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Part III: Clinical Departments and Divisions -- Chapter 14: Division of Rheumatology (pages 347-356)

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Division of Rheumatology

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“The rheumatism is a common name for many aches and pains, which have yet got no peculiar appellation, though owing to very different causes.”

—WILLIAM HEBERDEN (1710–1801)

AS THE various subspecialties of internal medicine evolved, rheumatology developed comparatively late. In the immediate decades preceding and following World War II, Departments of Medicine of United States medical colleges generally adopted divisional or sectional formats. During this organizational period such established subspecialties as cardiology, gastroenterology, and hematology took priority, and at many institutions rheumatology was either present on a very small scale or nonexistent. In the 1950s and 60s, however, there occurred a surge of interest in rheumatology, and this subspecialty became an organized entity at many institutions. Among the factors that contributed to this rapid development of rheumatology were the discovery of the antiinflammatory properties of glucocorticoids by Hench and co-workers at the Mayo Clinic, the explosion of new knowledge in the field of immunology, the National Institutes of Health research and training grants, and the trend to subspecialization by internists during the post-World War II era.

At Jefferson the divisional organization of the Department of Medicine occurred during the

tenure of Dr. Robert I. Wise as Chairman (1959–1975). In the forming of Divisions, rheumatology was among the last. Nevertheless, an arthritis clinic was established at Jefferson Hospital in 1931 and preceded the establishment of the Division by 28 years. Even before these events, a number of Jeffersonians made contributions to this specialty.

Early Rheumatology at Jefferson

In 1880, Roberts Bartholow, Professor of *Materia Medica*, wrote an elegant detailed description of the rheumatic diseases that constituted a chapter of his textbook *Practice of Medicine*.¹ Dr. Bartholow was born in 1831, received his M.D. degree from the University of Maryland, and was a member of the active faculty at Jefferson from 1879 to 1891. He died in 1904. Teaching and clinic activities at Jefferson did not deter him from writing; his bibliography included numerous articles and the sole authorship of a textbook of therapeutics, as well as the one of medicine.

Bartholow's chapter devoted to rheumatism was divided into discussions of acute and chronic joint disease. The portion on acute rheumatism was entirely concerned with rheumatic fever, a disease known also at the time as articular rheumatism and polyarthritis rheumatica. In his clinical description of the arthritis of rheumatic fever he detailed its migratory course, the tendency to involve large rather than small joints, and its limited duration of four to six weeks. Also cited was the propensity of those complicated with carditis to develop chronic heart disease later in life. Erythema marginatum and chorea were not mentioned. Although the temporal relationship of rheumatic fever and scarlet fever was discussed, there is no indication of appreciation that acute pharyngitis frequently preceded this disease. Bartholow's lucid discussion of the differential diagnosis of rheumatic fever is entirely valid after the lapse of a century. It included pyaemia (septic arthritis), rheumatoid arthritis, acute gout, urethral rheumatism (gonococcal urethritis and Reiter's syndrome), and hysterical joint disease. A variety of treatment modalities were described, but only salicylate is still in use. Salicylate was described as being very effective, but its use caused gastrointestinal complications, tinnitus, and depression of the heart. Possibly the cardiotoxic properties attributed to salicylate reflected the carditis of rheumatic fever. However, the concept that "aspirin is bad for the heart" persisted, and many patients some 70 and 80 years later refused aspirin for this reason.

In his discussion of chronic joint disease, Bartholow presented three categories: chronic rheumatism, gout, and arthritis deformans. Chronic rheumatism was identified as a joint disorder developing in patients beyond middle age, marked by stiffness, particularly in the morning, intermittent swelling, and rarely joint inflammation. His "chronic rheumatism" appeared to be that portion of the spectrum of arthritis that is presently classified as osteoarthritis. It is of interest, however, that he failed to touch upon a key point of osteoarthritis, the predilection of the disease to involve the distal joints of the fingers, the hips, the knees, and the low spine.

