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NOUVELLES DE L'UNION

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THE SECOND ANNUAL MEETING OF THE JAPANESE SECTION IN TOKYO (Oct. 17. 1954)

The Second Annual Meeting of the Japanese Section convened on Oct. 17. 1954 in the Library of the College of Medicine, Tokyo University. The Meeting was called to order by Prof. T. UCHIDA, President of the Japanese Section at 13. 40. There were present 15 members and 8 guests as follows:

Members: IMANISHI (K.), ISHIKAWA (R.), ITO (M.), KUWABARA (M.), MARUYAMA (K.), MORISITA (M.), OHGUSHI (R.), SAKAGAMI (S. F.), SHIDA (T.), TSUNEKI (K.), UÉNO (S.), UMESAO (T.), UCHIDA (T.), YAMANAKA (M.), YASUMATSU (K.).

Guests: FURUKAWA (H.), IIDA (M.), ITO (Y.), KITANO (H.), NAGASE (H.), NAKANISHI (T.), TANIGUCHI (S.), YAMAMOTO (S.) (Prof. FURUKAWA and Mrs. YAMAMOTO became the member of the Union at this meeting).

Chairman: Mr. SAKAGAMI, the Secretary of the Japanese Section.

Management: Mrs. SHIDA and MARUYAMA.

A. *Business Meeting* (13.45-14.35).

1. The Secretary reported briefly the general affairs during the year. The statutes of the Japanese Section was discussed. A plan of the statutes was read by Mr. OHGUSHI, the planner, and explained by Mr. SAKAGAMI in each item. Some opinions were anounced successively by Dr. FURUKAWA, Dr. IMANISHI, Prof. KUWABARA, Dr. MORISITA, Mr. ITO and Dr. YASUMATSU. Thereafter, under the decision of the President, the most of the original plan was adopted unanimously with minor modifications. (The Statutes of the Japanese Section corresponds for the most part with those of the Union and operate completely under the latter.)

2. The Secretary demanded for members the quick sending of the cotisation of the Union. The cotisation for the Japanese Section was fixed, for the time being, as 40 yens. Moreover, the Secretary demanded the sending of the papers written by the members or their abstracts as an important obligation of members.

3. It was agreed that, until the next meeting in Fukuoka, the Secretariat of the Section is situated also for 1955 in the Zoological Institute, Faculty of Science, Hokkaido University, Sapporo under the management of the present membership (Prof. UCHIDA: the President, Mr. SAKAGAMI: the Secretary and Treasurer). However, the distribution of the members is so concentrated near Kyôto and Tokyo, that Messers OHGUSHI (Kyôto) and MARUYAMA (Tokyo) admitted to help the Secretariat in various practical ways.

B. *Photographing* (14.40: At the Entrance of the College of Medicine).
C. *Lectures* (15.00-18.45) (Prof. UCHIDA and Prof. FURUKAWA absent).

1. SHIDA (T.), **The Life of a common wasp,** *Vespula lewisii* (Cameron).
Based upon the results of numerous field observations on *Vespula lewisii*, some problems common to the social wasps were discussed in the following order: Biology of the hibernated females, differentiation of the habits in corresponding to the development of the nest, the causal factors for the development of workers, trophallaxis and habits of males. The most remarkable phenomena are the occurrence of robber wasps among the post-hibernating females just as in the honeybee and the resulted tendency to the social parasitism.

Discussions betw. the lecturer and Dr. IMANISHI, Dr. MORISITA, Prof. KUWABARA, Prof. TSUNEKI, Mr. SAKAGAMI and Mr. YAMANAKA.

2. ITO (M.), **Fundamental properties of social insects from the standpoint of comparative sociology, with special reference to the interactions among certain "non-social" insects.**

The fundamental importance of the group effect by the schools of ALLEE and GRASSÉ and its future availability on the studies of the so-called social insects were discussed with special reference to the social facilitation and the ecological origin of the sociality. The basic concept of the group effect lies on the optimal density in both the individual and group levels. The cooperative and disoperative interactions may be evoke below or above the optimal density. The higher degree of the optimal density may correspond to that of the sociality. But, ALLEE's optimal density bears in itself two weak points: 1. The unstability of the operational standard in comparing various populations differing in species, stage, environment, etc. 2. The unidirectional assertion of the importance of the higher densities as a measure of the sociality.

