

# 琉球大学学術リポジトリ

## 沖縄群島の黒穂菌類

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# Ustilaginales of the Okinawa Islands\*

By

Shun-ichi SHIMABUKURO and Masao TAMORI\*\*

The first account of smut fungi from the Okinawa Islands was made by Naohide and Yasuyuki Hiratsuka in 1957. They recorded the following nine species of smut fungi from the islands, viz.: 1) *Sorosporium formosanum* (Sawada) Sawada, 2) *S. paspali-thunbergii* (P. Henn.) S. Ito, 3) *Sphacelotheca cruenta* (Kühn) Potter, 4) *Ustilago esculenta* Hennings, 5) *U. hordei* (Pers.) Lagerheim, 6) *U. kollerii* Wille, 7) *U. kusanoi* Sydow, 8) *U. shiraiana* Hennings and 9) *U. tritici* (Pers.) Rostrup.

Since then, a number of species of the smut fungi were collected by the writers and others from the islands, and among them, the following five species are newly added to the smut-flora of the islands in the present paper. They are: 1) *Ustilago commelinae* (Kom.) Zundel, 2) *U. flagellatum* Sydow et Butler, 3) *U. machili* (Hino et Nagaoka) S. Ito, 4) *U. onumae* (Shirai) S. Ito and 5) *U. utriculosa* (Nees) Unger.

The materials used by the writers in this study include besides the specimens collected by Naohide Hiratsuka and Yoshihisa Taira, the collections made by the writers and others from different localities of the Okinawa Islands.

The total number of the specimens which the writers examined amounts to more than sixty, in which three genera and fourteen species are included as shown in Table 1.

Table 1. Number of species of smut fungus found in the Okinawa Islands

Family	Genera	Previously reported	Present additions	Total	
Ustilaginaceae	<i>Sorosporium</i>	2	1	3	14
	<i>Sphacelotheca</i>	1		1	
	<i>Ustilago</i>	6	4	10	
Total		9	5	14	

1. *Sorosporium flagellatum* Sydow et Butler in Ann. Myc. V, p. 489, 1907. S. Ito, Myc. Fl. Jap. II, no. 1, p. 82, 1936; Zundel, Ustil. World, p. 60, 1953).

Hab. on *Ischaemum crassipes* var. *formosanum* Nakai (*Taiwan-kamonohashi*). Izena Isl.: Serikaku (Apr. 30, 1961, M. T.,\*\*\* no. Oki-40); Nakada (Apr. 30, 1961, M. T., no. Oki-43).

2. *Sorosporium formosanum* (Sawada) Sawada, Descript. Cat. Formosan Fungi, IV, p. 29, 1928. (N. & Y. Hiratsuka, Sci. Bull. Agr. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 135, 1957; S. Ito, l. c. p. 82 & fig. 80; Zundel, l. c. p. 60).

Hab. on *Panicum repens* L. (*Haikibi*). Okinawa Isl.: Naha-shi (Shuri) (Apr. 25, 1953,

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\*\*\* Division of Agriculture, Home Economics & Engineering.

\*\*\* The following abbreviations are used for the name of the collectors of the fungi mostly frequently named in the list: N. H. = Naohide Hiratsuka (平塚直秀); S. S. = Shun-ichi Shimabukuro (島袋俊一); Y. T. = Yoshihisa Taira (平良芳久); M. T. = Masao Tamori (田盛正雄).

