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Acta Hydrobiologica

Contents of Volume 19 (1977)

Tadeusz BASZYŃSKI¹ and Kazimierz KARCZMARZ²

Investigations on the production of inorganic matter by Charophyta associations. 1. Fresh-water associations.

Acta Hydrobiol., 19, 1-7.

Abstract - Studies on the production of inorganic matter by the Charophyta were carried out in *Nitellopsidetum obtusae*-association of the eutrophic Lake Rogóžno. The highly ecologically specialized association in this lake was earlier investigated in detail. The ecological effect of inorganic substances produced in the eutrophic lake will be treated in this first contribution.

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Eugeniusz BIESIADKA and Krzysztof KASPRZAK

An investigation on the macrofauna of the River Warta within the city of Poznań.

Acta Hydrobiol., 19, 109-122.

Abstract - The described investigation was carried out on the macrofauna of a strongly polluted sector of the River Warta within the city of Poznań in the years 1974 and 1975. 87 species from 13 systematic groups were noted. The occurrence of individual taxa at 3 stations lying along the river course was noted, special attention being paid to changes of the faunistic structure which accompany the increase of pollution.

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Eugeniusz BIESIADKA

Materials for a study on Heteroptera, Coleoptera and Hydracarina of small water bodies situated in the lignite opencast mine near Konin.

Acta Hydrobiol., 19, 439-449.

Abstract - The aim of this paper was to determine the species composition of Heteroptera, Coleoptera, and Hydracarina of small water bodies situated in the lignite opencast mine at Gosławice. A large number of southern species associated with waters of increased mineralization is a characteristic feature of these water bodies. A comparative analysis of the fauna of the investigated water body and of the warmed Konin Lakes was carried out. The problem of the origin of the fauna of these water bodies and the trends of its further activity are discussed.

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Maria BOMBÓWNA

Biocenosis of a high mountain stream under the influence of tourism. 1. Chemism of the Rybi Potok waters and the chlorophyll content in attached algae and seston in relation to the pollution.

Acta Hydrobiol., 19, 243-255.

Abstract - The waters of the Rybi Potok stream which flows on a granite substratum of the Polish High Tatra Mts, show an extremely low concentration of electrolytes. Pollution of the water with domestic sewage from a tourist shelter slightly influenced certain indices, being more pronounced in the content of ammonia and phosphates. The latter compounds played a limiting role in relation to other bioelements even near the inflow of sewage. A periodical increase in the fertility of the stream was manifested in the biomass of attached algae (expressed by the concentration of chlorophyll). Even at lower water levels the process of water self-purification ended below the small ponds lying in this stream about 400 m downstream from the shelter.

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Bazyli CZECZUGA

Carotenoids in fish. 13. *Coregonus peled* (Gmel.) from Polish waters.

Acta Hydrobiol., 19, 183-190.

Abstract - Using column and thin-layer chromatography, the occurrence of individual carotenoids in the fins, skin, muscles, liver, intestines, and generative cells of *Coregonus peled* (Gmel.) was investigated. The obtained results were compared with the data obtained for specimens of *Coregonus albula* (L.).

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Elżbieta GRABACKA

The influence of beet sugar factory wastes on the bottom microfauna in fish ponds.

Acta Hydrobiol., 19, 373-387.

Abstract - A further stage of investigations on the possibility of utilizing beet sugar factory wastes in carp ponds, and their consequent influence, was carried out. In the microfauna of the bottom Protozoa quantitative and qualitative relations of the group Ciliata were investigated. In conditions when high concentration wastes were brought in the changes taking place in the pond during self-purification influenced distinctly the development of the bottom Protozoa. A succession of ecologically different communities of Ciliata and characteristic changes in their number were also observed. No effect consequent on several years' enrichment of the pond with beet sugar factory wastes was found in the microfauna.

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Anna KALINOWSKA

The effect of gamma radiation on a change in the volume of Protozoa cells.

Acta Hydrobiol., 19, 83-87.

Abstract - An investigation was carried out on the effect of various doses of gamma radiation on changes in the volume of *Spirostomum ambiguum* and on the time of return of the volume of this protozoan to the initial state. It was found that gamma rays brought about a decrease in the volume of the animal, depending

in a linear relation on the dose, while the return of the volume to the initial state is negatively correlated with the received dose.

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Henryk KASZA

Inflow of nitrogen and phosphorus to the dam reservoir at Goczalkowice in the years 1973-1975.

Acta Hydrobiol., 19, 23-42.

Abstract - On the basis of regression equations expressing the relation between flow and concentration, the loads of nitrogen and phosphorus flowing into the reservoir were calculated. Subsequently the balance of these elements in the reservoir and the plan of decreasing its trophic conditions were presented.