Therefore, it seems to be preferable, that more objective standards are selected for the future investigations (for ex. UTIDA's space of iso-effect of density or *eco-density*). Even to the insects regarded ordinarily as "non-social", the group effect gives an influence which leads the subjects towards the loss of self-perpetuation as an individual and the resulted

double phases in life modes, being comparable to the division of labour and group integration among Hymenoptera and Isoptera.

Finally, three levels of socialization under the intraspecific competition were proposed hypothetically: 1. The equivalent-harmfulness for more or less all the constitutents. 2. Establishment of the non-equivalency among constitutents due to the dominance order. 3. Occurrence of the complementary heterovalency among individuals based upon the loss of individuality by the caste-differentiation.

Active discussions were made around the problem of the sociality between the lecturer and Mr. SAKAGAMI, Mr. ITO (Y.), Dr. MORISITA, Dr. IMANISHI, Prof. KUWABARA.

3. MORISITA (M.), **On the sociality and individuality among animals.**

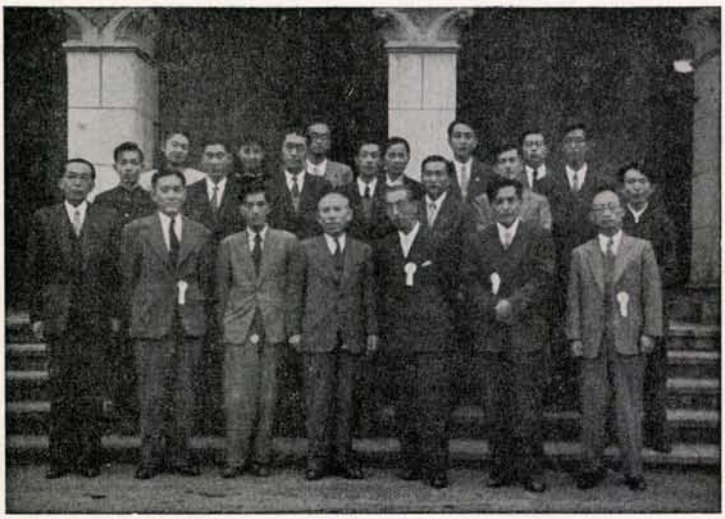
Owing to the too vivid discussions around the above two lectures, there was already no sufficient time for Dr. MORISITA. He promised, therefore, the detailed lecture in the next meeting (1955 in Fukuoka) and summarized briefly the above two lectures and suggested several important sides on the sociality and individuality of animals.

Discussions betw. Dr. MORISITA and Dr. IMANISHI, Mr. IIDA.

D. *Dinner* (18.45-20.00, at the Gakushi-Kaikan, Tokyo Univ.).

The following persons were present:

IMANISHI, ISHIKAWA, ITO (M.), KUWABARA, MARUYAMA, OHGUSHI, SAKAGAMI, SHIDA, TSUNEKI, UÉNO, YAMAMOTO, YAMANAKA, YASUMATSU.



The rear row (from left to right).

Mr. Nagase, Mrs. Yamamoto, Mr. Ishikawa, Miss Nakanishi, Mr. Ohgushi, Mr. Maruyama, Mr. Sakagami, Miss Taniguchi, Mr. Itô (M.), Mr. Kitano, Mr. Umesao, Mr. Shida, Mr. Itô (Y.), Mr. Iida.

The front row (from left to right).

Dr. Yasumatsu, Dr. Imanishi, Dr. Morisita, professor Uchida, professor Furukawa, professor Kuwabara, Mr. Yamanaka.

