philic aromatic substitution of hydrogen). The final chapter focuses on the synthesis of biologically important heterocycles such as pyrroles and indoles from nitro compounds.

In summary, this monograph provides an excellent overview of recent developments in nitro group chemistry. Since this book clearly presents a wide variety of synthetically useful reactions with organonitro compounds, it will be very attractive to the researchers in pharmaceutical, agrochemical, and fine chemical industries.

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Richard Willstätter im Briefwechsel mit Emil Fischer in den Jahren 1901 bis 1918. Edited by *Horst Remane* and *Wolfgang Schweitzer.* Verlag für Wissenschafts- und Regionalgeschichte Dr. Michael Engel, Berlin 2000. 125 pp. Softcover 19.68 €.—ISBN 3-929 134-27-6

The 47 letters from the correspondence between Willstätter and Fischer—they do not form an unbroken chain—come with one exception from the Bancroft library of UC Berkeley. The Emil Fischer Papers were acquired at Berkeley as a gift from Hermann O. L. Fischer on his death in 1960. The editors have prudently commented on the letters and provided a source index. Short biographies of the two great researchers precede the letters.

The relationship between the two pioneers was based on mutual respect, on the part of the 20-year younger Willstätter it was even reverence. The latter is shown by the polite address to the older man as "Excellency, highly esteemed Privy Councillor" as well as letter endings such as "I remain in deep reverence, respectfully yours". The reader who anticipates titanic dialogues from these letters will be disappointed. Exciting new ideas, visions, unpublished work, and future plans of the researchers are not addressed; the politeness even prohibited critical comments.

The first seven letters served to set the scene: the work areas were carefully demarcated. In connection with the synthesis of the atropine/cocaine series, Willstätter was interested in the carboxylic acids of piperidine and pyrrolidine. The worry of encroaching on Fischer's domain (amino acids) was legitimate, and, with all politeness, discrepancies in melting point and analyses of the betaine aurochlorate were even clarified.

The allocation of the spheres of interest was only slightly relaxed in the first half of the 20th century and finally fell in the 1950s. The young generation turned against the traditional mores, and the protest, especially from the other side of the atlantic, led to unlimited elbowroom.

The long letters No. 8 to 10 are concerned with the preparations for the 70th birthday party of Adolf von Baeyer (October 1905), their mutual academic teacher. Here the cost of the recommended subscription to a reprint of Baeyer's collected publications was calculated, and the question as to whether in addition to a bronze bust (A. von Hildebrand) a medal should also be coined, was even discussed with Baeyer himself.

In 1905 Willstätter moved from Munich to a position as professor at the Eidgenössische Polytechnikum (later ETH) at Zurich. His later nomination for the new Kaiser–Wilhelm Institut of Chemistry in Berlin–Dahlem led to a rise in the correspondence (13 letters from Nov 1910 to the end of 1911). At the inaugural meeting of the Kaiser–Wilhelm Gesellschaft in Nov 1911 (in the presence of the Imperial couple), Fischer presented an experimental lecture on recent advances and problems in chemistry and biology, for which he borrowed a sample of crystalline chlorophyll from Willstätter. Fischer succeeded in convincing his colleagues and the authorities that Willstätter was the outstanding personality to represent Organic Chemistry in the new KWI. The nomination proceedings faltered when in July 1911 Willstätter—here two letters are missing—abruptly withdrew his application. Skillfully the editors blend in letters (E1–E9) from Fischer to Beckmann, Haber, and Duisberg, as well as their replies. Fritz Haber recognized that Willstätter did not want to be appointed as subdirector under Ernst Beckmann, who had already been proposed as director of the KWI in 1910. In order that Willstätter could be given a state pension, he had been offered the position of professor extraordinarius at Berlin University. Habers diplomatic skill led to the solution to the puzzle: Free research activities at the KWI and an honorary full professorship without teaching obligations at the University. Willstätter agreed and moved at the end of 1912 to Berlin after completion of the Institute buildings.

In January 1915 Willstätter asked Fischer for permission to propose him for a second Nobel Prize honoring his work on amino acids, polypeptides, and proteins (letter nos. 34, 37, 38); Fischer had received his first in 1902 for his pioneering efforts on sugars and purines. Fischer put forward strong arguments against a second nomination. The 1915 Nobel Prize went to Willstätter for his investigation of plant pigments.