N. H.); Itoman-cho (Jan. 21, 1940, N. H. & Y. T.); Chinen-son (Apr. 17, 1955, M. T., nos. Oki-7 & 8); Sashiki-son (Jan. 20, 1940, N. H. & Y. T.); Mt. Yonaha-dake (May 30, 1953, N. H.); Haneji-son (Jan. 15, 1940, N. H. & Y. T.); Nago-cho (May 8, 1953, N. H.); Osato-son (Jan. 20, 1940, N. H. & Y. T.); Takamine-son (May 15, 1953, N. H.); Yabu-son (May 8, 1953, S. S., no. Oki-1; Apr. 23, 1961, M. T., nos. Oki-28 & 33); Kunigami-son (Apr. 21, 1961, M. T., no. Oki-29). Izena Isl.: Nakada (Feb. 17, 1959, M. T., no. Oki-17; Apr. 28, 1961, M. T., no. Oki-39; Apr. 30, 1961, M. T., no. Oki-41). Aguni Isl. (Feb. 23, 1959, M. T., no. Oki-22). Kudaka Isl. (May 22, 1959, M. T., no. Oki-16).

3. *Sorosporium paspali-thunbergii* (P. Henn.) S. Ito in Trans. Sapporo Nat. Hist. Soc. XIV, p. 94, 1935. (N. & Y. Hiratsuka, l. c. p. 136; S. Ito, l. c. p. 81 & fig. 79; Zundel, l. c. p. 69).

Hab. on *Paspalum orbiculare* Forst. (*Suzumeno-kobie*). Okinawa Isl.: Hentona, Kunigami-son (May 29, 1953, N. H.); Hedo, Kunigami-son (Apr. 21, 1961, M. T., no. Oki-26); Nago-cho (May 9, 1953, N. H.); May 9, 1953, S. S., no. Oki-2); Nakayama, Yabu-son (Apr. 23, 1961, M. T., no. Oki-27); Itoman-cho (May 15, 1953, S. S., no. Oki-3). Izena Isl.: Nakada (Apr. 28, 1961, M. T., no. Oki-38; Apr. 30, 1961, M. T., no. Oki-42). Aguni Isl. (Feb. 24, 1959, M. T., no. Oki-20). Minamidaito Isl. (July 31, 1958, M. T., Oki-14).

4. *Sphacelotheca cruenta* (Kühn) Pottter in Phytopathology, II, p. 98, 1912. (N. & Y. Hiratsuka, l. c. p. 136; S. Ito, l. c. p. 55 & fig. 56; Zundel, l. c. p. 86).

Hab. on *Sorghum vulgare* Pers. (*Morokoshi*) (*Cult.*). Okinawa Isl.: Nago-cho (July 14, 1907, T. Miyagi).

5. *Ustilago commelinae* (Komarov) Zundel in The Ustilaginales of the World, p. 151, 1953. Syn. *Tilletia commelinae* Kom. in Jacz. Kom. Tranz. Fg. Ross. Exs. V, no. 210, 1899. (S. Ito, l. c. p. 92 & fig. 89).

Hab. on *Commelina nudiflora* L. (*Shima-tsuyukusa*). Okinawa Isl.; Yabu-son (May 8, 1953, S. S., no. Oki-6).

6. *Ustilago esculenta* in Hedwigia, XXXIV, p. 10, 1895. (N. & Y. Hiratsuka, l. c. p. 140; S. Ito, l. c. p. 24 & fig. 21).

Hab. on *Zizania latifolia* Turcz. (*Makomo*) (*Cult.*). Okinawa Isl.: Haneji-son (Dec. 16, 1956, S. S.).

7. *Ustilago hordei* (Pers.) Lagerheim in Mitteil. Bad. Bot. Ver. p. 70, 1889. (N. & Y. Hiratsuka, l. c. p. 140; S. Ito, l. c. p. 8 & fig. 2; Zundel, l. c. p. 166).

Hab. on *Hordeum vulgare* var. *hexastichon* Aschers. (*O-mugi*) (*Cult.*) Okinawa Isl.: Nago-cho (May 18, 1953, N. H.). On *Hordeum vulgare* var. *nudum* Hook. f. (*Hadaka-mugi*) (*Cult.*). Okinawa Isl.: Ginoza-son (Apr. 17, 1954, S. S.); Yabu-son (May 8, 1953, S. S., nos. Oki-4 & 5); Kise, Nago-cho (May 2, 1961, M. T., no. Oki-46). Aguni Isl. (Feb. 23, 1959, M. T., no. Oki-24).

