erence in the *Zoological Record* under the "Titles."

Such a procedure would eliminate the question of the date of publication serving as a source of future trouble. That the publication date is still a source of confusion is illustrated by the fact that Sabrosky (*6*) found it necessary to publish a note regarding the date of "publication" of an article distributed as late as 1948.

It also appears desirable to provide for continuing international support (perhaps through Unesco or some similar means) for the *Zoological Record* and to insure sufficient funds so that an adequate staff may be maintained to produce a new volume within the year following that with which the volume deals.

It would be the authors' suggestion that the plenary powers of the International Commission be terminated at the point where the names and dates are first validated in the *Zoological Record*; i.e., that the plenary powers not extend to names to be published in the future and that a date be set at which the application of the law of priority becomes rigid.

Since it is only through stabilization of the International Code and the procedures to be followed that nomenclature can be placed on a sound basis, the suggestions given are presented as a constructive criticism rather than from any derogatory motives. The authors would welcome both private communications and published discussions of the ideas herein submitted.

References

1. Hemming, F. *Bull. Zool. Nomenclature*, **1**, (7), 119 (1945).
2. Gahan, A. B. *Proc. U. S. Natl. Museum*, **49**, (2095), 65 (1915).
3. Hincks, W. D. *Entomologist*, **76**, 223 (1943).
4. Gahan, A. B. *Proc. U. S. Natl. Museum*, **53**, (2197), 196 (1917).
5. Schmidt, E. *Entomol. News*, **49**, (8), 197 (1948); Longfield, C., *et al.* **50**, (6), 145 (1949).
6. Sabrosky, C. W. *Proc. Entomol. Soc. Wash.*, **52**, (6), 315 (1950).

Ultraviolet Absorption Spectra of Proteins

A. R. Goldfarb and L. J. Saidel

Department of Biochemistry, Chicago Medical School, Chicago, Illinois

Studies of the absorption spectra of proteins in the ultraviolet have led to the demonstration of bands associated with tyrosine, tryptophan, and phenylalanine (at about 280 mμ). In view of the results of the studies on fatty acids (*1, 2*), it seemed that in the region of 180–200 mμ a band might be present that would be representative of the peptide bonds. Through the courtesy of J. R. Platt we were able to confirm this conjecture by the finding that bovine serum albumin had a rather broad band with a maximum at about 190 mμ. To confirm that this band was also typical of simple peptides, glycylglycine and triglycine were also studied and gave the curves shown in Fig. 1. The complete quantitative data for bovine albumin are not available at this time, and this curve is not included, although a rapid analysis of the plates led to the above observation of a maximum.

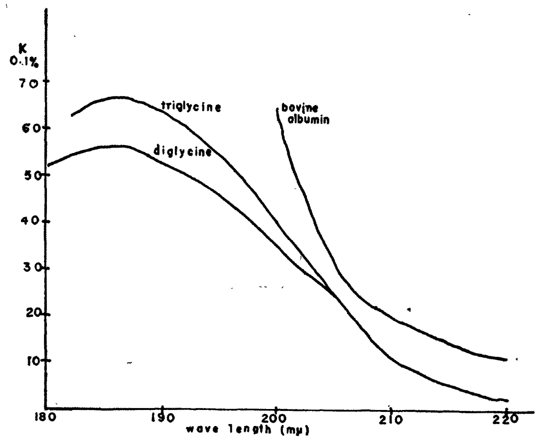

Fig. 1. Absorption spectra of bovine plasma albumin, diglycine, and triglycine.

A study of Ley and Arends' (*1*) data, as well as our own, on amino acids showed that near and above 205 mμ—i.e., on the shoulder of the curves—the absorptions of amino acids are of a much lower order of magnitude than the values for proteins and peptides. At lower wavelengths the absorption of the amino acids rises very rapidly, and near the maxima for peptides and bovine albumin amino acid absorption approximates, and is higher than, the absorption of peptide and protein. Since it is believed that the side chains of the constituent amino acids would make a definite contribution and corrections would be necessary, it was decided to obtain data for proteins for the region sufficiently high on the band and at the same time at wavelengths at which the amino acids absorb slightly. This region lies above 200 mμ.

The specific extinctions of several proteins and peptides were determined at 205 mμ. The specific extinction was multiplied by the molecular weights and divided by the number of peptide bonds (*3*). This gave a series of peptide extinctions (Table 1).

