

## BRANCH V.—Spermatophyta.

True seed plants.

Sexual generation very subordinate, in the Dicotyledons becoming almost completely suppressed with respect to the general structure.

NOTES.

### XVI.—GYMOSPERMÆ.

Carpels open, seeds naked.

### XVII.—ANGIOSPERMÆ.

Carpels forming closed seed vessels.

Heterosporous; prothalli two  $\times$  7.

Heterosporous, the rudimentary prothalli often wanting.

Orders.

1. Cycadaceæ.
2. Conifera.
3. Taxaceæ.
4. Gnetaeaceæ.

Orders numerous.

Order: numerous.

Asexual propagation subordinate, rarely wholly replacing the sexual; varied, by means of runners, stolons, offsets, bulbs, suckers, tubers, and rarely by parthenogenesis.

Asexual propagation subordinate; sometimes by tubers.

1. Prothallus rudimentary.
2. Antheridium rudimentary. (Pollen tube.)
3. Spermatozooids none. (Protoplasm of the antheridium.)

1. Prothallus not developed.
2. Antheridium rudimentary. (Pollen tube.)
3. Spermatozooids none. (Protoplasm of the antheridium.)

1. Prothallus not developed.
2. Antheridium rudimentary. (Pollen tube.)
3. Spermatozooids none. (Protoplasm of the antheridium.)

- I. Prothallus (endosperm), formed before impregnation; parasitic upon the asexual generation. (Seeds albuminous.)
- II. Archegonium well formed.
- III. Oosphere (Ovum.)

- I. Prothallus (endosperm), formed only after impregnation of the ovum; parasitic upon the asexual generation. (Seeds albuminous.)
- II. Archegonium not formed.
- III. Oosphere (Ovum.) Germ cell.)

- I. Prothallus (endosperm) formed only after impregnation of the ovum, generally obliterated. (Seeds exalbuminous.)
- II. Archegonium not formed.
- III. Oosphere (Ovum or Germ cell.)

1. Oospore.
5. Suspensor.
6. Embryo with 2 to several cotyledons.
7. Normal plant.
8. Anthophylla.
9. Microsporangia (Anthers.)
10. Microspores (Pollen.)

1. Oospore.
5. Suspensor.
6. Embryo with one cotyledon.
7. Normal plant.
8. Stamens.
9. Microsporangia (Anthers.)
10. Microspores. (Pollen.)

4. Oospore.
5. Suspensor.
6. Embryo with two cotyledons.
7. Normal plant.
8. Stamens.
9. Microsporangia (Anthers.)
10. Microspores. (Pollen.)

- IV. Oospore.
- V. Suspensor.
- VI. Embryo with 2 to several cotyledons.
- VII. Normal plant.
- VIII. Carpophyllum.
- IX. Macrosporangia (Ovules.)
- X. Macrospore (Embryo sac.)

- IV. Oospore.
- V. Suspensor.
- VI. Embryo with one cotyledon.
- VII. Normal plant.
- VIII. Pistil.
- IX. Macrosporangia (Ovules.)
- X. Macrospore (Embryo sac.)

- IV. Oospore.
- V. Suspensor.
- VI. Embryo with two cotyledons.
- VII. Normal plant.
- VIII. Pistil.
- IX. Macrosporangia (Ovules.)
- X. Macrospore (Embryo sac.)