8. *Ustilago kollerii* Wille in Bot. Notiser (1893), p. 10, 1893. (N. & Y. Hiratsuka, l. c. p. 140; Zundel, l. c. p. 174).

Syn. *Ustilago levis* (Kell. et Swingle) Magnus in Abhandl. Bot. Ver. Prov. Brand. XXXVII, p. 69, 1896. (S. Ito, l. c. p. 7 & fig. 1).

Hab. on *Avena sativa* L. (*Ma-karasu-mugi*) (*Cult.*). Okinawa Isl.: Goeku, Koza-shi (May 1, 1953, N. H. & S. S.).

9. *Ustilago kusanoi* P. Sydow in Mem. Herb. Boiss. IV, p. 4, 1900. (N. & Y. Hiratsuka, l. c. p. 140; S. Ito, l. c. p. 20 & fig. 16; Zundel, l. c. p. 174).

Hab. on *Miscanthus sinensis* Anders. (*Susuki*). Okinawa Isl.: Yona-Ada, Kunigami-son (Jan. 13, 1957, N. H. & T. Hiratsuka; Jan. 13, 1957, S. S. & M. T., no. Oki-10); Ginama, Kunigami-son (Apr. 21, 1961, M. T., no. Oki-37); Iji, Kunigami-son (Apr. 20, 1961, M. T., no. Oki-31); Nakayama, Yabu-son (Apr. 23, 1961, M. T., no. Oki-35); Shuri, Naha-shi (Oct. 26, 1960, M. T., no. Oki-25); Kyan, Miwa-son (Jan. 17, 1957, S. S., no. Oki-11). Aguni Isl. (Feb. 24, 1959, M. T., no. Oki-21). Minamidaito Isl. (July 30, 1958, M. T., no. Oki-13). On *Miscanthus sinensis* var. *condensatus* Makino (*Hachijo-susuki*). Minamidaito Isl. (Aug. 7, 1958, M. T., no. Oki-12).

10. *Ustilago machili* (Hino et Nagaoka) S. Ito in Trans. Sapporo Nat. Hist. Soc. XIV, p. 89, 1935. (S. Ito, l. c. p. 47 & fig. 49).

Hab. on *Machilus thunbergii* Sieb. et Zucc. (*Tabu.*) Okinawa Isl.: Yona, Kunigami-son (Apr. 22, 1961, M. T., no. Oki-34).

11. *Ustilago onumae* (Shir.) S. Ito in Trans. Sapporo Nat. Hist. Soc. XIV, p. 89, 1935. (S. Ito, l. c. p. 46 & fig. 48; Zundel, l. c. p. 185).

Hab. on *Cinnamomum japonicum* Siebold. (*Yabu-nikkei*). Okinawa Isl.: Hedo, Kuni-gami-son (Apr. 21, 1961, M. T., no. Oki-32); Izumi, Motobu-cho (Apr. 23, 1961, M. T., no. Oki-47). Izena Isl.: Izena (Apr. 29, 1961, M. T., no. Oki-48).

12. *Ustilago shiraiana* Hennings in Bot. Jahrb. XXVIII, p. 260, 1901. (N. & Y. Hiratsuka, l. c. p. 141; S. Ito, l. c. p. 28 & fig. 26; Zundel, l. c. p. 201).

Hab. on *Phyllostachys bambusoides* Sieb. et Zucc. (*Madake*). Okinawa Isl.: Nakijin-son (Apr. 15, 1940, Y. T.). On *Phyllostachys aurea* Carr. (*Hoteichiku*). Okinawa Isl.: Izumi, Motobu-cho (Apr. 23, 1961, M. T., no. Oki-30).