Gout was classified as a chronic disease, although the acute episodes of arthritis that may precede or be superimposed upon the chronic involvement were described in detail. Bartholow listed obesity and lead nephropathy (saturnine gout) as factors that predispose to gout and also discussed the association of gout and

atherosclerosis. Colchicine and salicylate were advocated for the treatment of acute gouty arthritis. After the passage of a century colchicine is still utilized for treatment and prophylaxis of this phase of gout. Also, today it is appreciated that weight reduction may lower the serum uric acid. Thus there is a rational basis for Bartholow's empiric recommendation of a sparse diet featuring fruits and vegetables and regular exercise in the treatment of this disease.

The final group of patients presented in Bartholow's chronic rheumatism section were those with destructive inflammation of multiple joints. They were discussed under the heading of arthritis deformans, which he favored over "rheumatoid arthritis," the term coined by the English physician Garrod to describe similar patients. Bartholow's arthritis deformans patients included those with limb joint involvement and also those with rigidity of the spine. These patients by present-day criteria would be categorized as having rheumatoid arthritis and ankylosing spondylitis, respectively.

In 1882, Morris Longstreth (1846–1914), Professor of Pathological Anatomy at Jefferson, authored a monograph concerned with rheumatic diseases. Dr. Longstreth was born and raised in the Philadelphia area and received an A.B. degree from both Haverford and Harvard Colleges and an M.D. degree from the University of Pennsylvania. He became a Resident at the Pennsylvania Hospital, where he developed an interest in both pathology and the rheumatic diseases.² After his residency he continued at the Pennsylvania Hospital as Attending Physician and Curator of the Pathological Museum. He was appointed Professor of Pathological Anatomy at Jefferson in 1879 and retained this position until 1895, when he resigned to enter private practice in Philadelphia. The William Wood publishing firm in New York City encouraged Dr. Longstreth to make known his knowledge of the rheumatic diseases and he responded with a monograph of 279 pages.³

The first few chapters of Longstreth's text, entitled *Gout, Rheumatism and Some Allied*

Disorders, were concerned with the spectrum of rheumatic diseases, including etiology and pathology. The middle and largest portion of the volume was devoted to the clinical, laboratory, and pathological aspects of rheumatic fever, which at the time of publication was the most prevalent of the acute rheumatic diseases. The emphasis on rheumatic fever is of interest in that present-day medical students are unlikely to encounter this disease except in relation to residual valvular heart disease.

Longstreth's chapter devoted to rheumatic fever gave an excellent description of acute arthritis associated with this disease. He and his contemporaries had a good understanding of rheumatic heart disease. They appreciated that there was involvement of the pericardium, myocardium, and endocardium. Although auscultation permitted clinical detection of endocarditis, the myocardial and pericardial disease was generally demonstrated at postmortem examination. Finally, it was clearly described that some patients with acute endocarditis went on to recovery, whereas others developed severe progressive and ultimately fatal heart disease. Longstreth noted that acute rheumatic fever was more common among the poor than in those from the higher economic classes, an observation that was made again in this country some 50 years later.

A chapter of Longstreth's book was devoted to central nervous system complications of rheumatic fever. He described neuropathological findings in the meninges and brain and also neural symptoms that were considered to reflect systemic aspects of the disease such as fever. For example, he quoted Dr. Jacob Mendes DaCosta of the Jefferson faculty, who reported that a patient may develop cerebral rheumatism during or shortly after an attack of rheumatic fever.⁴ Cerebral rheumatism was described as a restlessness passing into stupor, coma, or delirium and terminating in death. In some of these patients there were focal neurological findings as seizures, palsies, or hemiplegia. This material is difficult to reconcile with present-day concepts of the central nervous

system involvement in rheumatic fever, which is limited to the basal ganglia, expressed as chorea. In fairness to Longstreth it is to be noted he indicated that the meninges and cerebral disease described in these rheumatic fever patients may have been due to a complicating disease such as meningitis rather than the rheumatic fever. In hindsight the "cerebral rheumatism" may have represented systemic lupus erythematosus that was not delineated from rheumatic fever, or even a phase of rheumatic fever no longer encountered. With respect to treatment, salicylate in various forms was recommended as being effective in management of the arthritis but not the carditis of rheumatic fever. A quote from Longstreth concerning salicylic acid is of interest in view of the fact that many present-day physicians favor salicylates over the other nonsteroidal antiinflammatory drugs, as they are effective and less expensive. "The acid (salicylic acid) has been known since 1844 when it was prepared from oil of wintergreen. Its scarcity and great cost prevented its use and its quality remained to a great degree unknown." He goes on to state that in the ensuing years manufacturing techniques improved, and the drug became less expensive.

