compared with those of the same female when fertilized immediately." A footnote from this passage gives the numbers of males and females from over-ripe eggs in one experiment as 13 males and 673 females; a reference to Hertwig's paper shows that the condition is exactly the reverse of that quoted, namely, over-ripe eggs give rise to this large excess of *males*.

In places there is a good deal of repetition which is probably unavoidable, owing to the method of treatment; for example, portions of the general history in the introduction are repeated in the special chapters. Several of the chapters show that they have grown by accretion rather than by intussusception, owing probably to the fact that new work had to be added to chapters already written. The terminology of cytology is relatively unfamiliar and complicated and it ought to be simplified as far as possible; it is unfortunate that in this standard work all superfluous synonyms were not suppressed and a single uniform system of terms adopted throughout the text. For example, about five hundred cytological terms are listed in the glossary, of which at least one hundred are synonyms and probably another hundred are of no real service. The invention of new names in cytology is akin to the introduction of new specific names in taxonomy; it is an easy road to immortality,—if they stand. In a great work such as this it is highly desirable that synonyms and superfluous terms should be defined and authority for them cited in the historical sections and in the glossary, as has been done in this case, but elsewhere they should be excluded from the text, for they serve only to complicate and confuse.

There is a peculiar charm in all Professor Wilson's writing, which is especially noticeable in the more general and theoretical portions of this book; this is in part due to excellent diction and style, but chiefly to an artistic quality that can best be described as stimulating to the scientific imagination. Of the many excellences of the book, perhaps the most notable are its breadth of view, judicial temper and eclectic spirit. The views of different authors are presented fairly and judged impartially, and where evidence is conflicting conclusions are stated with scientific caution. Even in matters where Professor Wilson's own investigations have been most unambiguous, as, for example, on the determination of sex, he does not attempt to force all cases into a single mould. His is not "a single-track mind," but rather one of many tracks not always parallel, but all of which lead to certain general termini. Furthermore, he nowhere leaves the impression that final solutions of any problem have been found; even the most satisfactory solutions are incomplete and tentative, and back of the known is an infinity of the unknown.

In my review of the second edition of "The Cell" I called attention to the fact that the book-mark on the cover of the first edition had been changed from a mitotic figure in the metaphase to one in the anaphase, and expressed the hope that we might see "still other editions, telophases and yet other cycles of development in the future." This is the telophase of Wilson's "Cell"; if there should ever be another edition it is safe to predict that it will have divided into two. Probably no singe book can ever again deal so comprehensively and judicially with the whole field of cytology. Few other workers are left who were in at the birth of this science and who can speak of its development with the knowledge that comes from intimate contact with persons and problems. It is a monumental work, one of the most complete and perfect that American science has produced in any field, and biologists throughout the world will unite in extending thanks and congratulations to its author on the successful completion of a great work which will always stand as a golden milestone on the highway of biological progress.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

COMPENSATING THE UNEMPLOYED EYE IN MONOCULAR INSTRUMENTS

WHEN using a hand-lens, an ordinary single-tube microscope, or any other optical instrument made for one eye, three points at least may be considered with regard to balancing the two eyes: (1) The intensity and angle of the light passing through the two pupils may be made roughly equal, so that the two irises may not tend to be in conflict with regard to contraction or expansion; (2) an arrangement may be made to facilitate the axes of the two eyes converging to the same point, this point is best, in many or most cases, if situated at an indefinite distance; (3) the accommodation of the two eyes, which is more or less linked with their convergence, may be kept approximately the same.

The beginner with the microscope, as every one knows, has troubles because the unoccupied eye persists in seeing. If an opaque shade is placed in front of it, or if it is closed, matters are not better. The well-known rule is to keep the unemployed eye open, and to gradually learn to neglect everything it sees. More or less temporary diplopia often results. Also, in the course of years, the unemployed eye commonly sees less and less, and may in time

become partially blind. The remedy is to change the eye at the tube; but this change is rarely made, because of initial difficulties.