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Barbara KAWECKA

Biocenosis of a high mountain stream under the influence of tourism. 3. Attached algae communities in the stream Rybi Potok (the High Tatra Mts, Poland) polluted with domestic sewage.

Acta Hydrobiol., 19, 271-292.

Abstract - Differentiation of attached algae communities along the course of a mountain stream (altitude 1393-1100 m) polluted with domestic sewage from a shelter serving yearly about one million tourists is described. In the highly eutrophicated environment (to 30 m from the sewage outlet) dominated: *Phormidium favosum*, *Nitzschia palea*, *Navicula cryptocephala*, *Cymbella ventricosa*, species of the genus *Gomphonema*, and the fungus *Leptomitus lacteus*. As mineralization of the sewage proceeded development of green algae and diatoms took place with the concomitant disappearance of the above-mentioned organisms. The final stage of sewage mineralization, about 500 m from the outlet, was marked by a mass development of diatoms, especially *Fragilaria capucina* and of the green algae *Oedogonium* sp. In the lower course of the stream *Hydrurus foetidus*, *Homoeothrix janthina*, *Diatoma hiemale* with the variety *mesodon*, *Ceratoneis arcus*, and *Achnanthes minutissima* were dominants similarly as in other pure Tatra streams at that altitude. Moreover, quantitative changes of dominating algae were described in the annual cycle, their ecological characteristic also being made.

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Barbara KAWECKA

The food of dominant species of bottom fauna larvae in the River Raba (Southern Poland).

Acta Hydrobiol., 19, 191-213.

Abstract - The food of 47 species of larvae of Ephemeroptera, Trichoptera, and Chironomidae inhabiting the River Raba (a Carpathian tributary of the River Vistula) was investigated in the annual cycle. Phytophagous animals constituted 40.4% of those investigated (chiefly Ephemeroptera and Trichoptera), 19.1% fed on detritus (chiefly Chironomidae), unidentified organic matter prevailed in the food of 19.1% (chiefly Chironomidae), mineral matter in 10.6% (chiefly Ephemeroptera), mixed food in 6.4% (chiefly Trichoptera), and animal tissue in 4.3% (chiefly Trichoptera and Chironomidae). In the majority of larvae the food did not change throughout the year. A dependence was noted between the habitat of the organisms and the content of their alimentary canals. The phytophagous organisms preferred diatoms, among them the cells of the genus *Gomphonema*. The organisms did not select the food actively, simply consuming that which was most readily accessible in the environment.

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Andrzej KOWNACKI

Biocenosis of a high mountain stream under the influence of tourism. 4. The bottom fauna of the stream Rybi Potok (the High Tatra Mts).

Acta Hydrobiol., 19, 293-312.

Abstract - The stream Rybi Potok, which crosses the strict nature reserve on the territory of the Tatra National Park takes in the domestic sewage from the shelter at lake Morskie Oko, whose annual turnover is over one million tourists. The influence of sewage causes the development of characteristic zoocoenoses permitting the distinction of certain zones: a septic zone - 1 m from the sewage discharge, with larvae of the genus *Psychoda* dominating; a zone of strong pollution - 3 to 10 m below the sewage outlet, where Ostracoda, Oligochaeta, Nematoda, Chironomidae (*Prodiamesa olivacea*, *Paratanytarsus* sp., *Chironomus* gr. *thummi*) prevail; a zone of self-purification - 30-500 m below the sewage discharge where a vigorous increase in the total amount of fauna takes place, with Chironomidae (Orthocladiinae juv., *Thienemanniella* sp., *Microcricotopus* sp.) dominating; a pure montane stream zone - where develops the typical community of the Tatra streams of the montane forest zone with the myflies *Baetis alpinus*, Chironomidae (*Orthocladius* (*Euorthocladius*) *rivicola*, *O.* (*Euorthocladius*) *saxosus*) dominating.

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Wojciech KRZANOWSKI

An attempt at determination of the daily migrations of the zooplankton on the basis of daily bottom water discharges in the dam reservoir at Goczałkowice.

Acta Hydrobiol., 19, 43-50.

Abstract - In 1972, in connection with the routine repair of damming installations, the water level of the Goczałkowice reservoir was lowered by about 1.5 m below the average exploitation levels. Since the water was discharged through the bottom sluice, an attempt was made on this basis to characterize the daily migrations of plankton animals in the part of the reservoir adjoining the dam.

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Lucja KRZECZKOWSKA-WOŁOSZYN

The influence of beet sugar factory wastes on the phytoplankton of ponds.