Longstreth's last chapters were devoted to chronic articular rheumatism (osteoarthritis), gout, and gonorrheal arthritis. Of particular interest is the description of the natural course of gonococcal arthritis in the prepenicillin era. The attack of arthritis might last for weeks or months, and in some instances there was progression to chronic effusion, fibrous involvement, and fibrous ankylosis. In contrast to present-day rheumatology textbooks, which give top priority to rheumatoid arthritis, Dr. Longstreth was cursory in his approach to this disease and considered it primarily in subsections devoted to the differential diagnosis of arthritis. Factors to be considered in the rise in importance of rheumatoid arthritis over the course of a century include the virtual disappearance of rheumatic fever in the United States and Western European countries, the development of laboratory and radiographic techniques that facilitate the delineation of rheumatoid arthritis from other rheumatic diseases, and possibly an increased prevalence of rheumatoid arthritis in recent decades.

In 1886 representatives from Philadelphia hospitals presented their treatment programs for the rheumatic diseases.⁵ Drs. J. M. DaCosta and Bartholow represented Jefferson, and Dr. Longstreth the Pennsylvania Hospital, although

he also held a Professorship at Jefferson. The renowned Dr. William Osler of the University of Pennsylvania Hospital and Dr. James Tyson of the Philadelphia Hospital (Philadelphia General Hospital) also contributed. The main focus on the discussion was directed to rheumatic fever. It was generally agreed that salicylates were useful in controlling the articular but not the cardiac manifestations. For joint pain, opium or one of its derivatives was advocated both systemically and by local application.

In 1914 Dr. Solomon Solis-Cohen (Figure 14-1) (Jefferson, 1883), Professor of Clinical Medicine, authored a paper⁶ that represented the first report in the English literature of the rheumatic entity now termed palindromic arthritis. It is an episodic disorder marked by attacks of pain and swelling of joints or tissues adjacent to joints, lasting for a day or a few days, with variable intervals between attacks. After months or years the attacks may cease. At times, however, they may be a harbinger of rheumatoid arthritis. Dr. Solis-Cohen's report reviewed a series of patients, many of whom



FIG. 14-1. Solomon Solis-Cohen, M.D., Professor of Clinical Medicine (1904–1927) and Jefferson pioneer in treatment of “rheumatic disorders.”

manifested an episodic disorder consistent with palindromic arthritis. He attributed the articular and periarticular involvement to an autonomic imbalance, which he termed vasomotor or autonomic ataxia; however, at present this condition is considered to reflect a disorder of the immune system. He also published many additional reports dealing with clinical features or treatment of rheumatic disease.⁷⁻⁹

Dr. Abraham Cohen (Figure 14-2) was one of the pioneer rheumatologists in the United States. Cohen (Jefferson, 1925) was a member of the staff of Jefferson Hospital with special interest in its arthritis clinic from 1931 until his death in 1969. In addition, he was active at the Philadelphia General Hospital and headed an arthritis clinic at that hospital for many years. Dr. Cohen's hospital appointments and bibliography demonstrate his



FIG. 14-2. Abraham Cohen, M.D., innovative organizer of Jefferson's first arthritis clinic (1931).

Blizzard (Jefferson, 1954), and Leon Weiner participated in the Jefferson Arthritis Clinic.

