stopped, there is no prolonged afterdischarge. Reflecting the radiant beam off a front-surfaced mirror and then into the pits does not reduce its effectiveness. On the other hand, if the radiation is filtered through water, the frequency of discharge is decreased (Fig. 3C), an indication that the infrared absorbed by the water is an important component in the action spectrum.

If the balance of radiation is outgoing, the effect is reversed, and the frequency is reduced. This may be demonstrated by placing a relatively cold object some distance in front of the pits. For this purpose, we used a Frigistor thermoelectric cooling element with a surface area of 5.8 cm^2 which was well below 0°C (probably nearer −30°C). At a distance of 5 cm from the pits, this heat sink was very effective in completely inhibiting the background discharge (Fig. 3D).

These data suggest that the pits are radiant energy detectors, although the limits of the stimulus parameters have not yet been measured; we must establish the threshold to a stimulus, spectral sensitivity of the receptors, and the angle of reception of a single pit. Also, the transducing mechanism is not known, and because the morphology of the nerve endings in the pits of pythons contrasts sharply with those in the crotalid pit membrane, the mechanism may differ in the two groups.

Because the pits in pythons have a wider distribution on the face and subtend a greater angle, these snakes may detect radiation sources from a larger arc of the environment than crotalid snakes do. To what degree the snakes use such information in avoiding predation or in capturing prey will only be discovered by controlled behavioral experiments.

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Premature Citations and Zoological Nomenclature

It is frequently necessary to refer to data that are in the process of being published elsewhere or in reports that may never be published. This practice is potentially confusing when the subject deals with zoological names. Premature publication of zoological names adds to the confusion and difficulty of the bookkeeping imposed by the International Code of Zoological Nomenclature. The object of the Code is to promote stability in the scientific names of animals by means of a set of rules and recommendations. However, there is no mechanism to enforce adherence to the Code among zoologists.

To be accepted by the community of zoologists, the scientific name of an organism has to be published, as defined in the Code (Articles 8 and 9) and also it must satisfy Articles 12, 16, or 13 (*1*). Published names which fail to meet these conditions are *nomina nuda* and have no standing in nomenclature. Names prematurely cited in papers that happen to be published before the primary paper may meet the conditions of publication. This publication is then the official establishment of the scientific name.

The date that appears on a report may not necessarily be the correct date for purposes of nomenclature, and Article 21 provides guidelines for the determination of publication dates. For purposes of priority a new name takes the year, month, and day on which the report became available to the public, and the date on which the publication is mailed is considered to be the official date of publication. For example, one of my papers is dated 1960, but was released on 24 February 1961, and a second paper dated 1961 was released on 22 March 1962 (*2*). The new names in those publications date from 1961 and 1962, respectively. Swain described, illustrated, and discussed eight species, one genus, and one family which he credited to Kraft, 1962, citing in the synonymies Kraft's page and figure numbers for each taxon. Swain's paper (*3*), dated July 1962, was mailed on 16 July 1962, while Kraft's paper (*4*) was first mailed in September 1962. All these names take their date of publication as 16 July 1962 and should be credited to Swain.

Dadlez and Kopik (*5*) cited and illustrated a Triassic species *Notocythere media excelsa* Will, 1953. The synonymy cited page and figure references in Will, 1953, which is an unpublished dissertation on Keuper ostracodes from northwest Germany in the University of Tübingen, whereas Dadlez and Kopik illustrated a Rhaetian specimen from a well in western Poland. The above taxon was illustrated for the first time but not described by Dadlez and Kopik. The genus, species, and subspecies are *nomina nuda* because their publication does not meet the requirements of Article 13 of the Code, and the genus does not enter into homonymy with *Notocythere* Hart and Hart, 1967 (Article 54) (*6*). Furthermore, Dadlez and Kopik also created the *nomen nudum* of the nonexisting nominate subspecies *media media* (Article 47, 61a).

The present ease of duplication and distribution of unpublished typescripts has increased similar cases. One of my papers that was submitted for publication in 1965 and is still in press was cited in a publication in 1966 (*7*).

The use of "in litt." to identify the authors of taxa in unpublished reports and in reports "in press" is a common practice that causes nomenclatural snarls. Egorov (*8*) described the new genus *Mossolovella* and designated *M. incognita* (Glebovskaja and Zaspelova in litt.) as the type species, for which he published a description and illustration for the first time. The parentheses around the authors' names indicate that *incognita* was transferred from a different genus (Article 51d). Because "in litt." indicates that *incognita* was a manuscript name, the taxon should be cited as *M. incognita* Egorov, 1953.

Polenova (*9*) had access to Egorov's report prior to its publication as well as to the unpublished report by Glebovskaja and Zaspelova. She described the Late Devonian genus *Ellesmerina* which she credited to "Glebovskaja et Zaspelova, in litt." and cited without description or illustration *Ellesmerina incognita* Gleb. et Zasp. in litt. as the type species. In the generic discussion she noted that Egorov erroneously decided that Glebovskaja and Zaspelova referred the species *incognita* to *Ellesmeria* Tolmachoff, 1926, and consequently transferred the species to his new genus *Mossolovella* Egorov, in litt. Polenova then proceeded to describe and illustrate only one species as *Ellesmerina philippovae* Egorov in litt.

