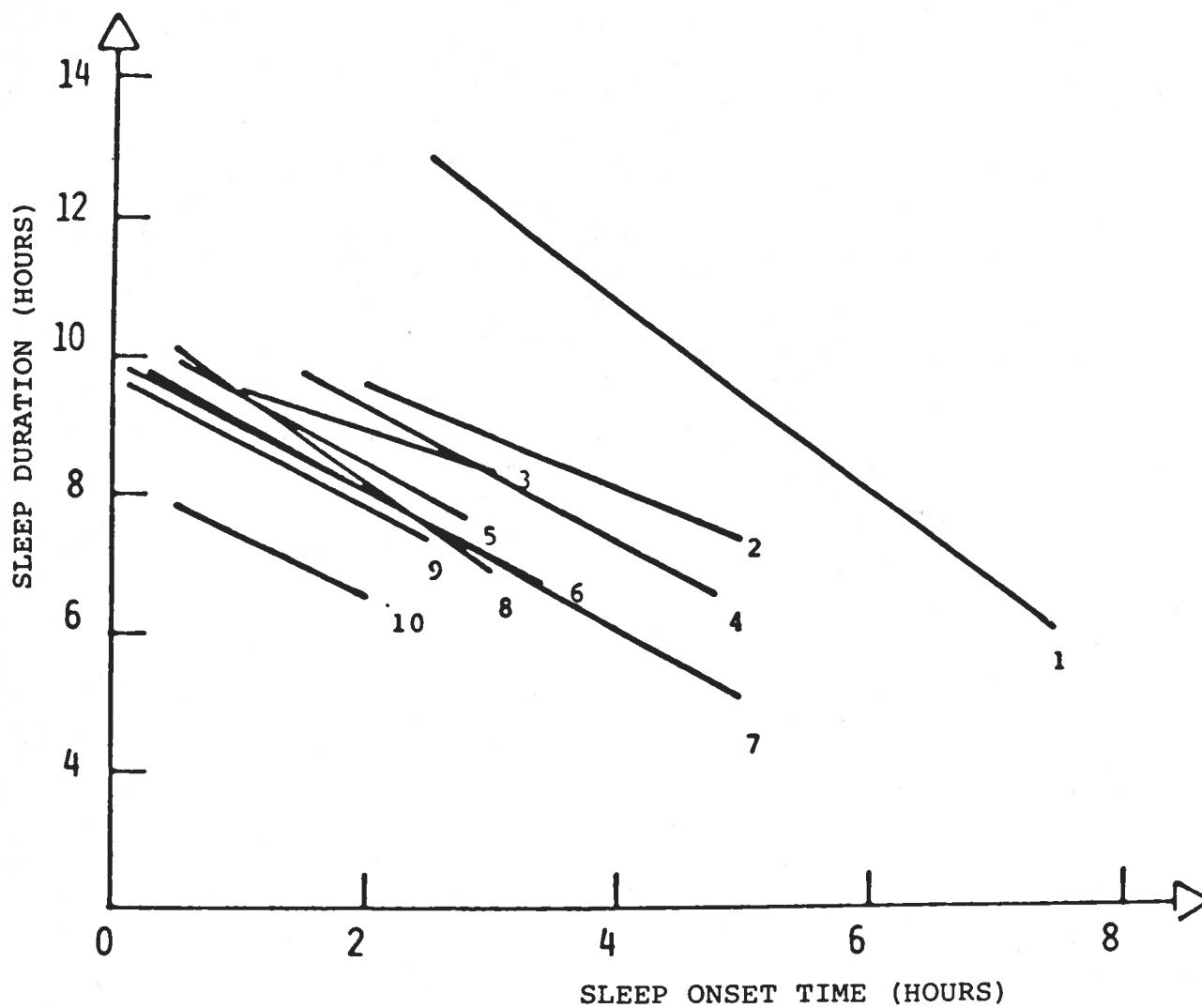


Fig 4. - Individual correlations between sleep duration and sleep onset time. Each regression line has been drawn from five consecutive observations (one week)

- Pourquoi avoir donné une nature  
aussi mineure à un fait aussi intéressant  
que la relation inverse de la corrélation  
mentale - endormissement.

- Pourquoi ~~avoir~~ ne pas parler de  
contradiction (c'est pas de l'équilibre)  
entre l'endormissement lié avec  
occurrence thermique (il a une autre  
présence avec qui les 2 sont en  
corrélation) et l'excitation  
produite par le travail mental

- La relation <sup>claire</sup> entre cycle nyctheméral et  
tâches performées est l'inverse de celle que  
nous avons montrée.

- Il ne s'agit pas que le cycle nyctheméral  
joue un rôle de synchronisme mais qu'il  
détériore le synchronisme.