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capacity as tireless worker, astute observer, and innovative therapist. In 1941 he published the first definitive description of gouty arthritis in black Americans.¹⁰ Before that time there was only one case report of gout in a black American, which had appeared in a Scandinavian journal. Cohen also authored 20 additional papers on a variety of rheumatological topics. In the *New England Journal of Medicine*, he detailed his experience with gold therapy for rheumatoid arthritis.^{11,12} He also reported a trial of an estrogenic substance for the treatment of rheumatoid arthritis. Several papers described his use of physostigmine and neostigmine for patients with musculoskeletal-articular pain and muscle spasms, as well as histamine for those with impaired peripheral circulation.¹³⁻¹⁵ In the context of today's use of such immunosuppressive agents as azathioprine and methotrexate to manage connective tissue diseases, Dr. Cohen's effort with a trial of nitrogen mustard for patients with rheumatoid arthritis was prophetic.¹⁶

From 1946 until 1956 Dr. Richard T. Smith (Figure 14-3) (Jefferson, 1941) served as Chief of the Rheumatology outpatient clinic. He was a staunch advocate of gold therapy prior to the time that this agent was unequivocally established as an effective therapeutic modality for rheumatoid arthritis. Subsequent to his activity at Jefferson Hospital, Dr. Smith was the Attending Rheumatologist at Pennsylvania Hospital and also was active at the Merck Pharmaceutical Company. He died suddenly at age 58.

Dr. Irvin F. Hermann (Jefferson, 1937) assisted Dr. Smith at the arthritis clinic. Dr. Hermann's training included a fellowship with the eminent rheumatologist, Dr. Walter Bauer, at the Massachusetts General Hospital. Following his fellowship, Dr. Hermann returned to Philadelphia and was active in rheumatology at Jefferson, at Mt. Sinai Hospital of Philadelphia (the Southern Division of the Albert Einstein Medical Center), and at Pennsylvania Hospital. He later served as Medical Director of the United States Postal Service. In addition, Drs. Roy G. Hays, Edward Mazur (Jefferson, 1941), Howard Lorenz, John

A Division of Rheumatology within the Department of Medicine was formed in July 1959, with Nathan M. Smukler (Jefferson, 1947) as Division Head. Dr. Smukler (Figure 14-4), who had trained at the Mt. Sinai Hospital of Philadelphia (now the Southern Division of the Albert Einstein Medical Center) and in rheumatology at the Hospital of the University of Pennsylvania under Dr. Joseph Hollander, was a member of the Department of Medicine at the University of Pennsylvania School of Medicine before his appointment at Jefferson.

At the outset the only member of the Division of Rheumatology beside Dr. Smukler was Howard Lorenz, M.D., a volunteer faculty member who attended the arthritis clinic. It was thus necessary for Dr. Smukler to concentrate on teaching and patient care activities and to put aside temporarily his research interests. The teaching program included bedside teaching rounds at Jefferson Hospital, presentations of outpatients to students assigned to the arthritis clinic, and participation at medical grand rounds and formal lectures.

A particular interest of Dr. Smukler was the suspected role of psychological disorders in



FIG. 14-3. Richard T. Smith, M.D., early advocate of gold therapy for rheumatoid arthritis.

provoking, sustaining, or aggravating rheumatoid arthritis and other systemic inflammatory rheumatic diseases. It was envisioned that a group of psychologists, psychiatrists, and rheumatologists could be organized to investigate this psychosomatic concept, and a request for support was submitted to the National Institutes of Health. Although this application was never funded, Dr. Smukler continued his observations of psychological factors upon the course of rheumatoid arthritis and other chronic rheumatic diseases. Other areas of study included the neuroanatomy and neurophysiology of pain, nonorganic musculoskeletal-articular pain, systemic vasculitis, and spinal arthritis.

Dr. John Abruzzo became the second full-time member of the Division in February, 1967. Before coming to Jefferson, Dr. Abruzzo (Figure 14-5), a graduate of Georgetown University School of Medicine, had been a resident in internal medicine at the Jersey City Medical Center, a Fellow in Rheumatology at the Columbia-Presbyterian Medical Center in New York City, and faculty

member with the rank of Assistant Professor of Medicine at the New Jersey College of Medicine. During his fellowship at the Columbia-Presbyterian Rheumatic Disease Unit under Dr. Charles Christian, Dr. Abruzzo collaborated in a study that showed that chronic injection of *E. coli* into dogs induced rheumatoid factor.¹⁷ This pioneer work is among the factors that stimulated intensive research directed to uncovering an infectious etiology for rheumatoid arthritis. After coming to Jefferson, Dr. Abruzzo engaged in teaching, reorganized and directed the outpatient center, and carried out clinical testing of nonsteroidal antiinflammatory drugs in patients



FIG. 14-4. Nathan M. Smukler, M.D., Chief of the Jefferson Rheumatology Division (1958–1980).