13. *Ustilago tritici* (Pers.) Rostrup in Overs. K. Dansk. Vid. Selsk. Forh. (1890), p. 15, 1890. (N. & Y. Hiratsuka, l. c. p. 142; S. Ito, l. c. p. 13 & fig. 7; Zundel, l. c. p. 212).

Hab. on *Triticum aestivum* L. (*Ko-mugi*) (*Cult.*). Okinawa Isl.: Kise, Nago-cho (May 2, 1961, M. T., no. Oki-45). Aguni Isl. (Feb. 23, 1959, M. T., no. Oki-23). Kume-jima Isl.: Gushikawa-son (Feb. 25, 1954, M. Nagayama).

14. *Ustilago utriculosa* (Nees von Essenbeck) Unger, Einfl. Bod. 211, 1836. (Zundel, l. c. p. 215).

Syn. *Ustilago cordeii* Liro, Ustil. Finn. I. p. 12, 1924. (S. Ito, l. c. p. 42 & fig. 41).

*Ustilago utriculosa* (Nees) Tulasne in Ann. Sci. Nat. Bot. (III), VII, p. 102, 1847.

Hab. on *Polygonum barbatum* L. (*Ketade*). Iheya Isl.: Gakiya (Dec. 28, 1956, K. Shinjo, no. Oki-15).

## Explanation of plates

## Plate VII

- Fig. 1. Symptoms of *Sorosporium flagellatum* Sydow et Butler on *Ischaemum crassipes* var. *formosanum* Nakai. (Tokunoshima-cho, Tokunoshima Isl., Mar. 23, 1961, M. T., no. Amami-12).
- Fig. 2. Symptoms of *Sorosporium formosanum* (Sawada) Sawada on *Panicum repens* L. (Kunigami-son, Okinawa Isl., Apr. 21, 1961, M. T., no. Oki-29).
- Fig. 3. Symptoms of *Sorosporium paspali-thunbergii* (P. Henn.) S. Ito on *Paspalum orbiculare* Forst. (Hedo, Kunigami-son, Okinawa Isl., Apr. 21, 1961, M. T., no. Oki-26).
- Fig. 4. Symptoms of *Ustilago hordei* (Pers.) Lagerheim on *Hordeum vulgare* var. *nudum* Hook. f. (Kise, Nago-cho, Okinawa Isl., May 2, 1961, M. T., no. Oki-46).
- Fig. 5. Symptoms of *Ustilago kusanoi* Sydow on *Miscanthus sinensis* Anders. (Iji, Kunigami-son, Okinawa Isl., Apr. 20, 1961, M. T., no. Oki-31).
- Fig. 6. Symptoms of *Ustilago kusanoi* Sydow on *Miscanthus sinensis* Anders. (Iji, Kunigami-son, Okinawa Isl., Apr. 20, 1961, M. T., no. Oki-31).
- Fig. 7. Symptoms of *Ustilago machili* (Hino et Nagaoka) S. Ito on *Machilus thunbergii* Sieb. et Zucc. (Yona, Kunigami-son, Okinawa Isl., Apr. 22, 1961, M. T., no. Oki-34).
- Fig. 8. Symptoms of *Ustilago onumae* (Shir.) S. Ito on *Cinnamomum japonicum* Siebold. (Hedo, Kunigami-son, Okinawa Isl., Apr. 21, 1961, M. T., no. Oki-32).