TRAVAUX PUBLIÉS PAR DES MEMBRES DE L'UNION

STUMPER (R.). — 1917. **Unser heutiges Wissen über das Seelenleben der Ameseni, insbes. ihre Raumorientierung** (*Annuaire de l'Associat. génér. des Étudiants luxemb.*, Luxembourg, p. 78-84). — 1917. **Zur Ontogenese der Ameisenkolonien, I et II** (*Archiv. f. Naturgeschichte, Berlin*, **83**, Abt. A, p. 1-10, p. 137-140). — 1918. **Formicoxenus nitidulus Nyl.** (*Biolog. Zentralbl., Leipzig*, **38**, p. 160-179). — 1918. **Psycho-biologische Beobachtungen u. Analysen an Ameisen** (*Biolog. Zentralbl., Leipzig*, **38**, p. 345-354). — 1918. **Zur Kenntnis des Polymorphismus der Ameisen** (*Bullet. Société Natural. luxemb.*, Luxembourg, p. 18-24). — 1919. **Pages myrmécologiques** (*Bullet. Soc. Natural. luxemb.*, Luxembourg, p. 73-82). — 1919. **Réflexions génér. sur la psychologie animale, suivies de quelques expériences sur l'odorat des fourmis** (*Annuaire de l'Assoc. gén. des Étudiants luxemb.*, Luxembourg, p. 75-87). — 1919. **Einige allgem. Gedanken über Tierpsychologie** (*Bull. Soc. Natural. luxemb.*, Luxembourg, p. 19-24, 45-48, 105-112). — 1919. **Ueber einige Anomalien des Ameisenlebens** (*Arch. f Naturgesch.*, Berlin, **85**, Abt. A, p. 184-191). — 1920. **Untersuchungen über die Psychologie der Ameisen** (*Bullet. Société Natural. luxemb.*, Luxembourg, p. 19-20, 51-59). — 1921. **Études sur les fourmis. I. Recherches critiques sur l'odorat** (*Bullet. Soc. Entom. belg.*, Bruxelles, **3**, p. 24-30). — 1921. **Études sur les fourmis. II. Observations sur la genèse d'une piste de** *Lasius fuliginosus* (*ibid.*, **3**, p. 84-88). — 1921. **Études sur les fourmis. III. Recherches sur l'éthologie de** *Formicoxenus nitidulus* (*ibid.*, **3**, p. 89-97). — 1921. **Note sur la psychologie des fourmis** (*Journal de Psychologie*, Paris, **18**, p. 566-570). — 1921. **Le coefficient de température de la locomotion des fourmis** (*C. R. Soc. Biol.*, Paris, **85**, p. 706-708). — 1921. **Le coefficient thermique de la combativité des fourmis** (*ibid.*, **85**, p. 708-709). — 1922. **Études sur les fourmis. IV. L'influence de la température sur l'activité des fourmis** (*Annales Soc. Entomol. belg.*, Bruxelles, **62**, p. 137-140). — 1922. **L'influence de la température sur l'activité des fourmis** (*C. R. Soc. Biol., Paris*, p. 9-10). — 1921. **L'acide formique** (*Bull. Soc. Natural. luxemb.*, Luxembourg, p. 174-187). — 1922. **Le venin des fourmis, en particulier l'acide formique** (*C. R. Acad. Sciences, Paris*, **174**, p. 66-68). — 1922. **Nouvelles observations sur le venin des fourmis** (*C. R. Acad. Sciences*, Paris, **174**, p. 413-415). — 1922. **Le venin des fourmis** (*Annales Sciences Natur., Zool.*, Paris, p. 105-112). — 1922. **Quantitative Ameisenbiologie** (*Biol. Zentralbl.*, Leipzig, **42**, p. 435-440). — 1922. **Die Geheimnisse der Gastameise** (*Natur u. Technik*, Zürich, p. 194-196). — 1923. **Études sur les fourmis. V. Les réflexes de nettoyage** (*Bullet. Soc. Entom. belg.*, Bruxelles, **5**, p. 29-31). — 1923. **Études sur les fourmis. VI. Sur l'utilité de la fourmi des bois** (*ibid.*, **5**, p. 38-39). — 1923. **Études sur les fourmis. VII. A propos de l'orientation des fourmis** (*ibid.*, **5**, p. 133-136). — 1923. **Le venin des fourmis** (*Strasbourg médical*, Strasbourg, **81**, p. 472-477). — 1923. **L'établissement des nouvelles colonies chez les fourmis** (*Ann. Sciences Nat., Zool.*, Paris, **6**, p. 95-105). — 1923. **Nouvelles recherches sur le venin des fourmis** (*C. R. Acad. Sc.*, Paris, **176**, p. 330-332). — 1923. **Das Gift der Ameisen** (*Natur u. Technik*, Zürich, **4**, p. 295-299). — 1923. **Die Nützlichkeit der Waldameise** (*ibid.*, **5**, p. 15-16). — 1923. **Temperatur u. Lebensvorgänge** (*ibid.*, **5**, p. 65-68). — 1923. **Sur la composition chimique des nids de l'***Apicotermes occultus* (*C. R. Acad. Sc.*, Paris, **177**, p. 409-411). — 1923. **L'utilité de la fourmi des bois** (*Nature*, Paris, n° 2565). — 1923. **Le venin des fourmis** (*Nature*, Paris, p. 174-176). — 1923. **L'illusion des amputés chez les**