FIG. 14-5. John L. Abruzzo, M.D., Director, Division of Rheumatology (1980–).

with rheumatoid arthritis and osteoarthritis. He also collaborated with Dr. Ralph Heimer, a member of the Department of Biochemistry, in the study of alterations of serum proteins in patients with various rheumatic diseases. In 1978 Abruzzo was named Associate Editor of the *Annals of Internal Medicine*. Dr. Abruzzo was promoted to Associate Professor of Medicine in 1969 and to full Professor in 1974. He succeeded Dr. Smukler as Head of the Division in 1980.

Dr. Ralph DeHoratius (Figure 14-6) (Jefferson, 1968) became the third full-time member of the Division in 1974. He had interned at Jefferson and subsequently served a residency in internal medicine and a fellowship in rheumatology at the

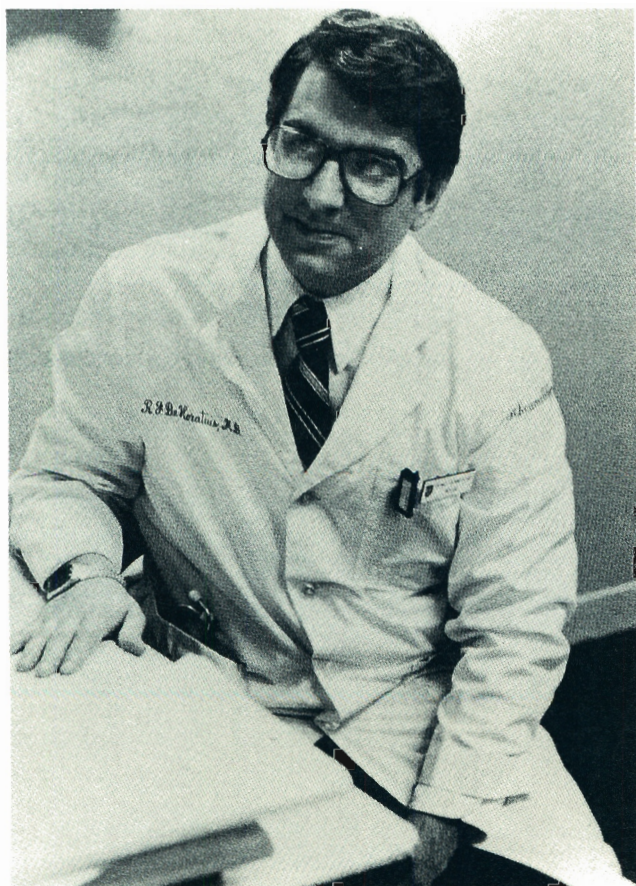


FIG. 14-6. Ralph DeHoratius, M.D., explorer of immunologic interrelationships in rheumatology.

University of New Mexico School of Medicine under Dr. Ralph Williams. Following completion of his training, Dr. DeHoratius joined the faculty of the University of New Mexico School of Medicine with the rank of Assistant Professor. At the time, he also received a career development award from the Veterans Administration, which enabled him to pursue research concerning pathogenetic immune mechanisms in connective tissue diseases. A particular interest of Dr. DeHoratius was detection of antibodies to lymphocytes that are concerned with immune regulatory mechanisms. He demonstrated their presence in patients with systemic lupus erythematosus, in their families and household pets, and in laboratory workers exposed to their blood. After returning to Jefferson as Assistant Professor of Medicine, DeHoratius received a young investigator award from the National Institutes of Health to continue his studies of defects in immune regulation in systemic lupus erythematosus patients and their contacts. He also developed an outpatient facility for evaluation and treatment of systemic lupus erythematosus patients. As a result of his productivity he rose to the rank of full Professor in 1982. In that year DeHoratius left Jefferson to accept a position as Director of an Immunology and Rheumatology Division in the Department of Medicine at Hahnemann Medical College.