## Plate VIII

- Fig. 1. Symptoms of *Ustilago kusanoi* Sydow on *Miscanthus sinensis* Anders. (Iji, Kunigami-son, Okinawa Isl., Apr. 20, 1961, M. T., no. Oki-31).
- Fig. 2. Symptoms of *Ustilago nuda* (Jens.) Rostrup on *Hordeum vulgare* var. *hexastichon* Aschers. (Tokunoshima-cho, Tokunoshima Isl., Mar. 25, 1961, M. T., no. Amami-10).
- Fig. 3. Symptoms of *Ustilago tritici* (Pers.) Rostrup on *Triticum aestivum* L. (Aguni Isl., Feb. 23, 1959, M. T., no. Oki-23).
- Fig. 4. Symptoms of *Ustilago utriculosa* (Nees) Unger on *Polygonum barbatum* L. (Gakiya, Iheya Isl., Dec. 28, 1956, K. Shinjo, Oki-15).
- Fig. 5. Symptoms of *Ustilago commelinae* Zundel on *Commelina nudiflora* L. (Yabuson, Okinawa Isl., May 8, 1953, S. S., no. Oki-6).
- Fig. 6. Symptoms of *Ustilago shiraiana* Hennings on *Phyllostachys aurea* Carr. (Izumi, Motobu-cho, Okinawa Isl., Apr. 23, 1961, M. T., no. Oki-30).

## Plate IX

- Fig. 1. Spores of *Sorosporium flagellatum* Sydow et Butler on *Ischaemum crassipes* var. *formosanum* Nakai. (Serikaku, Izena Isl., Apr. 30, 1961, M. T., no. Oki-40). ×400.
- Fig. 2. Spores of *Sorosporium formosanum* (Sawada) Sawada on *Panicum repens* L. (Kunigami-son, Okinawa Isl., Apr. 21, 1961, M. T., no. Oki-29). ×400.
- Fig. 3. Spores of *Sorosporium paspali-thunbergii* (P. Henn.) S. Ito on *Paspalum orbiculare* Forst. (Nakada, Izena Isl., Apr. 28, 1961, M. T., no. Oki-38). ×400.

- Fig. 4. Spores of *Ustilago hordei* (Pers.) Lagerheim on *Hordeum vulgare* var. *nudum* Hook. f. (Kise, Nago-cho, Okinawa Isl., May 2, 1961, M. T., no. Oki-46).  $\times 400$ .
- Fig. 5. Spores of *Ustilago kusanoi* Sydow on *Miscanthus sinensis* Anders. (Ginama, Kunigami-son, Okinawa Isl., Apr. 21, 1961, M. T., no. Oki-37).  $\times 800$ .
- Fig. 6. Spores of *Ustilago machili* (Hino et Nagaoka) S. Ito on *Machilus thunbergii* Sieb. et Zucc. (Yona, Kunigami-son, Okinawa Isl., Apr. 22, 1961, M. T., no. Oki-34).  $\times 800$ .
- Fig. 7. Spores of *Ustilago onumae* (Shir.) S. Ito on *Cinnamomum japonicum* Siebold. (Izena, Izena Isl., Apr. 29, 1961, M. T., no. Oki-48).  $\times 800$ .
- Fig. 8. Spores of *Ustilago shiraiana* Hennings on *Phyllostachys aurea* Carr. (Izumi, Motobu-cho, Okinawa Isl., Apr. 23, 1961, M. T., no. Oki-30).  $\times 800$ .

## Plate X

- Fig. 1. Spores of *Ustilago tritici* (Pers.) Rostrup on *Triticum aestivum* L. (Aguni Isl., Feb. 23, 1959, M. T., no. Oki-23).  $\times 800$ .
- Fig. 2. Spores of *Ustilago utriculosa* (Nees) Tulasne on *Polygonum barbatum* L. (Gakiya, Iheya Isl., Dec. 28, 1956, K. Shinjo, no. Oki-15).  $\times 800$ .
- Fig. 3. Spores of *Ustilago commelinae* Zundel on *Commelina nudiflora* L. (Yabuson, Okinawa Isl., May 8, 1953, S. S., no. Oki-6).  $\times 800$ .

