

the yeast contained N^{15} . The biologically marked PNA was isolated from the yeast according to the method of Hammarsten ⁴. Cytidine and uridine were prepared from the PNA according to the method of Reichard ⁵. The N^{15} -nucleosides after some dilution with non isotopic material were injected into rats at a level of 80 mg per kilo of body weight per day for 3 days. After that time the rats were killed, the polynucleotides from the pooled internal organs prepared and separated ⁴, the ribonucleosides isolated ⁵ from the PNA and analyzed for N^{15} . The results may be seen from Table 1.

Obviously the injected cytidine-N enters the PNA in a comparatively low dilution while uridine is active to a much lesser degree. The injected cytidine is not only a precursor for the cytidine of the PNA but also for uridine. A detailed report will be published later.

Table 1.

Nucleoside injected	Cytidine injection		Uridine injection	
	Atom % excess N^{15}	Calc. on basis of 100 % N^{15} in cytidine injected	Atom % excess N^{15}	Calc. on basis of 100 % N^{15} in uridine injected
Nucleoside injected	6.43		11.20	
<i>Isolated:</i>				
Mixed polynucleotides	0.102	1.59	0.024	0.21
Uridine	0.385	5.99	0.047	0.42
Cytidine	0.463	7.20	0.053	0.47
Protein	0.006	0.1	0.012	0.1

1. Plentl, A. A., and Schoenheimer, R. *J. Biol. Chem.* **153** (1944) 203.
2. Bendich, A., Getler, H., and Brown, G. B. *J. Biol. Chem.* **177** (1949) 565.
3. Loring, H. S., and Pierce, J. G. *J. Biol. Chem.* **153** (1944) 61.
4. Hammarsten, E. *Acta Med. Scand. Suppl.* **196** (1947) 634.
5. Reichard, P. *Nature* **162** (1948) 662; *J. Biol. Chem.* In press.

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New Books

Niels Bjerrum. *Selected papers*. Edited by friends and coworkers on the occasion of his 70th birthday the 11th of March 1949. Einar Munksgaard, Copenhagen, 1949. 295 pp. 18 Danish Crowns.

A review of this tribute to one of the most outstanding chemists of this century can most adequately be commenced by quoting the book's introduction, written by Niels Bohr, acting chairman of the editorial committee.

«The scientific publications of Niels Bjerrum have initiated great advances of our knowledge and understanding in many fields of chemistry and physics and bear throughout witness of that same openness of outlook and balance of judgment, which his friends and colleagues admire so highly and which together with his straight

forwardness and loyalty has secured him the confidence of the whole Danish community. Many important tasks have been entrusted upon him, and his fertile activities and the encouragement he has given to wide circles will be remembered with deep gratitude from most different sides on his 70th birthday. Deliberating how his colleagues best could contribute on this occasion, the committee has thought that an edition of a selection of the papers of Niels Bjerrum by which he has erected himself a lasting monument in science, would be the most fitting way to express the indebtedness we owe to him, and we feel assured one which will be warmly welcomed by chemists and physicists all over the world.»

A reviewer must agree most emphatically with this statement. More especially

he must express great satisfaction at seeing the most prominent of Niels Bjerrum's paper made accessible through this book. Many of them were originally published in journals, which are not easily available. Most of them were also written in Danish, French or German. In the present volume they have all been translated into English.

In the beginning of the book J. A. Christiansen gives a survey of the scientific papers of Niels Bjerrum and this chapter is followed by a bibliography of his publications. Then a total of 27 selected papers are reproduced. It has certainly not been an easy task to make the selection from the more than one hundred original publications (including books) but it seems as if the choice has been sound. In some cases only the summaries of the longer papers have been presented.

The collection makes an imposing impression, in no slight degree caused by the width of the author's sphere of activity. The first paper treats the development of chemistry in the nineteenth century. Then come three papers on chemical physics dealing with specific heat and infrared spectra of gases. The section on physical chemistry begins with seven papers illustrating Bjerrum's famous contribution to the electrolytic dissociation theory. It may be good to recall the fact that Bjerrum assumed the complete dissociation of the strong electrolytes already in 1909 and that he found that their behaviour could be explained by means of the

interionic forces. One certainly must agree with Professor Christiansen when he says that «it may safely be stated that Bjerrum has contributed more to the victory of these ideas than any other single person».

The physico-chemical section is continued with seven papers which mainly deal with acid-base equilibria. Mention should be made of the theories and nomenclatures for acids, bases, and salts, the very important work on the constitution of ampholytes and the dissociation constants of multibasic acids and their relation to the molecular dimensions. Further the electro-metric determinations of dissociation constants carried out together with Miss Unmack and investigations on the solubility of calcium phosphates.

The collection terminates with nine papers which deal with inorganic problems. Seven of them illustrate Bjerrum's fundamental work on the chromium complexes while two deal with gold complexes and free thiocyanogen.

In the first paper of the book Bjerrum states that the laboratories of Europe today are behind those of the United States of America, but he advises the former to seek consolation and hope in remembering that progress in scientific work «largely springs from the underlying spiritual force and mental discipline». Niels Bjerrum's own achievement by which he has contributed so much to the high esteem of his native country in science is the best possible illustration of this statement.

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