During the 1950s and succeeding decades, intensive investigation indicated that immunological mechanisms contributed to the pathogenesis and perhaps the etiology of rheumatoid arthritis and other connective tissue diseases. Consequently, immunologically oriented research flourished at numerous rheumatology units throughout the United States. In an effort to facilitate this type of investigation at Jefferson, Dr. Frank Gray, the Magee Professor of Medicine (1976–1981), along with Drs. Abruzzo and DeHoratius, recruited Dr. J. Bruce Smith to join the Division in 1981. Dr. Smith, a graduate of the Bowman Gray School of Medicine, had trained in internal medicine at Pennsylvania Hospital and the University of Pennsylvania Hospital. He then became a Fellow in Immunology under Nobel Laureate Dr. Baruch Blumberg at the Institute for Cancer Research in Philadelphia and at University College, London, England, under Dr. N. A. Mitchison.

Following his training in immunology, Dr. Smith was appointed a Research Physician at the Institute for Cancer Research in Philadelphia (1974–

1981). During this period he received grants from the American Cancer Society and the National Institutes of Health for his studies of immune cell interactions in laboratory animals, in normal persons, and in patients with cancer. After joining the Jefferson faculty, Dr. Smith expanded his studies of immune cell interactions to patients with rheumatic diseases. His laboratory provided research opportunities for Ph.D. investigators and Fellows in Rheumatology. Dr. Smith also participated in all the clinical activities of the Division.

To enhance further the expertise of the Division in immunology, Dr. Willis Maddrey, who had succeeded Dr. Frank Gray as Magee Professor of Medicine in 1982, and Dr. Abruzzo recruited Dr. Henry Scovern. Dr. Scovern, a graduate of the George Washington University School of Medicine, had just completed a combined fellowship in allergy, immunology, and rheumatology at Yale before joining the Jefferson faculty in 1982. His research concerned the cellular actions and interactions associated with delayed hypersensitivity. In addition, he has actively engaged in teaching and patient care at the Jefferson Arthritis Center and Hospital.

Volunteer physicians have also made important contributions to the Division. Dr. John R. Patterson (Jefferson, 1959) joined the Division as a part-time member in 1961. After completion of a residency in internal medicine at Jefferson, during which he devoted nine months to training in rheumatology, Dr. Patterson limited his practice to the subspecialty of rheumatology. In addition to teaching at the arthritis clinic, he attended the sarcoid clinic directed by Dr. Harold Israel. The sarcoid clinic provided Dr. Patterson with a unique opportunity to evaluate and classify rheumatic disease among a large group of patients with sarcoidosis.

Dr. Ronald Restifo, a graduate of the Indiana University School of Medicine, who had been a fellow and staff physician in the section of rheumatology at the University of Pennsylvania Hospital, joined the Division in 1967. While at Jefferson he attended the arthritis clinic, maintained an office at the Mohler building, and was also active at Jefferson Hospital. A capable clinician and teacher, Dr. Restifo was popular with students, house staff, and colleagues. The call of the West proved irresistible, however, and Restifo left Jefferson in 1972 to enter private practice in San Jose, California.

A Fellowship Program was established in the Division in 1968. The first trainees were Drs. Walter Schwarzchild and Vincent Giuliano, both going on to the practice of rheumatology. Subsequent early Fellows varied in their pursuits with respect to practice and research. As the Division gained strength, research became more intense and innovative. Dr. Anthony Cuccinotta investigated bone density in patients with rheumatic disease. Dr. Muhammed Sadeghian, a graduate of the University of Teheran, worked with Dr. Abruzzo in the evaluation of piroxicam, a nonsteroidal antiinflammatory drug. Sadeghian has continued investigations in Iran, including the possible value of colchicine in the management of calcinosis universalis.