## 沖繩群島の黒穂菌類 (摘要)

島袋俊一・田盛正雄

1. この報文は、琉球列島中の沖繩群島の黒穂菌についてのべたものである。
2. 沖繩群島においては、黒穂菌科 3 属 14 種の黒穂菌が認められた。
3. この論文で、つぎの 5 種が沖繩群島の黒穂菌フロラに新しく加わった。1) *Ustilago commelinae* (Komarov) Zundel, 2) *U. flagellatum* Sydow et Butler, 3) *U. machili* (Hino et Nagaoka) S. Ito, 4) *U. onumae* (Shir.) S. Ito, 5) *U. utriculosa* (Nees) Unger.

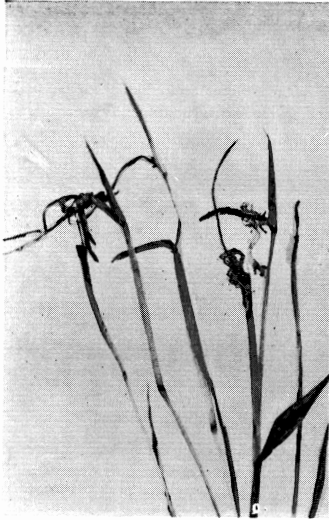


Fig. 1

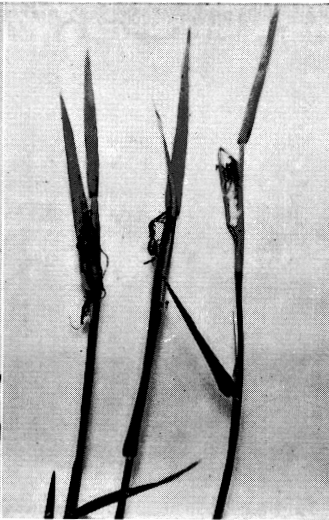