There are two ways of interpreting this case: (i) *Ellesmerina* Polenova, 1953 is a monotypic genus with the type species *E. philippovae* Polenova, 1953 (Article 68c) because *Ellesmerina incognita* Glebovskaja and Zaspelova in Polenova, 1953 is a *nomen nudum,* or (ii) *Ellesmerina* and *Mossolovella* are objective synonyms because they have the same type species (Article 61b).

Shaver (*10*, p. Q386) arrived at the second interpretation and indicated that they are objective synonyms. He assumed that Egorov's statement in the discussion of *Mossolovella* (*8*, p. 46), "The genotype of the new genus . . . was mistakenly assigned by E. M. Glebovskaja, and later by E. M. Glebovskaja and V. S. Zaspelova (1948) to *Ellesmeria* Tolmachoff . . . ," indicated a publication not available in the United States. On this basis he recognized *Ellesmerina* Glebovskaja and Zaspelova in Glebovskaja, 1948, and relegated *Mossolovella* Egorov, 1953 to objective synonymy.

Zanina and Polenova (*11*, p. 342, Fig. 874) considered *Ellesmerina* Zaspelova, 1953 as a junior synonym of *Mossolovella* Egorov, 1953, and illustrated *M. philippovae* Egorov, 1953. They, however, erred in citing the type species as *M. incognita* (Glebovskaja and Zaspelova, 1953), and also in crediting *Ellesmerina* to Zaspelova. The type species of *Mossolovella* is by original designation *M. incognita* Egorov, 1953; Zaspelova, 1953 (*12*) to whom they referred (*11*, p. 414) recorded without describing or illustrating *Ellesmerina incognita* Gleb. et Zasp., by definition a *nomen nudum.*

According to the Code, *Mossolovella* Egorov, 1953 (type species by original designation *M. incognita* Egorov, 1953) and *Ellesmerina* Polenova, 1953 (type species by monotypy *E. philippovae* Polenova, 1953) are objective synonyms. The valid name of the taxon is the oldest available name applied to it (Article 23). Because both reports are dated 1953, it is necessary to determine from the records of the publishing houses which paper was published first, in order correctly to record this taxon.

The above examples should convince researchers that premature citation of zoological names and the use of names in unpublished reports serve only to confuse zoological nomenclature.

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Cysteamine: Differential X-ray Protective Effect on Chinese Hamster Cells During the Cell Cycle

Abstract. *Cysteamine present during x-irradiation protects synchronized Chinese hamster cells in culture against lethal damage at all stages of the cell cycle. The effect is greatest for cells irradiated at sensitive stages such as* G_1 *and least for resistant cells; for example, late S (dose-modifying factors 4.2 and 2.7, respectively). The effect of 50 millimolar cysteamine is to render almost invariant the normally variant x-ray age response for lethality. This suggests that there are two components of x-ray damage, only one of which is age dependent, and it is against this component that cysteamine protects the cell. Cystamine, however, has no protective effect upon these cells at any stage of the cell cycle.*

Cysteamine (2-mercaptoethylamine) protects mammalian systems in vivo (*1*) and in vitro (*2*) against the lethal effects of x-radiation. Cysteamine has also been shown recently to exert a differential action on the length of division delay following x-irradiation at different parts of the cycle (*3*). While the mechanism of protective action is still in doubt (*1, 2, 4*), it may be related to effects of the compound upon cellular constituents the concentrations of which may vary throughout the generation cycle of mammalian cells. Support for this possibility comes from studies by Sakai and Dan (*5*) which show variations in the amount of sulfhydryl per protein nitrogen during the cell cycle of sea urchin eggs and tetrahymena. Experiments with cysteamine on cells irradiated at different stages of the cell cycle may cast some light not only on the action of the agent but also, perhaps more importantly, on our understanding of the variation of x-ray response through the mammalian cell cycle (*6*).

Synchronous cells of a Chinese hamster subline V79-S171 obtained by selection for dividing cells (*6*) were inoculated onto plastic petri dishes containing EM-15 medium (*7*). Cell cultures were then incubated at 37°C in a humid atmosphere of 2 percent CO_2 and air. Synchronous cells progress through G_1 in 2 to 2½ hours, S in 6 to 7 hours, and G_2 in about 1½ hours, and mitosis lasts about ¾ hour, the population desynchronizing with time. Cultures were irradiated with 250-kv (peak) x-rays (half-value-layer 0.9 mm Cu, exposure rate 105 r/min, absorbed dose 0.945 rad/r) at room temperature. Freshly dissolved cysteamine (*8*) was added to the medium of treated cultures to yield the desired concentration immediately prior to irradiation. These cultures were rinsed and fresh medium was added immediately after irradiation. Unirradiated cultures were divided into two groups, one untreated and the other receiving cysteamine to determine its toxicity. All cultures were handled ex-