TABLE 1

Peptide Extinction for Proteins and Amino Acids

Compound	Peptide extinction (205 mμ)
Bovine albumin	2,580
Egg albumin	2,785
Gelatin	3,050
Glycylglycine	3,300
Triglycine	2,340

The agreement between the various proteins is fairly good, and all the values fall within the order of magnitude of each other. The values for the proteins are not considered rigidly assigned values for a peptide bond but rather as a statistically averaged value of the individual peptide bonds. This is confirmed by a series of studies (*4*) of simple di- and tripeptides in which it was observed that the peptide absorption depends not only on the constituent amino acids but also on the order of arrangement. The variations, however, always remain within the order of magnitude of the values given above. It is concluded from these findings, as well as from studies on other proteins, that peptide bonds show a band with a maximum near 185 mμ and that data collected at 205 mμ mirror this band. The details of this study will be reported elsewhere.

References

1. Ley, H., and Arends, B. *Z. physik. Chem.*, **B17**, 177 (1932).
2. Rusoff, I. I., Platt, J. R., and Burr, G. O. *J. Am. Chem. Soc.*, **67**, 673 (1945).
3. Brand, E. *Ann. N. Y. Acad. Sci.*, **47**, 187 (1946).
4. Saidel, L. J., and Goldfarb, A. R. *Federation Proc.*, **10**, 241 (1951).

The Value of Small Lead Shields against the Injurious Effect of Total-Body Irradiation[1]

J. Gershon-Cohen, M. B. Hermel, and J. Q. Griffith, Jr.

Jewish Hospital, Philadelphia, Pennsylvania

Irradiation through small portals has long been recognized by radiologists to suppress hemopoiesis only slightly. Jacobson *et al.* (*1*), by a reverse approach, recently have shown that the lethal effects of total irradiation can be reduced by shielding the spleen alone. This report concerns the protection from lethal effects of whole-body irradiation afforded by lead shielding of other small body segments.

TABLE 1

SURVIVAL RATES

	Irradiation	No. rats	No. survivals	Percentage
Group I	None	20	20	100
Group II	Whole body	20	8	40
Group III	Liver shielded	12	10	83
Group IV	Right lung shielded	9	7	78
Group V	Right lower abdomen shielded	9	6	67

TABLE 3

HEMOGLOBIN (g/100 ml)

	Area shielded	Before treatment	24 hr	48 hr	72 hr	10 days	20 days	30 days
Group I	Controls	14.3	14.0	14.4	13.9	14.0	14.4	14.7
Group II	None	14.7	14.2	13.8	13.5	11.7	12.8	14.4
Group III	Liver	13.9	14.3	13.9	13.7	12.4	12.5	14.0
Group IV	Right lung	13.7	13.9	14.5	14.1	13.3	13.1	13.2
Group V	Right lower abdomen	14.0	14.1	14.4	14.5	13.2	14.0	14.2

Young white rats weighing approximately 200 g were divided into five groups. Group I comprised 20 rats receiving no treatment. Group II comprised 20 rats which received 600 r total-body irradiation. In Group III were 12 rats exposed to 600 r total-body irradiation except over the liver, which was shielded by a lead plate $\frac{1}{8}$ in. thick, measuring approximately 2.5×4.0 cm, put in place by fluoroscopic control. In Group IV were 9 rats treated like those in Group III except that the rectangular lead shield was placed over the right lung. In Group V were 9 rats, also treated like those in Group III except that the lead shield was placed over the right lower abdomen.

The rats were confined to close-fitting compartments in a wooden frame without anesthesia during irradiation. The x-ray factors were 200 kv; 25 ma; 50-cm distance; 0.5 mm Cu and 1.0 mm Al filter; HVL equivalent to 1.1 mm of Cu.

The survival time, the weights, and blood counts of all animals were recorded daily for the first 3 days, then every tenth day thereafter until the end of 30 days.

All the untreated animals in Group I survived, gained weight normally, and showed no disturbance in their blood counts.

The survival rates of all the partially shielded rats were higher than those exposed to whole-body irradiation. Of 20 rats in Group II which received whole-body irradiation, 8 survived. There were 10 survivals of the 12 rats protected over the liver in Group III, 7 survivals of 9 rats protected over the right lung in Group IV, and 6 survivals of 9 rats protected over the right lower abdomen in Group V. These results

TABLE 2

WEIGHTS (IN GRAMS)

	Area shielded	Before treatment	24 hr	48 hr	72 hr	10 days	20 days	30 days
Group I	Controls	197	196	197	196	203	208	204
Group II	No shield	214	212	203	197	194	198	215
Group III	Liver	204	203	202	200	208	206	206
Group IV	Right lung	200	199	199	198	197	203	198
Group V	Right lower abdomen	195	195	194	195	194	189	195

[1] This investigation was supported by a grant from the Louis Sitnek Fund of the Eagleville Sanatorium, Eagleville, Pa.