

absolute magnitude $+2.0$ might be considered, therefore, as a factor in favour of the fission theory. This would not, of course, explain the existence of spectroscopic binaries, the combined mass of which is greater than twice that of the sun.

There is no *a priori* reason, however, why the process might not be reversed in direction, that is, coalition of a close spectroscopic pair into a rapidly rotating single star of mass 2. The mean combined mass of spectroscopic binaries of spectral class *F* is somewhat greater than twice the sun's mass. Many of the *n* stars, however, are known to be members of binary systems.

There is, further, no *a priori* reason for excluding the possibility that in some way angular momentum is lost directly by radiation. If so, however, it would seem more natural for the dissipation to occur gradually and continuously, rather than having a very marked peak at a mean stellar mass of slightly less than twice the mass of the sun.

Regardless of whatever theory is advanced, the observational fact remains that stars exhibiting the *n* characteristic occur only in the early spectral classes, do not diminish in number gradually as the later spectral types are approached, but fall off abruptly at about *F5*, and those of classes *A* and *F* (and possibly those of classes *B* and *O* also) seem to exhibit a strong preference for absolute magnitude of about 2, and thus presumably for mass of about twice that of the sun.

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¹ *Astrophys. J.*, **82**, 338 (1935); **79**, 357 (1934); additional material in press.

² *Astrophys. J.*, **72**, 1 (1930).

Photographic Observations of the Planet Pluto

I HAVE found and measured the planet Pluto on four plates (Superguill) taken at the Cracow Observatory on November 4 and 5, 1935, by K. Steins, using two $4\frac{1}{2}$ -in., *f*/5, twin Zeiss cameras, the duration of the exposures being two hours. The correction of the Ephemeris ("Berl. Jahrbuch", 1935) is found to be $\Delta\alpha = +0.06^s$, $\Delta\delta = +1.2''$.

The planet Pluto, being photographically of $15\frac{1}{2}$ magnitude, about 6,300 times fainter than the faintest stars ordinarily visible to the naked eye, has only been observed hitherto, so far as I know, with telescopes having apertures considerably greater than mine. It appears, however, that the remotest great planet is accessible even to small instruments, provided that they are of excellent quality and that a fast modern plate is used.

Pluto is seen distinctly on the Cracow photographs, which show stars down to the seventeenth magnitude. It was promptly detected, by its proper motion between the stars, with a blink-comparator, recently constructed by the Polish National Astronomical Institute.

Full details on the above observations and the method of their reduction will be published shortly in the *Bulletin International de l'Acad. Polonaise d. Sciences*.

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¹ *Publ. Astron. Soc. Pac.*, **46**, 218 (1934).

Length of Gestation Period and Menstrual Cycle in the Chimpanzee

THIS note should have been written a year ago, but during the preceding two years I was working at the Anthropoid Experiment Station of Yale University, in Orange Park, Florida, U.S.A., in a rather isolated place without adequate library facilities, and therefore had no opportunity to read Dr. R. C. Clarke's notes on the birth of a chimpanzee¹, in which he states: "Although the preconceived idea is that the period of gestation [in the chimpanzee] is nine months I cannot help feeling that it is five months, at any rate all the evidence points to it in this case" (1, p. 732). Dr. Clarke does not give either the menstrual history of his female preceding the time (December 1, 1933) when she was "properly served" or the date of the infant's birth. On the basis of information given in the article by J. M. Wyatt and G. M. Vevers² and the time of acceptance of Dr. Clarke's publication one can surmise that the infant was born in the first half of May, 1934. The parents of the infant had lived together for a period prior to the first observation of proper mating, during which time there was a "certain amount of sexual play". Because of this fact there is a possibility that the date of conception assumed by Dr. Clarke is not correct. The female may have been fertilised during one of sexual play. The December swelling and acceptance of the male do not preclude this possibility, for there are records proving that chimpanzee females may have swellings of the sex skin and be receptive during the gestation period⁴.

I agree with Dr. Clarke that the prevailing notion of the nine month gestation period for chimpanzees does not seem to be correct. A year ago I analysed data kept on record at the Yale Anthropoid Experiment Station and found that the average gestation period in the chimpanzee is no longer than $8\frac{1}{2}$ lunar months. The attention of Dr. R. M. Yerkes, the Director of the Station, and of Dr. S. Zuckerman was directed to the fact. Later, Dr. Zuckerman incorporated some of the data into one of his articles³. Still later, Dr. A. H. Schultz and F. F. Snyder brought together⁴ most of the data published by different workers. Unfortunately, in their article there are slight errors. They use data for one animal twice, make a mistake of ten days in another case, and of two days in still another.

The lengths of gestation periods (menstrual ages in days) of the cases considered here are: 264, 263, 233, 242, 232, 278, 251, 256, 237, 264, 263. The average of these eleven cases is 253 days.

Out of the available data on menstrual cycles I selected 50 cycles of 7 females, discarding those that were displayed after abortions and lactating periods, and those of young females, just becoming sexually mature. On the basis of these selected fifty cycles a composite curve was built, which shows that on the average the length of the normal menstrual cycle is 35.5 days. Bleeding lasts for 3 days, the sex skin being at rest. Enlargement of the sex skin begins on the 10th day of the cycle, reaches its maximum on the 17th day and persists until the 28th day, when it begins to decrease. The swelling decreases more rapidly than it is formed and by the 33rd day the sex skin is at rest. The day of the onset of menstruation is counted as the first day.

It is usually considered that ovulation in women takes place in the middle of the menstrual cycle around the fourteenth day. Hartman⁵ (Fig. 6) find