fourmis (*Nature*, Paris, p. 335-336). — 1924. **Une termitière singulière** (*Nature*, Paris, p. 351-352). — 1924. **Chemiker im Insektenreich** (*Natur u. Technik.*, **5**, p. 295-299). — 1928. **Prof. Aug. Forel. 80. Geburtstag** (*Luxemb. Ztg.*, Luxembourg, 30 août). — 1931. **Erich Wasmann S. J.** † (*Luxemb. Zeitg.*, Luxembourg, 15 mars). — 1931. **Das Leben August Forel's, ein Kampf ums Bessere** (*Luxemb. Ztg.*, Luxembourg, 17 août). — 1936. **Ameisenstaat-Menschenstaat** (*Schriftenreihe des Verbandes luxemb. Volksbildungsvereine*, Luxembourg, Heft **2**). — 1936. **L'homme et la fourmi** (*Scientia*, Milan, p. 95-108). — 1939. **Zusammenstellung der einheim. Ameisen** (*Bullet. Soc. Natural. luxemb.*, Luxembourg, p. 82-87). — 1946. **Folie humaine, sagesse myrmécéenne** (Journal d'Alsace, 3 septembre 1946). — 1948. **Zum 100. Geburtstag v. Aug. Forel** (*Escher Tageblatt*, 25 juillet 1948). — 1949. **L'illusion de l'altruisme chez les fourmis** (*Nature*, Paris, p. 43-45). — 1949. **La structure sociale des collectivités de fourmis** (résumé de conférence) (*Arch. Instit. Gr.-D. Sciences*, Luxembourg, **18**, p. 13-14). — 1949. **Liberté et servitude chez les fourmis** (*Synthèses*, Bruxelles). — 1949. **Études myrmécologiques. IX. Nouvelles observations sur l'éthologie de** *Formicoxenus nitidulus* (*Bullet. Soc. Natural.*, Luxembourg, p. 242-248). — 1950. **Le venin des fourmis** (*Atomes*, Paris, **5**, p. 272-274). — 1950 (avec H. KUTTER). **Sur le stade ultime du parasitisme social chez les fourmis, atteint par** *Teleutomyrmex schneideri* (*C. R. Acad. Sc.*, Paris, **231**, p. 876-878). — 1950. **Les associations complexes des fourmis (Commensalisme, symbiose, parasitisme)** (*Bullet. Biolog. France Belgique, Paris*, **84**, p. 376-399). — 1950. **Études myrmécologiques. VIII. Examen chimique et microbiologique de quelques nids de** *Lasius fuliginosus* (*Arch. Inst. Gr.-D. Luxembourg Sciences*, **19**, p. 243-250). — 1950. **Études myrmécologiques. X. La myrmécobiose** (*Bullet. Soc. Natur. luxemb.*, Luxembourg, **44**, p. 30-43). — 1950. **Liberté et servitude chez les fourmis** (*Hautes-Fagnes*, Verviers, p. 171-177, 249-256). — 1951. **Ueber die Lebensweise der neuen Schmarotzerameise** *Teleutomyrmex schneideri* (*Bullet. Soc. Entom. suisse*, **24**, p. 129-152). — 1951 (avec H. KUTTER). **Sur l'éthologie du nouveau myrmécobionte** *Epimyrma stumperi* (*C. R. Acad. Sc.*, Paris, **233**, p. 983-985). — 1951. **Sur la sécrétion d'acide formique par les fourmis** (*C. R. Acad. Sciences*, Paris, **233**, p. 1144-1146). — 1952. **Données quantitatives sur la sécrétion d'acide formique par les fourmis** (*C. R. Acad. Sc.*, Paris, **234**, p. 149-152). — 1952 (avec H. KUTTER). **Sur un type nouveau de myrmécobiose réalisé par** *Plagiolepis xene* (*C. R. Acad. Sc.*, Paris, **234**, p. 1482-1485). — 1952. **Un insecte social, la fourmi** (*Nouvelles littéraires*, Paris). — 1952. **Sur les sécrétions odorantes de quelques fourmis** (*C. R. Acad. Sciences*, Paris, **235**, p. 520-528). — 1953. **Études myrmécologiques. XI-XII. Fourmis luxembourgeoises. A propos du rôle social des sécrétions odorantes chez les fourmis** (*Bullet. Soc. Natur. luxemb.*, **46**, 122-135). — 1953. **Quelques aspects nouveaux du parasitisme social chez les fourmis** (*Arch. Inst. Gr.-D. Luxemb. Sciences*, **20**, p. 171-174). — 1953. **Ueber Schutz- u. Trutzsekrete der Ameisen** (*Naturwissenschaften*, Berlin, Göttingen, Heidelberg, **40**, p. 33-34,). — 1954. **La fourmilière, état totalitaire ?** (*Nouvelles littéraires*, Paris). — 1954. **Deux grandes figures de la science des insectes sociaux : E. Wasmann et A. Forel** (*Insectes sociaux*, Paris, **1**, p. 345-369).