In 1916 Willstätter succeeded A. von Baeyer as professor at Munich; no letters were preserved from possible efforts to keep Willstätter in Berlin–Dahlem. In August 1917 A. von Baeyer died at the age of 82 years. Letters 41–44 concern the organization of a worthy Memorial Session, the writing of the obituary, as well as the erection of a statue and its financing. Note from the reviewer: the Baeyer statue created by H. Hahn was positioned in 1922 in front of Willstätter's refurbished building at the Chemische Laboratorium der Bayerischen Akademie der Wissenschaften, as it was called at the time, and survived the destruction of the laboratories in World War II. Today it is positioned in front of Haus F of the new buildings of the Department of Chemistry of the Ludwig–Maximilians University in Munich–Grosshadern.

The last exchange of letters (No. 46, 47) occurred in 1918 and concerned the maintaining of the level of Liebigs Annalen der Chemie as well as the founding of a Society for the Promotion of Chemistry Teaching.

The blossoming of academic research requires a solid institutional framework, so elastic that it would survive even in times of war. The fascinating reading matter in this exchange of letters conveys less on research results, but more on the characters of the two great scientists and the conditions of their work. Viewed

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in retrospect, it is astonishing that the idea of a cooperation never arose despite the occasional proximity of their research areas. A clear demarcation of the research interests was of greater importance at the time of the pioneers.

The editors deserve thanks for the careful editing of the letters, which are now available to a broad audience in this small book.

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Protein-Based Surfactants. Synthesis, Physicochemical Properties, and Applications. Edited by *Ifendu A. Nnanna* and *Jiding Xia.* Marcel Dekker, New York 2001. 312 pp., hardcover $ 150.00.—ISBN 0-8247-0004-X

Protein-based surfactants—fundamental research topic or area of application with a high potential? Ifendu A. Nanna and Jiding Xia try to give an answer to this question. The book describes the synthesis of protein-based surfactants, their physicochemical properties, potential applications, and significant developments. Numerous research projects have been carried out with this class of surfactants, especially in recent years, which is reflected in the great number of publications. Most of these are of a fundamental character and demonstrate interesting properties of this type of surfactant.

The subject of protein surfactants, which is an aspect of the trend towards mild and biodegradable surfactants, is described in ten clearly arranged chapters. Following a general introduction in Chapter 1, Chapters 2–8 cover different topics of protein-based surfactants. Chapter 2 describes the production of protein-based surfactants by enzymatic modification of agricultural by-products and natural raw materials. A review of the interaction of proteins at interfaces is given in Chapter 3. Chapter 4 summarizes the chemistry, synthesis, and properties of amino acid surfactants. Amphoteric surfactants and the enzyme-catalyzed synthesis of protein-based surfactants are the topics of Chapter 5. Arginine lipopeptide surfactants show antimicrobial activity depending on the chemical structure (Chapter 6), and Chapter 7 reviews research on fluorinated synthetic surfactants based on amino acids. These chapters are followed by a summary of the interaction of amino acid based surfactants with other compounds (Chapter 8). There are only a few examples of a successful transfer of protein-based surfactants to applications, which is partly explained by their high cost. The applications of protein-based surfactants described in Chapter 9 are therefore to be regarded more from the viewpoint of future perspectives, as explained in Chapter 10 which discusses market developments and trends for amino acid based and protein-based surfactants.

The authors of the individual chapters include some engaged in fundamental research and others working on industrial applications, thus providing a broad survey of the topic from different points of view. In summary, the book gives a very good overview for someone who is interested in getting basic information about protein-based surfactants. The different chapters complement each other quite well. It would be even better but for the fact that several chapters have similar introductions. However, as the introductory parts of each chapter are quite short, this is only a minor point. Readers who are interested in finding more detailed information can use the bibliographies appended to the chapters. These include references up to 1999, with a main focus on publications up to 1997/1998. The main emphasis of the topics discussed is more on synthesis and applications than on the physicochemical properties of protein-based surfactants. The book is easy to read. Previous knowledge of protein-based surfactants and surfactant chemistry in general is not necessary, and therefore the book can be recommended for all who are interested in getting a general overview of the subject.

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