If a translucent, but not transparent, screen is placed over the unemployed eye, and the requisite time allowed to get used to it, the following advantages may result: (1) The intensities of the light reaching the two eyes may be roughly balanced by putting a sheet of white paper on the table under the unemployed eye; (2) there is nothing to lead the unemployed eye astray, and prevent it from converging with the other, or to keep their axes from being parallel; (3) the accommodation of the two eyes can change together, since the translucent screen prevents the unemployed eye from fixing on near objects; (4) if it is desired to change the observing eye, the screen may be arranged so that there is a constant reminder as to which eye is to be used. After observing with the right eye for years, it is possible to change to the left eye in a month or two, so that this eye gives images good enough for routine work.

At slight expense one can prepare a screen which affords, after a few weeks of practice, much of the comfort of the binocular, while retaining the simplicity of the monocular. In some of the periscopes used in the late war it was found advantageous to use a blank eyepiece for the unoccupied eye. This gives fair results with the monocular microscope, but it is needlessly elaborate. In half an hour a frame can be cut out of sheet aluminum, with a circular aperture into which the eyepiece of the monocular fits snugly, while a disc of ordinary paraffin waxed paper covers the other circular aperture at the right interocular distance. The upper surface of the metal can be blackened, or a sheet of dark cardboard cemented to it. If an extension is left to serve as a handle, a meniscus, deep sphere, achromatic meniscus, Verant or Steinheil triple lens can be fastened in one aperture, while the other is shielded by the translucent screen. This gives, after practice, an increase of comfort in the use of a hand-lens or reading glass. If such a frame is fitted to a monocular prism field-glass, it gives a sense of ease. Finely ground glass may replace the waxed paper.

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SPECIAL ARTICLES

DISEASES OF THE RUFFED GROUSE

SPORTSMEN and bird students are taking an ever-increasing interest in the conservation of our game birds. They have accomplished much through the passage and strict observance of good game laws and have replenished areas which have been depleted of game by numerous introductions of new stock. Until recently however sportsmen have not coordinated their efforts in conservation with a definite plan of ornithological investigation. A comprehensive study of the ruffed grouse has now been undertaken. The problem is not a simple one and there is needed the cooperation of every one who is interested in the welfare and the future of the grouse. It is probable that disease may kill as many or more birds than do the guns of all the sportsmen in the country, but we can not hope to combat disease until we know more about it and its intricate relations in the life of the birds. During the course of life history studies now being made at Bowdoin College, Brunswick, Maine, and work conducted in southeastern New York during 1924 for the Roosevelt Wild Life Forest Experiment Station of Syracuse, certain diseases of the ruffed grouse have come to my attention. It seems desirable to make a preliminary report of the diseases found, at this time, as they probably have an important bearing on the sudden fluctuations in the numbers of the ruffed grouse. The author also hopes that this report may stimulate the desire of all persons interested to examine birds found dead and all birds killed which present symptoms of disease.

Thus far I have received eighteen birds in the flesh, two from New York, five from Connecticut, one from Rhode Island, two from Massachusetts and eight from Maine. Of these eighteen birds eight were killed and ten were found dead; of the latter, three had met death by violent plunges into buildings and one by flying into telephone wires. Two of the birds found dead died as the result of injuries received in some unknown way and seemed to be normal as far as the presence of any disease was concerned. None of the ten birds found dead had been shot.

The cases of parasites and diseases among the eighteen birds are: *Dispharynx* seven, *Ascaridia* two, pulmonary mycosis two, tuberculosis three and one bird died apparently from the results of a large abnormal growth dorsal to the abdominal viscera. The 44 stomachs examined were free from parasites. Following is a brief statement of the diseases.

DISPHARYNX (DISPHARAGUS; ACUARIA)

Dispharynx is a parasitic nematode worm which usually becomes established in the proventriculus, a glandular swelling at the base of the gullet, and in later stages spreads to the muscular walls of the stomach. The names *Dispharagus* and *Acuaria* have been used by various writers to designate this para-