1930. IMANISHI (K.). — **An example of the vertical distribution among ants** (*Kontyû*, **4**, 185, in Japanese). — 1948. **Principles of Biosocieties,** Tokyo & Osaka (Book in Japanese). — 1949. **Sociology viewed by a zoologist** (*Biol. Sci.*, **1**, 224, in Japanese). — 1950. **Social life of semi-wild horses, proposition of specia-specion and oikia-oikion** (In *Population and environment of organisms*, **1**, in Japanese). — 1951. **Prehuman societies,** Tokyo (Book in Jap.).

It is difficult to summarize here shortly IMANISHI's huge system of speculation based upon the plenty of experience during his life-course as a field investigator. On the level of ecosystem his theory sharply opposed to all the community doctorines which postulate various enclosed systems. Apprehending typologically all the ecological groupings, he brings a theory of open system based upon the habitat segregation among synusia and compound synusia.

Furthermore, he criticizes ALLEE's works on the aggregation, especially his unidirectional accentuation of beneficial effects alone. If the gregarious life is an aspect of sociality, the solitary life mode must be another important aspect. Whether gregarious or not, the society is defined by him as follows: A field in which the group formation is possible or not, namely the field in which a species live spatially and temporally irrespective of gregarious or not. His *society* starts therefore from the species-society, *specia*. He proposes *specion* as the basic unit of specia. This means an organic unit as the carrier of both the individual—and species—maintaining capacities, and therefore corresponds ordinarily to each individual except such cases as sessile colonies of marine invertebrates and so-called social insects. In the latter cases, only the co-existence of reproductive and non-reproductive forms make possible to maintain the life, consequently only the set of these two forms is equivalent to each ordinary female of non-social insects. Therefore, the unit (specion) of the society (specia) is here not each individual but a kind of superindividual aggregate. True social phenomena among so-called social insects is limited only to the relationship among such superindividuals. Numerous suggestive opinions are included in the above papers. (He proposed the *genia* and *genion* for the social insects instead of specia-specion but not published his opinion.) (Sh. F. SAKAGAMI.)

1954. MARUYAMA (M.). — **Adenosinetriphosphate content and apyrase activity during metamorphosis of the wasps,** *Vespula lewisii (J. Fac. Sci. Tokyo Univ., Sect. IV. Zool.*, **7**, 61*)*.

1. ATP content in the whole body of *Vespula lewisii* decreases gradually during pupation, imaginal differentiation, and early adult life. 2. Apyrase activity of the whole brei undergoes an alteration corresponding with muscule development. 3. Acid and alkaline phosphatase activities are much lower than the apyrase activity in the adults.

1954. MORIMOTO (R.). — **On the nest development of** *Polistes chinensis antennalis* Pérez. I. (**Studies on the social Hymenoptera of Japan III**) (*Sci. Bull. Fac. Agric., Kyushu Univ.*, **14**, 337, in Jap. with English resumé). 1. A founding female makes 30-40 cells in the solitary period, the mode of enlarging the nest depends highly on the nest-site. 2. Oviposition ceases for some days after the hatching of the first larva. The younger larvae (to 3. instar) are fed only by fluids, the older ones by both fluids and flesh. 3. 5-10 workers emerge under the care of founding female alone. After their emergence, the mother concentrates her task to brood-care and oviposition. If she dies, the ovipositing workers increase. The development of nests stops when the males begin to appear. — 1954. **On the nest development of — II (Studies — IV)** (*Ibid.*, **14**, 511, in Jap. with English resumé). — 1. There is a direct relation between the duration of the incubation period and the number of cells made by a founding female. Moreover, the environ. conditions, esp. the temperature influence markedly the enlargement of nest. 2. Ovip. rate of founding females increase when the larvae reach 4-5 instar. Such older larvae are fed with protein-rich food, a part of which is also taken by female and results the increase of oviposition. 3. Ovip. rate of founding females increases after the cocooning of larvae in the nests under the warmer condition but not in those under cooler one. This may be explained by the decreased amount of labour due to the decreased breeding activity and the lower body temperature. 4. After the appearence of workers, the ovip. rate of founding female increases gradually and, corresponding with the periodical emergence of workers, the ovip. rate also fluctuates periodically 5. Ovip. rate of the founding female is independent of the number of empty cells. 1954. **On the development of — III. Relation between the removal of eggs and larvae from the nest and the oviposition of the founding female (Studies — V)** (*Ibid.*, **14**, 523, in Jap. with English resumé). — 1. Emergence of newly hatched larvae as the limiting factor to the rate of ovip. and cell construction of the founding