24 Mai 1982

Professor K. Kogi  
Division of Work Physiology and  
Psychology  
INSTITUTE FOR SCIENCE OF LABOUR  
1544 Suago Takatsu-ku  
KAWASAKI 213 (Japon)

Cher ami,

Mon programme de cet été se précise et je me réjouis de vous revoir bientôt. J'arriverai à Osaka, venant de Séoul, le mardi 17 Août pour participer les 19 et 20 à la réunion qu'organise Sugiyama sur les robots. Je n'ai malheureusement reçu aucune confirmation d'une lettre de Janvier, aussi je vous joins une copie de la lettre que je viens d'écrire à notre collègue afin qu'éventuellement vous puissiez lui téléphoner à mon sujet.

J'arriverai à Tokyo par le train le samedi 21 après-midi et je pourrai donc participer, le 23, à la réunion que vous organisez sur le membre supérieur. Malheureusement, je n'ai guère de communications à vous proposer sur ce sujet.

Après le congrès de l'IEA et les diverses réunions que j'aurais avec les autres membres du Conseil, je quitterai Tokyo pour ~~Tokyo~~ <sup>Kyoto</sup> le dimanche 29 après-midi par le train.

Après avoir participé à la réunion que vous organisez, je quitterai Kyoto pour Osaka et Manille le jeudi 2 Septembre à 12 heures. Je quitterai Manille pour Singapour le 12 Septembre afin de participer au séminaire du BIT qui suit le congrès de médecine du travail.

Je vous ferai parvenir le texte complet de ma présentation d'ici le 30 Juin.

Je vous confirme la réservation que j'ai adressée le 27 Mars 1982 pour une chambre single du 29 Août au 2 Septembre.

.../...

Vous m'avez très aimablement proposé de me réserver une chambre dans une résidence universitaire pour mon séjour à Tokyo. Je serais heureux d'en avoir confirmation et de connaître l'adresse et le téléphone afin de pouvoir diffuser dès maintenant mon programme de voyage.

Je viens d'apprendre de Monsieur Purswell que le Gouvernement mexicain a confirmé son invitation à donner le colloque des ergonomistes des pays en développement dans son pays. Il s'agit d'une très bonne nouvelle car nous pourrions ainsi, à Tokyo, arrêter le programme des étapes préliminaires à ce colloque.

Recevez, cher ami, l'expression de mes sentiments très cordiaux.

A. Wisner

THE SIXTH INTERNATIONAL SYMPOSIUM  
ON NIGHT- AND SHIFT-WORK

30 August - 1 September 1982, Kyoto, Japan

REGISTRATION FORM

(Please complete in BLOCK LETTERS.)

FAMILY NAME : Ms./~~Mr.~~/Dr./Prof. WISNER

FIRST NAME(S) : ALAIN LEON MANUEL

ORGANISATION/INSTITUTION : LABORATOIRE DE PHYSIOLOGIE DU TRAVAIL  
ET ERGONOMIE DU CONSERVATOIRE NATIONAL DES ARTS ET METIERS

MAILING ADDRESS : 41 RUE GAY-LUSSAC  
75.005 PARIS FRANCE

NAMES OF FAMILY MEMBERS ACCOMPANYING ME :

1. /
2. /
3. /

(Please check in the blanks.)

Please reserve the following accomodation at New Miyako Hotel (Write the number of rooms you need).

Twin room(s)\*

Single room(s)

\* In the case of a twin room,

I wish to share the room with \_\_\_\_\_

I am ready to share the room with another participant.

Date of arrival in Kyoto : 29.08.82

Date of departure from Kyoto : 03.09.82

I have made my own arrangements and will be staying at :

Date : 27.03.82 Signature : [Signature]

PLEASE SEND THIS FORM AS SOON AS POSSIBLE.

DEADLINE : March 31, 1982.



rep 1.4.82  
Dante KOGI

Second circular letter

THE SIXTH INTERNATIONAL SYMPOSIUM  
ON NIGHT- AND SHIFT-WORK

30 August - 1 September 1982, Kyoto, Japan

---

Scientific Committee on Shift-work  
Permanent Commission and International  
Association on Occupational Health  
President: J. Rutenfranz (Dortmund)  
Secretary: W.P. Colquhoun (Brighton)

Dear Colleague,

We have the pleasure of sending you the second circular letter on the Sixth International Symposium on Night- and Shift-work, which will be held under the auspices of the Scientific Committee on Shift-work of the Permanent Commission and International Association on Occupational Health.