Acta Hydrobiol., 19, 351-372.

Abstract - Beet sugar factory wastes fed to ponds stimulated the development of algae, especially of chlorococcal green algae, the effect of undiluted wastes being much stronger than that of diluted ones. After the inflow of the wastes was stopped their consequent effect was observed. If beet sugar wastes are to play an active role in fertilizing ponds they should be applied at carefully selected concentrations.

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Edward KRZYŻANEK

Bottom macrofauna of the dam reservoir at Goczałkowice in the years 1970-1975.

Acta Hydrobiol., 19, 51-67.

Abstract - The work contains a description of the bottom macrofauna in the dam reservoir at Goczałkowice in the years 1970-1975. It is a continuation of studies carried out by the author since 1961 and chiefly involves a record of the quantitative changes and qualitative composition of the leading animal groups. The investigation on biomass was introduced in 1971. In the period of investigation progress in stabilization (with the exception of 1973) was observed both with regard to average numbers and to the composition of taxa. The mean annual number of the macrofauna ranged from 1098-2245 ind. m⁻² and the biomass from 314.2-720.1 g m⁻², over 90% of the latter being composed of molluscs. During the whole period of investigation the leading group were Chironomidae larvae. Genus *Procladius* dominated, occupying the bottom environment of the water body. Oligochaeta, Ceratopogonidae, and Mollusca occurred in great numbers. Variability in the formation of the communities of the bottom macrofauna resulted from natural changes in the bottom environment but also from other factors, such as great variations in the water level.

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Tadeusz KUFLIKOWSKI

Macrophytes and phytophilous macrofauna of the pond Zimowy Wielki at Golysz.

Acta Hydrobiol., 19, 413-422.

Abstract - The paper presents investigations on the process of macrophytes overgrowing a carp pond fed with sugar factory wastes as well as the development of phytophilous macrofauna in this pond.

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Tadeusz KUFLIKOWSKI

Macrophytes of the dam reservoir at Goczałkowice.

Acta Hydrobiol., 19, 145-155.

Abstract - The paper presents a continuation of the investigations on the process of overgrowing of the dam reservoir at Goczałkowice by higher plants. In recent years a further enlargement of the area overgrown by dominant species of submersed plants was observed. These changes may be explained by a very high average water level and its smaller variation and by an increased content of chemical compounds (chiefly nitrogen and phosphorus) in the water.

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Krystyna KYSELOWA

Benthic algae in a pond after the accumulation of beet-sugar factory wastes.

Acta Hydrobiol., 19, 215-231.

Abstract - The composition of algae occurring in the mud of a pond used for several years for the accumulation of beet-sugar factory wastes was identified and listed. This is an attached algae community accompanied by typical pond plankton algae originating from sedimentation, a prevalence of diatoms, of benthic or epiphytic species, being characteristic. Green and blue-green algae occurred in smaller amounts.

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Maria LEWKOWICZ and Stanisław LEWKOWICZ

Restoration of a pond after a five year period of fertilization with beet sugar factory wastes. Chemical factors and zooplankton.

Acta Hydrobiol., 19, 315-333.

Abstract - After five years' fertilization of a pond with wastes the consequences to the mineral compound content in the water and on the zooplankton was investigated in the two subsequent years. A high content of phosphates and low content of mineral forms of nitrogen were found after filling the pond with pure river water. Nitrogen was the main factor limiting the development of phytoplankton. The species of zooplankton dominating during the period of fertilization of the pond were already eliminated in the first month after filling the pond with pure water and species characteristic of moderately fertile fish ponds developed.

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Rosa MARTINEZ

Phytoplankton species, biomass, and diversity in Lake La Caldera (Sierra Nevada, Granada, Spain).

Acta Hydrobiol., 19, 95-107.

Abstract - The phytoplankton of the high-mountain lake La Caldera (3050 m, above sea level) in the Sierra Nevada (Penibetic Mountains, South Spain) was for the first time examined. The study was carried out during the ice-free period, June-September 1973. The dominant algal class was the Chrysophyta, mainly chryomonads of the genus *Chromulina*. Diatoms were poorly represented, most of them came from the bottom or littoral communities. An uncommon phenomenon was the quantitatively important presence of the blue-green alga *Cyanarcus hamiformis*. Cell number, biomass and Shannon's diversity index were calculated. The indices are in accordance with those in other alpine ecosystems.

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Kazimierz MATYSIAK

An attempt to determine the settlement order of leech species (Hirudinea) in open bathing pools in the city of Łódź.

Acta Hydrobiol., 19, 75-82.

Abstract - The occurrence of leeches in open bathing pools situated in the outskirts of the city of Łódź was investigated. Six species of leeches were found to be present in these pools and the settlement order of particular leech species was determined.