female was again ascertained. The ovip. rate does not increases by the partial removal of eggs and larvae, i. e. by the increase of empty cells. 2. The females tend to deposit the eggs to cell-walls facing to comb centre, probably due to (*a*) their natural attitude in the earlier life that they grasp the entrance of the cells when ovipositing, and (*b*) the tendency of females to deposit intensively into the empty cells at the central area of comb rather than those of the outer rings. 3. The dissappearence of eggs is highly correlated with the hatching of the young in the other cells. It can be explain from the fact that the young larvae are fed often with comparatively newly laid eggs attached to the cell-walls of the peripheral area of comb.

1950. MORISITA (M.). — **Migration and population density of a water-strider,** *Gerris lacustris* L. (*Contrib. from the Zool. Inst., College of Sci., Kyoto Univ.*, No. **65**, 149, 149 pp., in Japanese). The structure of the surface-film community composed of supraneustons was discussed with special reference to the habitat segregation among several species of water-striders. The process of density fluctuation in aggregations of *Gerris lacustris* was analysed at several small pools. From the occurrence of various density types and the observation of marked individuals, it was confirmed that the density fluctuation in each aggregation is heavily influenced by those of neighbouring ones and consecuently by the frequent immigration and emigration among aggregations. Due to the continuous immigration, the spatial size as well as the density of each aggregation increases but only to the maximal extent of about 2 m in diameter. Beyond this limit, the aggregation maintains its extent and density by the emigration. The tendency of such a self-maintenance caused by the self-limitation of individual movement was proved statistically not by the ordinary quadrat method, but by the significant deviation from the formula of random movement by spacing method: $P = \frac{a\,(2\,l - a)}{l^2}$ (P: Probability in which the spatial displacement of a marked individual in two successive observations lies in the arbitary length of a, *l*: the maximal length along which the strider can displace), or later in Postscript, $P = \frac{a^2}{l^4}\left(\pi l^2 - \frac{8}{3}\,al + \frac{1}{2}\,a^2\right)$, $\left(a \leqq \frac{l}{2}\right.$, *l*: the length of one side of a square). Thus the size and density of aggregation is self-regulated and self-equilibrized in relation with those of the neighbouring ones by the balance of immigration and emigration. — 1952. **Habitat preference and evaluation of environment of an animal. Experimental studies on the population density of an ant-lion,** *Glenuroides japonicus* M'L. (*Ecol. & Physiol.*, **5**, 1, — in Jap. with English resumé). — The strong tendency of the ant-lion to prefer the fine sand to the coarse one for pit-formation falls with the increasing density. Therefore, the values of habitats themselves can be expressed by the population density as *environmental density*. For instance, if the probability that the first individual settles in the fine sand is larger than ½, while the second one settles in the same part with the probability of ½, we can consider that, for the habitat preference of the animal, value of the fine sand having one individual in it is as same as that of the coarse sand without individuals: namely, $E_B - E_A = 1$ (E_B & E_A is the environmental values of the fine and coarse sands expressed by the pop. density, namely *environmental density*. Assuming the probability settles an individual in the fine sand is $\frac{E_B + D_B}{E_A + E_B + D_A + D_B}$ (D_B & D_A: Pop. density in the coarse and fine sand respectively), the probability that x individuals settle in the fine sand when $n + 1$ individuals are introduced into the experiment-box is calculated by the following formula:

$$Px\,(n+1) = \left(\frac{E_A + x/s}{E_A + E_B + n/s}\right) Px\,(n) + \left(1 - \frac{E_A + (x-1)/s}{E_A + E_B + n/s}\right) P_{x-1}\,(n)$$

where s = area of the fine sand = (in his case) area of the coarse sand. The

frequency distribution of the observation coincides well with the expected value by the formula. The theory of environmental density may be applicable for the studies on the population density of other animals. — 1954. **Dispersion and population pressure. Experim. studies on the pop. density of an ant-lion. — II** (*Jap. J. Ecol.*, **4**, 71, in Jap. with English resumé).—Released in the centre of a field, the increase of the rate of dispersion in normal larvae is proportional to that of the initial numbers of larvae exist in the field, and is expressed by $y = N\ (l - e^{-(b+c/N)s})$ (y: Indiv. number found in the field with extent of s; N: Initial individual number, b & c: constant).