Fig. 2

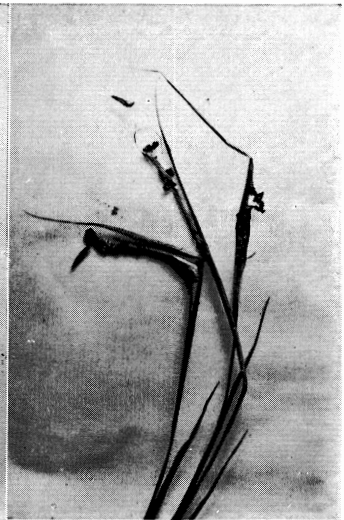


Fig. 3



Fig. 4



Fig. 5



Fig. 6

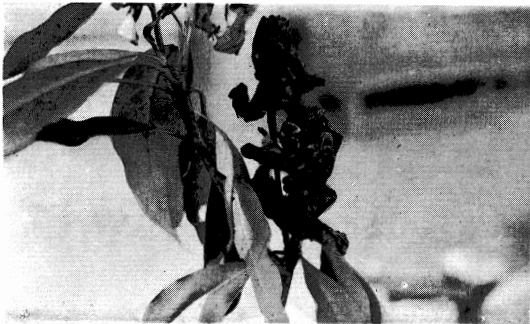


Fig. 7

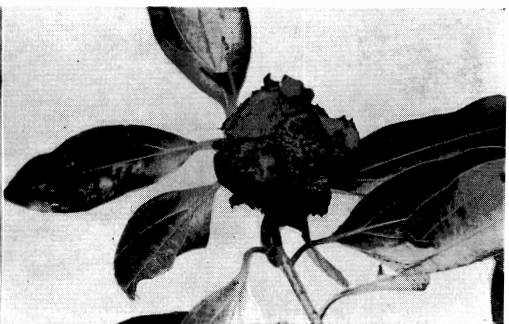


Fig. 8

PLATE VIII



Fig. 1

Fig. 2

Fig. 3



Fig. 4

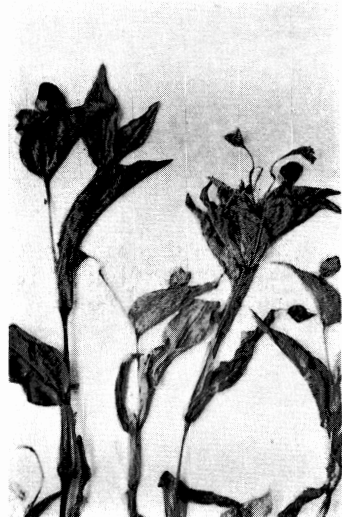


Fig. 5

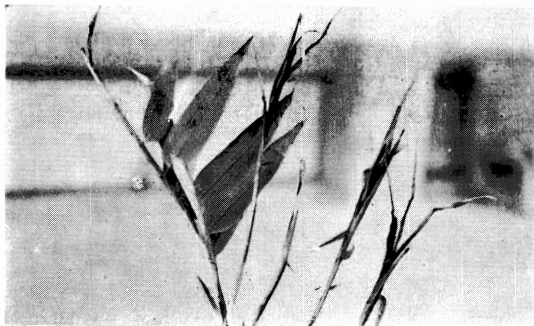


Fig. 6



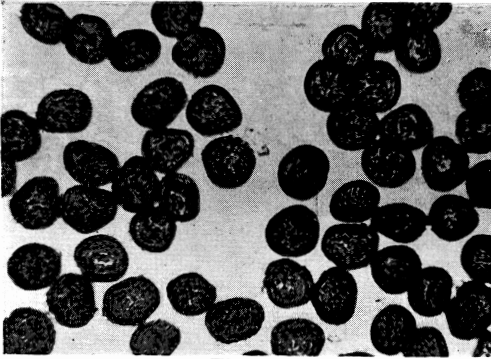


Fig. 1