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Carol G. NAGY

Note on the snails from the Sinoe Lagoon.

Acta Hydrobiol., 19, 89-92.

Abstract - The first record for the fauna of Romania of two recent species of brackish water Gastropoda

Prosobranchia is presented and a survey of their habits briefly described.

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Andrzej PILARCZYK

Haematological and histological changes in carp with necrotic gill disease (branchionecrosis cyprinorum).

Acta Hydrobiol., 19, 9-22.

Abstract - Haematological and histological investigations on carp from the Experimental Fish Culture Station at Gołysz revealed a number of pathological changes accompanying necrotic gill disease in carp. On the basis of the obtained results it may be stated that this disease causes marked changes in the whole organism, these being manifested by a general anaemia which, in turn, leads to an increased regeneration of red blood cells. Large numbers of immature erythrocytes with signs of retrograde changes are found in the blood circulation. Changes in the kidney, liver, and pancreas are of necrotic character and their intensity depends on the degree of advancement of the disease.

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Janina PUDO

Periphyton of the River Vistula in the region of heated water discharged from the power plant at Skawina.

Acta Hydrobiol., 19, 123-143.

Abstract - The paper concerns investigations on algae communities in the periphyton of the Rivers Vistula and Skawinka in the region of the inflow of heated water discharged from the power plant at Skawina. In relation to the water temperature at the station above the power plant, the water temperature in the Vistula was higher by 6 to 7.5 °C. 7 species, reacting distinctly to thermal changes in the river, were distinguished. Organisms reacting to the increase in temperature with a quantitative decrease in specimens were: *Sphaerotilus natans*, *Diatoma elongatum* var. *tenue*, and *Surirella ovata*. A more intensive development in the zone of heated water was shown by the species: *Siderocapsa maior*, *Lagynion subglobosum*, *Navicula mutica*, and *N. viridula* var. *avenacea*. The content of dissolved oxygen at maximum heating of the river water to 32 °C did not fall below 2 mg L⁻¹.

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Krzysztof SROKOSZ

Phytophilous fauna in ponds fertilized with sugar factory wastes.

Acta Hydrobiol., 19, 233-242.

Abstract - The work presents investigations carried out from April to September 1971 on the phytophilous fauna of ponds fertilized with beet-sugar factory wastes in the Gołysz near Cieszyn. The investigation covered 3 ponds, the settlement of the plants *Glyceria aquatica*, *Myriophyllum spicatum*, and *Elodea canadensis* by various species and groups of invertebrates being compared. It was found shown in what degree the settlement of plants by the fauna was influenced by the trophic conditions or by the species of plant.

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Janusz STARMACH

Electrophoretic separation of blood serum proteins on polyacryloamide gel in seven carp families.

Acta Hydrobiol., 19, 163-167.

Abstract - Electrophoretic separation of esterases on starch gel was carried out in nine families of carp selected with respect to scaliness and cultured for many years in line purity at the Experimental Farm of the Polish Academy of Sciences at Gołysz. It was found that liver and spleen esterases in the investigated families did not show any differences. Polymorphous patterns of blood serum esterases differ from one another in the frequency of F esterases and in an additional band occurring in the pattern of one of the families.

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Janusz STARMACH

Electrophoretic separation on starch gel of blood serum, spleen, and liver esterases in nine carp families.

Acta Hydrobiol., 19, 157-161.

Abstract - Electrophoretic separation of esterases on starch gel was carried out in nine families of carp selected with respect to scaliness and cultured for many years in line purity at the Experimental Farm of the Polish Academy of Sciences at Gołysz. It was found that liver and spleen esterases in the investigated families did not show any differences. Polymorphous patterns of blood serum esterases differ from one another in the frequency of F esterases and in an additional band occurring in the pattern of one of the families.

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Aleksandra STARZECKA

Biocenosis of a high mountain stream under the influence of tourism. 2. Bacteria as an index of water pollution of the Rybi Potok stream.

Acta Hydrobiol., 19, 257-270.

Abstract - The changes in the total number of heterotrophic bacteria and of physiological groups (i.e. proteolytic ammonifying, and denitrifying bacteria and of the *Escherichia coli* titre) were compared in the annual cycle in the water of the stream Rybi Potok in the pure sector and at the point of inflow of domestic sewage from the shelter at Lake Morskie Oko. On the basis of changes in the number of bacteria a logarithmic comparative coefficient (LCC) was calculated, this enabling two zones of water self-purification to be differentiated in a stream sector of about 3.2 km in length.