Indices P, α & β were proposed to indicate respectively the degree of the pop. pressure, the barrier effect to the spatial distribution and the velocity of distribution. By using these indices the relation betw. the pop. densities and the rate of dispersion were analysed mathematically. Moreover, by comparing the values of P of three spp. of insects, it was shown that the pop. pressure/unit area is largest in the ant-lion, smallest in the rice-weevil, while intermediate in the azuki-bean weevil when the pop. densities are equal to one another.

1954. OHGUSHI (R.).—**On the plasticity of the nesting habit of a hunting wasp,** *Pemphredon lethifer fabricii* Müller (*Mem. Coll. Sci., Univ. Kyoto, Ser. B*, **21**, 45).—The partition between each cell in a nest is often omited. The fullgrown larvae are found occasionally in the same space without cannibalism. Moreover, the mother-daughter contact can be seen in some nests. These facts seem to suggest the dawn of a social relationship.

1954. SAKAGAMI (S.).—**Ueber einige Hummelarten von Hokkaido u. Kurilen Inseln** (*Systematische Studien der Hummeln. V*, Kontyu, **21**, 84).—*B. terrestris japonicus* aus Kurilen Inseln, *B. hypnorum calidus* aus Hokkaido u. Kurilen neu berichtet. Beschreibung von *B. tersatus* Smith mit *B. t. kurilensis* ssp. nov.

1947. TAKAMATSU (Y.).—**On the structure of the reproductive organ and the genitalia of** *Vespula lewisii* (Cameron) (*Hym., Vespidae*) (*Seibutu*, **2**, 166, in Japanese).—General description of the mentioned organs in both sexes, including difference betw. reproductive females and workers. 1949. **On the post-embryonic development of the genitalia of** *Vespula lewisii* (Cameron) (*Seibutu*, **4**, 161, in Japanese).—The distinction of sex in the abdominal end can be possible when the larvae reached to 3.5 mm in length. Through the continuous observation of the post-embryonic development in the later stages, it was confirmed that the genitalia of both sexes originate from both the tergites and sternites.

1949. UMESAO (T.).—**Social interference between individuals, its concept and experiments** (*Biol. Sci.*, **1**, 19, in Japanese).—The criticism of the current trends of sociology as a branch of biology. Instead of the generally adopted opposition of more or less arbitrarily defined "group" versus individual, the construction of objective and deductive sociology was proposed basing on the interaction among individuals. Defining the soc. interaction based upon the difference of behaviour when other individuals co-exist or not, the quantitative determination of the interaction was experimented with tadpoles in the field of probability. The +, — and 0 interaction was quantitatively determined by the difference of the distribution of individuals from the randomized theoretical value. The method employed allows its application to various organisms and phenomena as a useful tool constructing a more objective sociology.

1928. YAMANAKA (M.).—**On the male of a paper wasp,** *Polistes fadwigae* Dalla Torre (*Sci. Rep. Tôhoku Imp. Univ., Ser. Biol.*, **3**, 256).—Short notes on the parthenogenetic production of males by both the nest mother and virgin workers.

1954. YOSHIKAWA (K.).—**Ecological studies of *Polistes* wasps, 1. On the nest evacuation** (*J. Inst. Polytechn., Osaka City Univ.*, **5**, 9).—Observing the development of nests of *Polistes antennalis* & *P. fadwigae*, the nest evacuation was confirmed in 90 % of the total 69 queens in a limited area, and mostly before the eclosion of workers. Evacuation in the social stage was represented only by a single nest of *P. antennalis*. Discussing the causal factors of evacuation, it was concluded that the later part of solitary stage represents the most unstable period throughout the developmental process of the nests.

NOTES ET ANALYSES

1954. Brian (A. D.). — **The foraging of bumble bees** (*Bee World*, **35**, 61-67, 81-91). — A review of the subject dealing with: the senses of bumble bees (*Bombus*) in relation to foraging; the behaviour of and factors influencing foragers in the field and in the nest; type of flowers visited, tongue length of different species, corolla biting, constancy and economic importance of bumble bees.