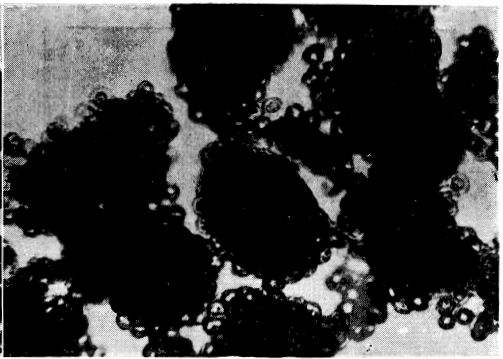


Fig. 2



Fig. 3

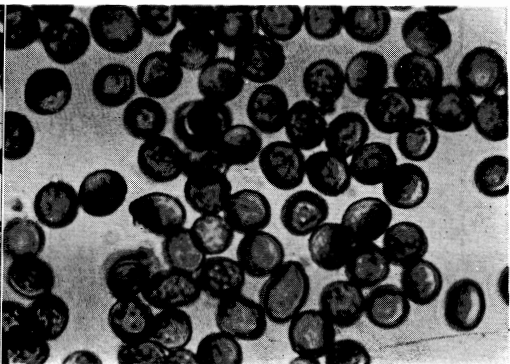


Fig. 4

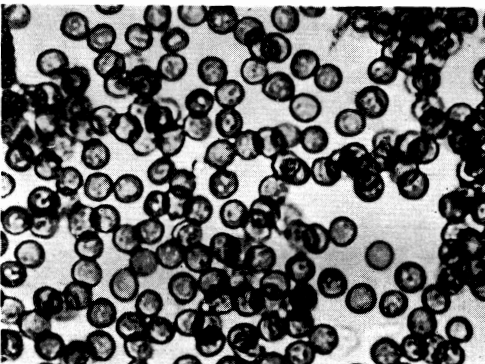


Fig. 5



Fig. 6

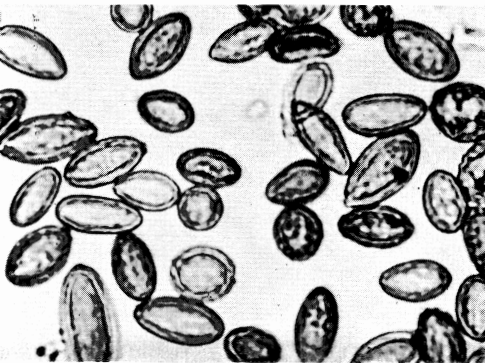


Fig. 7

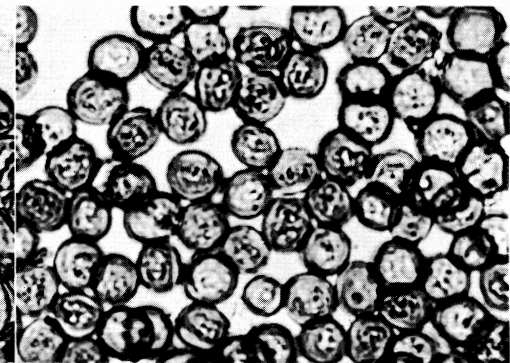


Fig. 8

PLATE X

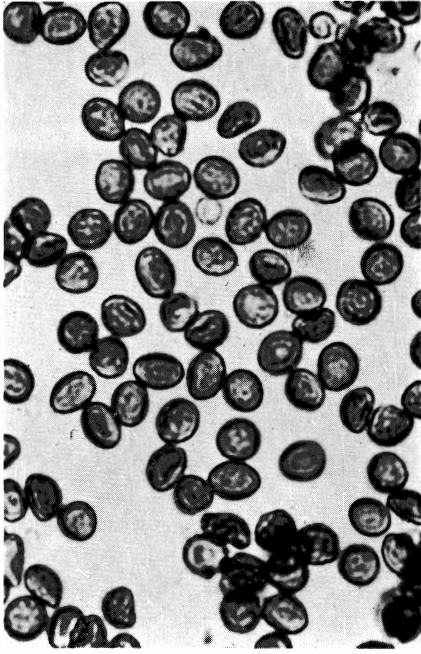


Fig. 1

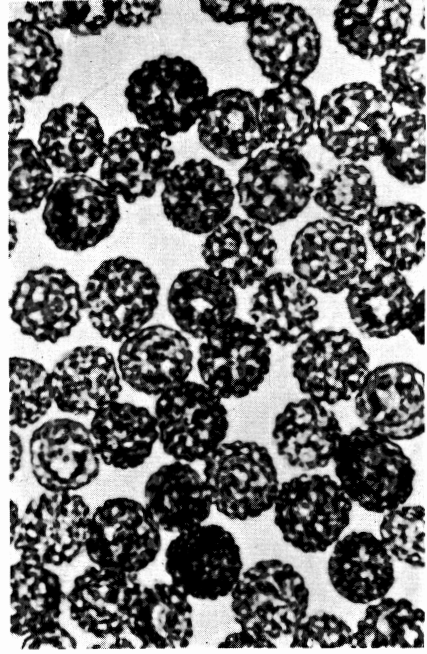


Fig. 2

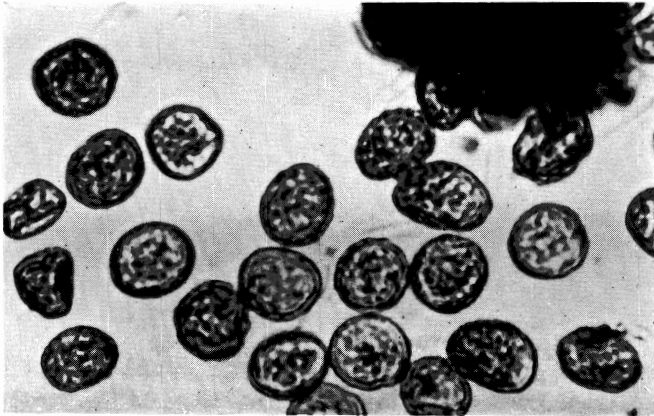


Fig. 3