In 1982 the Fellowship Program was expanded so that a trainee was accepted every year rather than every two years. This format permitted the first-year Fellow to concentrate on clinical activities and the second year Fellow to devote his or her efforts to a research project. Dr. Lawrence Brent (Jefferson, 1978) became the first Fellow under the two-year program. His studies on T-lymphocytes in normal mice stimulated him to pursue further training in the field of immunology at the University of Alabama. Dr. Bruce Bender (Jefferson, 1977) studied monoclonal antibodies with specificity for HLA-DR antigens. Dr. John Fort studied the occurrence of anticardiolipin antibodies in various connective tissue diseases during his Fellowship, then joined the Jefferson full-time faculty to continue research, teaching, and patient care activities. The Division accepted its first woman Fellow in 1985, Dr. Celia Fernandez, from the Rutgers University School of Medicine.

Jefferson's history of rheumatology is replete with contributions in literature, teaching and patient care. During the 1980s, successors to its pioneer rheumatologists required an environment supportive of research for full-time investigators with relatively light teaching and patient care responsibilities. To this end Dean Joseph Gonnella and Professors Willis Maddrey, Darwin Prockop,

and Jouni Uitto recruited a group of new faculty members: Drs. Sergio Jimenez, John Varga, and Reza Bashey. This trio provided research skills for the rheumatology program as well as for other departments engaged in the comprehensive study of collagen and diseases marked by collagen defects and progressive fibrosis. These newcomers are ranked along with Cornile LeRoy and his co-workers at the Medical University of South Carolina as the two groups most productive in the investigation of scleroderma in the United States. Dr. Jimenez and his colleagues joined other newcomers to Jefferson, Drs. Prockop (Biochemistry), Emanuel Rubin (Pathology), Maddrey (Medicine), and Uitto (Dermatology) for a multilateral approach to the diseases of connective tissue, particularly the collagen component. Specific diseases studied include osteoarthritis, osteogenesis imperfecta, and those associated with progressive fibrosis such as scleroderma and hepatic cirrhosis.

Dr. Sergio Jimenez, a native of Peru, received his early training there (M.D., University of San Marcos, 1964, *magna cum laude*). Following internship in Lima, he came to the United States for training in internal medicine on the University of Pennsylvania service at Philadelphia General Hospital and later at the Mayo Clinic, returning to Philadelphia General Hospital as a Research Fellow under Dr. Darwin Prockop at the Clinical Research Center. Numerous publications followed relative to the molecular structure, biochemistry, synthesis, and genetic regulation of collagen. Jimenez was appointed to a Rheumatology Fellowship under Dr. Allen Myers at the University of Pennsylvania School of Medicine and joined the teaching staff as Associate in Medicine in 1973. He advanced to full Professor in the Departments of Medicine and Orthopedic Surgery. In 1987 he was appointed Professor of Medicine and Director of Rheumatology Research at Jefferson, thus rejoining his early mentor, Dr. Prockop, who had come to Jefferson in 1986 as Chairman of Biochemistry and Director of the Jefferson Institute of Molecular Medicine.

Dr. Jimenez has published more than 100 papers and has received numerous awards including the Gerald Rodnan Award for excellence in scleroderma research.

Dr. John Varga (New York University School of Medicine, 1980) was trained in internal medicine at Rhode Island Hospital. This was followed by a Fellowship in rheumatology under Dr. Alan Cohen at Boston University and a postdoctoral fellowship at the University of Pennsylvania, where he joined Dr. Jimenez in the study of collagen. Dr. Varga has studied specifically amyloidosis and scleroderma. His publications include chapters in three textbooks.

Dr. Reza Bashey was educated at the University of Bombay (1952). He remained there for his M.S. in biochemistry and then went on to Rutgers for his Ph.D. His collagen research began at the University of Southern California and at the University of Miami, after which he had appointments at Albert Einstein College of Medicine in New York and at Hahnemann University, Philadelphia. In 1975 Bashey was appointed a senior investigator at the Philadelphia General Hospital Clinical Research Center, where he joined Dr. Jimenez and held Associate status in the Department of Medicine at the University of Pennsylvania. He continued at Pennsylvania, with appointments in both the Schools of Medicine and Dentistry, until he joined the Jefferson Faculty as Research Associate Professor of Medicine in 1987.

These recent research capabilities promise improvements in our knowledge of the etiology of rheumatic diseases, with the possibility of better methods of treatment while at the same time aiding in a more comprehensive understanding of disease in its global relationships.

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