1954. Vowles (D. M.). — **The orientation of ants. I. The substitution of stimuli** (*J. Exp. Biol.*, **31**, 341-355). — Von Frisch has shown that in the honey-bee orientation established in relation to one directional stimulus (light) can be transferred to another directional stimulus (gravity or polarized light). In the present work the orientation of ants has been studied in experiments in which one type of directional stimulus has been replaced by another. Light, gravity and polarized light have been used as stimuli. When light and gravity are interchanged, the ant's successive orientations to the two stimuli are correlated. The angle between the track and the stimulus is the same for both orientations. When light and polarized light are interchanged, the ant's successive orientations are again correlated. The actual relationship depends of the experimental conditions. When polarized light and gravity are interchanged there is no significant correlation between successive orientations. It is suggested that in bees and ants there is a single taxis mechanism for orientation to light, polarized light and gravity, and that the' setting' of this mechanism during an orientation to one stimulus persists and partially determines the subsequent orientation to another stimulus.

1954. Vowles (D. M.). — **The orientation of ants. II. Orientation to light, gravity and polarized light** (*J. Exp. Biol.*, **31**, 356-375). — The orientation of ants to gravity has been investigated, and it is shown that orientations symmetrically placed on either side of the vertical are confused. The georeceptor is located in the antenna, and is probably Johnston's organ. Only one antenna is in use at any one time during geo-orientation. The light compass reaction has been investigated and it is shown that orientations θ^{o} and $180\text{-}\theta^{o}$ are confused. No explanation can be offered for this. The results are discussed in relation to the hypothesis that ants have a taxis mechanism common to all senses. It is suggested that the function of this mechanism is to set up a temporary labile symmetry of the ant with respect to orientatory stimuli.

1955. Vowles (D. M.). — **The foraging of ants** (*British J. Anim. Behaviour*, **3**, 1-13). — This is a comprehensive review of the foraging behaviour of ants and includes sections on: the stimuli releasing foraging behaviour; feeding behaviour and its releasers (collection of booty, collection of nectar, distribution of booty in the nest, regurgitation); individual differences in behaviour; the journey to and from the nest (visual, chemical, tactile, kinaesthetic, and other stimuli); and the influence of general environmental stimuli. A classification of foraging behaviour is proposed with a view to clarifying the problems involved.

1954. Ocaton (W. G. H.). — *(Div. Entom., Pretoria) Veld Reclamation and Harvester Termite Control. Farming in South Africa*, **29**, (338) 243-248. — Illus. Overgrazing by sheep leads to further destruction by harvester Termites and much grassland degenerates to the inferior Karoc-bush land. Broadcasting chaffed hay poisoned with sodium fluosilicate brings surprising restoration of grassland, without report of any poisoning of stock on treated grounds.

A.-L. Pickens.

INFORMATIONS

TENTH INTERNATIONAL CONGRESS OF ENTOMOLOGY
Montreal, Canada, 1956

The Tenth International Congress of Entomology will be held in Montreal on August 17-25, 1956. Following the Congress a number of excursions to places of entomological interest will be arranged.

All those hoping to attend the Congress and wishing to obtain further information should communicate as soon as possible with the Secretary, Mr. J. A. Downes, Division of Entomology, Science Service Building, Ottawa, Ontario, Canada.

Le Dixième Congrès International d'Entomologie tiendra ses assises à Montréal du 17 au 25 août 1956. Des excursions susceptibles d'intéresser les entomologistes auront lieu après le Congrès.

Les personnes qui voudraient assister au Congrès et qui désirent recevoir des renseignements plus complets devront se mettre en rapport le plus tôt possible avec le secrétaire, M. J. A. Downes, Division of Entomology, Science Service Building, Ottawa, Ontario, Canada.

Der X. Internationale Entomologische Kongreß wird vom 17.—25. August 1956 in Montreal stattfinden. Im Anschluß an die Kongreßwoche werden Besichtigungen von entomologisch interessanten Plätzen durchgeführt.

Interessenten, die beabsichtigen, an diesem Kongreß teilzunehmen, werden gebeten, sich bezüglich näherer Einzelheiten so bald wie möglich mit dem Schriftführer, Mr. J. A. Downes, Division of Entomology, Science Service Building, Ottawa, Ontario, Canada.

El Décimo Congreso Internacional de Entomología tendrá lugar en Montreal del 17 al 25 de Agosto de 1956. A continuación del Congreso se organizarán una serie de excursiones a lugares de interés entomológico.

Las personas que deseen asistir al Congreso y quieran recibir una información más completa sobre el mismo deben ponerse en comunicación lo antes posible con el Secretario del mismo, Mr. J. A. Downes, Division of Entomology, Science Service Building, Ottawa, Ontario, Canada.

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