The tentative outline of the Symposium is as follows;

PLACE : New Miyako Hotel, 17 Nishikujoin-machi, Minami-ku, Kyoto 601, Japan. (Tel. 075-661-7111)

SCHEDULE : August 29, 1982 8:00 P.M. Registration and Informal gathering  
August 30, 1982 9:00 A.M. Scientific session  
2:00 P.M. Scientific session  
7:00 P.M. Reception  
August 31, 1982 9:00 A.M. Scientific session  
1:00 P.M. Excursion  
September 1, 1982 9:00 A.M. Scientific session  
2:00 P.M. Scientific session

THEMES :

1. Development of criteria for the design of shift-work systems.
2. Individual differences in adaptation to shift-work.
3. Sleep problems in night- and shift-work.
4. Occupational health measures for night- and shift-workers.
5. Social support for night- and shift-workers.
6. Shift-work in industrially developing countries.
7. Special considerations for shift-work of women and elderly workers.

We particularly welcome papers dealing with problems arising from shift-work practices in developing countries. Theme 6 in our last circular (Shift-work in industrialised countries) was a misprint. This should read as above.

REGISTRATION : Those who will attend the Symposium are requested to send the registration form to the secretary by March 31, 1982.

REGISTRATION FEE : 10.000 Yen(per participant). It is to be paid at the meeting.

PAPERS FOR PRESENTATION : Those who intend to present a paper are requested to send an abstract not exceeding 300 words by March 31, 1982.  
The full text of the paper should reach the secretary of the meeting by June 30, 1982.

PROCEEDINGS : We plan to publish the proceedings of the Symposium in book form in the English language.

HOTEL RESERVATION : Rooms in the New Miyako Hotel may be reserved at reduced rates through the secretary of the meeting.  
The room charges (per person) are;  
7.000 Yen: for twin room with breakfast.  
10.000 Yen: for single room with breakfast.

DEADLINES :

Receipt of registration form : March 31, 1982.

Receipt of abstract form : March 31, 1982.

Receipt of full text : June 30, 1982.

We would be very glad to receive your registration form by the deadline.

Yours sincerely,

For the Organizing Committee,

K. KOGI

T. MIURA

M. MORIOKA

H. SAITO

Correspondence : All correspondence concerning the Symposium should be addressed to:

Mr. Y. Saito,  
Secretary, Organizing Committee,  
Sixth International Symposium on  
Night- and Shift-work,  
Institute for Science of Labour,  
1544, Sugao, Takatsu-ku,  
Kawasaki 213, Japan.

Organizing Committee,  
Sixth International Symposium on  
Night- and Shift-work,  
Institute for Science of Labour,  
1544 Sugao, Takatsu-ku,  
Kawasaki 213, Japan.

April 13, 1982.

Dr. A. Wisner,  
Laboratoire de Physiologie du  
Travail et ergonomie du  
Conservatoire National des  
Arts et Metiers,  
41 Rue Gay-Lussac,  
75.005, Paris,  
France.

Dear Dr. A. Wisner,

We acknowledge with thanks receipt of your registration form and the abstract of your paper for the Sixth International Symposium on Night- and Shift-work, Kyoto, 30 August - 1 September 1982.

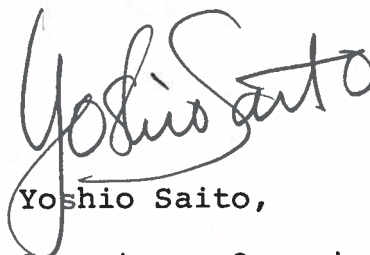
We are happy to accept presentation of your paper in the Symposium. Your active participation will certainly help us make this meeting successful.

We will keep you informed about further preparations of the Symposium.

We look forward to receiving your full text by the end of June.

With best wishes,

Yours sincerely,

A handwritten signature in cursive script that reads "Yoshio Saito". The signature is written in dark ink and is positioned above the printed name of the signatory.

Yoshio Saito,

Secretary, Organizing Committee,  
Sixth International Symposium on  
Night- and Shift-work.

INSTITUTE FOR SCIENCE OF LABOUR

1544 Sugao, Takatsu-ku,  
Kawasaki 213 Japan

13 February 1982

Prof. A. Wisner,  
Département des Sciences de  
l'Homme au Travail,  
C.N.A.M.,  
41, rue Gay-Lussac,  
75005 Paris, France.

Dear Friend,

Thank you very much for your letter of 8 January. I am glad to learn that you will be joining us at the Shiftwork Symposium in Kyoto. Though your stay in Japan will be a bit shorter than you originally intended, I am sure you will gain from it getting acquainted with important research activities in the field of your interest.

I enclose a copy of the announcement for the Shiftwork Symposium. Your active participation is certainly an encouraging news for us.

Another meeting on occupational upper limb disorder is being planned for 23 August in Tokyo. (The IEA Congress will actually start from 24 August.) I shall be attending this meeting on 23 August. I am sure that the subject will interest you much. So please keep this date free from other engagement.

I will arrange accommodation for you from 21 to 29 August.

I look forward to seeing you and hearing your comments on future collaboration with the third world.

With best regards also from my family,

Yours sincerely,



Kazutaka Kogi,  
Division of Work Physiology  
and Psychology.