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Aleksandra STARZECKA¹ and Rajmund RONCHETTI²

Influence of beet sugar factory wastes on the occurrence of bacteria in the water and bottom sediments of a carp pond.

Acta Hydrobiol., 19, 335-350.

Abstract - In the years 1972-1974, at the experimental Farm of the Polish Academy of Sciences at Gołysz,

bacteriological investigations of the water and bottom sediments of the carp-rearing ponds Zimowy Wielki (with beet sugar factory wastes) and Gorol (without wastes) were carried out. The quantitative occurrence of heterotrophic bacteria was determined, taking into consideration such physiological groups as desulphurizing and denitrifying bacteria and those decomposing protein compounds while disengaging NH_3 and H_2S . A greater development of bacteria in the water and bottom sediments of the pond Zimowy Wielki was observed in the year the wastes were applied. Control investigations carried out in the pond Gorol in 1973 showed that the eutrophic effect of beet sugar factory wastes lasts longer in bottom sediments than in water.

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Jerzy STRZELECKI

Diatoms on the bivalve shells in the dam reservoir at Goczałkowice.

Acta Hydrobiol., 19, 69-74.

Abstract - In 1972 15 samples of algae were collected in the Goczałkowice reservoir from the shells of Bivalvia and 5 comparative samples from the *Oedogonium* sp. communities and from the surface of the slimy bottom, with the aim of determining whether the shells were a suitable substratum for the development of algae. The diatoms (Bacillariophyceae) were elaborated in detail, the quantitative composition and the list of species with 149 taxa of 29 genera being presented. It was found that the bivalve shells formed a good substratum for the development of the algae.

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Janusz WILTOWSKI

Władysław Kolder, 1905-1976.

Acta Hydrobiol., 19, 179-181.

Abstract - [Biography, in Polish]

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Janusz WOJTUSIAK

To the fauna of the Gronikowy Stawek (the Gronikowy Pond) in the Gubałówka Elevation in the Tatra Highlands.

Acta Hydrobiol., 19, 169-177.

Abstract - In the years 1967-1968 the macrofauna of the Gronikowy Stawek (the Gronikowy Pond), the only large natural water body in the Gubałówka Elevation, was investigated for the first time. The chemism and physical properties of the pond water were found to be typical for small overgrowing ponds. The number of 44 species, representing 14 systematic groups, found in the pond, indicates a fairly great faunistic variety. About 80% of the whole fauna of the pond are insects, chiefly the orders Diptera and Odonata. A faunistic comparison of the Gronikowy Stawek with two Tatra ponds, the Toporowy Niwny and Smreczyński, shows a far-going similarity.

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Jerzy ZIĘBA

Macrobenthos of a carp pond enriched for some years with beet sugar factory wastes and of a control pond.

Acta Hydrobiol., 19, 389-412.

Abstract - In the years 1971 and 1972 the macrobenthos of a carp pond filled every previously autumn with poorly diluted beet sugar factory wastes consisted mainly of *Chironomus* f. l. *plumosus* and *Glyptotendipes polytomus* larvae. In spite of adaptation to anaerobic conditions, the greater part of this fauna perish already during the winter. Concomitantly with the large amounts of oxygen appearing in spring with an abundance of food (bacteria, algae, protozoans), new generations of these larvae developed, attaining with time large numbers and biomass. Soon after finishing of waste mineralization i.e. in the second half of the vegetation season and two years later, a macrobenthos similar to that in the control pond developed already in spring. Quantitative relations in the macrobenthos underwent some changes in consequence of the migration of animals between the bottom proper and the macrophyte thicket. There were no distinct consequences of the wastes after their inflow had been stopped; they were expressed only indirectly by temporary enrichment (after lying fallow in winter) of the organic matter originating mainly from decomposed macrophytes.

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Jadwiga ZYGMUNTOWA

The content of protein and other ninhydrin-positive compounds dissolved in the water of a pond fertilized with beet sugar factory wastes.

Acta Hydrobiol., 19, 423-438.

Abstract - The content of alpha-amino nitrogen was determined in condensed water, after hydrolysis of dry residue soluble (a) and insoluble (b) in phosphate buffer. The compounds of molecular weight over 4000, from 4000-250, and below 250 were separated. During the processes of production of organic matter in the pond the amount of dissolved alpha-amino nitrogen increases. This results both from the extracellular secretion of algae and from the autolysis of their cells, preceded by the appearance of bacteria. The amount of alpha-amino nitrogen in the water depends on the number of algae and of physiological groups of bacteria. The succession of phyto- and zooplankton influences the formation of relations between the compounds containing alpha-amino nitrogen of various molecular weight (protein, peptides, and amino acids).

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