

# STAGES, AGE, MEASUREMENTS, GROWTH, AND EXTERNAL FORM INCLUDING THE FACE

*A*ge and measurements are basic to the study of growth, both prenatal and postnatal. In the embryonic period, an additional aid, namely, developmental staging, provides a more precise means of assessing morphological progress.

## EMBRYONIC AND FETAL PERIODS

Prenatal life is conveniently divided into two phases: the embryonic and the fetal. The distinction is based mainly on the following considerations.

1. The terms embryo (of ancient Greek origin) and fetus (Latin, dating from the seventh century and sometimes incorrectly written foetus) have gradually become distinguished, and it is now accepted that the word embryo, as currently used in human embryology, means "an unborn human in the first 8 weeks" from fertilization (COD). Embryonic life begins with the formation of a new embryonic genome (slightly prior to its activation).

2. The embryonic period is that during which new features appear with great rapidity, whereas the fetal period is characterized more by the elaboration of existing structures. It has been estimated that more than 90% of the more than 4500 named structures of the adult body become apparent during the embryonic period (O'Rahilly).

3. The embryonic period is that which has been successfully subdivided into 23 developmental (Carne-

gie) stages (by Streeter and by O'Rahilly), whereas the fetal period, because of less striking developmental changes, has so far proved to be resistant to a morphologically based staging system.

4. The embryonic period occupies the first 8 post-fertilizational or postovulatory weeks (i.e., timed from the last ovulation), at the end of which time the human organism measures approximately 30 mm in length. This length and age correspond, as confirmed by ultrasonography *in vivo*. It is remarkable that an embryo less than half the length of an adult thumb already possesses several thousand named structures (Fig. 18-27).

5. The vast majority of congenital anomalies appear during the embryonic period.

The term **conceptus** (Fig. 3-1B) (**conceptuses** is the plural\*) is used for the whole product following as a result of fertilization, throughout prenatal life, i.e., the embryo or fetus as well as the developmental adnexa (extra-embryonic membranes), such as the placenta and umbilical cord. The strictly embryonic or fetal component, throughout prenatal life but without the developmental adnexa, is termed the **cyema**.† The strictly embryonic cells are distinguishable at about 4–5 days as the embryonic disc.

\**Conceptus* belongs to the same declension as *fetus* and *abortus*. In Latin the plural forms are *conceptus*, *fetus*, and *abortus*. In English the usual plurals are *conceptuses*, *fetuses*, and *abortuses*.

†This useful term (plural *cyemata*), suggested by Prof. Adolph H. Schultz, was adopted by Mall and Meyer in 1921.