

## The Return of the Phoenix: The 1963 International Congress of Zoology and American Zoologists in the Twentieth Century

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**Abstract.** This paper examines the International Congress of Zoology held in Washington D.C. in 1963 as a portrait of American zoologists' search for effective and rewarding relationships with both each other and the public. Organizers of the congress envisioned the congress as a last ditch effort to unify the disparate subdisciplines of zoology, overcome the barriers of specialization, and ward off the heady claims of more reductionist biologists. The problems zoologists faced as they worked to fulfill these ambitious goals illuminate some of the challenges faced by members of the naturalist tradition as they worked to establish disciplinary unity while seeking public support in the competitive world of twentieth century science.

**Keywords:** Alfred S. Romer, biodiversity, genetics, institutions, international congresses, John Moore, organismal biology, unity, zoology

The transition from nineteenth century taxa-defined disciplines such as zoology, botany, entomology, and ornithology, to the problem-based disciplines of twentieth century biology provides a fascinating set of case studies for examining how disciplines based in the naturalist tradition have persisted, faded, and adjusted as science and society have changed. For example, studying the fate of naturalist disciplines can illuminate the challenges the heterogeneity of the life sciences poses to scientists and administrators intent on defining the compartments through which identity, funding and status are channeled into biological research. Depending on the decade and the place, tracing the fate of the naturalist tradition amid shifts in the priorities, methods, and patronage networks of twentieth century science is sometimes a rather depressing task.<sup>1</sup>

<sup>1</sup> See, for example, Pianka, 2003.

Yet the fact this tradition is going strong today, albeit under some guises that would perhaps seem strange to the nineteenth century naturalist, is a clue that some remarkable internal and external negotiations have taken place as naturalists navigated a place for themselves in a changed world.

Almost a half century ago, the International Congress of Zoology of 1963 addressed the fate of one of the central – yet frustratingly amorphous – taxa-defined subjects to come out of the nineteenth century – zoology. Its organizers ultimately hoped that this congress would become “an event of some significance in the history of animal biology.” Concerned with both the disunity of zoology and the inability of zoologists to obtain a fair share of the funds available to science, organizers hoped that out of the chaos of zoologists’ priorities, methods, and frameworks, the congress could finally create a discipline that encompassed and unified all. The congress, they announced, would aim for a “reunion of the various sub-disciplines of zoology.” To do this they would organize the congress around unifying themes that would cause the “vast, fragmented domain of animal biology” to give way to a “coherent, broad discipline, a reversal of the dominant trend of the last 100 years toward specialization and fragmentation.”<sup>2</sup> In addition, the congress would devote a number of symposia to the goal of convincing the public of the relevance of zoology to human welfare.

The 1963 congress organizers’ strong interest in uniting under the rubric of a “coherent, broad discipline” reflects the power of this unit in the history of science. For disciplines have long been central to how the sciences work, providing an (albeit often nebulous) entity through which particular sciences are institutionalized in universities, and the resources that society is willing to provide to science are courted.<sup>3</sup> Yet defining a “discipline” of zoology had been impossible for a long time. Despite societies like the Zoological Society of London, the American Society of Zoologists, and the International Congresses of Zoology,

<sup>2</sup> Press release, “News from the XVI International Congress of Zoology, Washington, August 20–27, 1963,” May 27, 1963, p. 1. National Research Council, National Academy of Sciences Archives (NAS-NRC).

<sup>3</sup> On disciplines in the history of science see Lemaine et al., 1976; Lenoir, 1997; Messer-Davidow et al., 1993.

“zoology” had always encompassed a range of research styles and approaches to the study of animal life.<sup>4</sup> Zoologists not only studied a huge variety of organisms, from birds to protozoans, but they also worked in museums, industry, medical faculties of universities, and a range of academic departments. To make matters even more complicated, what zoologists of seemingly the same type did often varied within different countries due to the idiosyncratic historical development of institutions, patronage networks, and links between science, national culture and politics.<sup>5</sup> When combined with competition from more reductionist disciplines, such diversity raised pressing questions regarding the role zoologists would play within the broader framework of biology in the twentieth century.

This paper examines why unification and the importance of zoology to human welfare formed the theme of the 1963 International Congress of Zoology, how organizers tried to instill this unity and relevance, and what factors influenced the congress’s ability to deliver on such grandiose ambitions. The paper’s organization is inspired by the fact the 1963 congress organizers clearly had two different audiences in mind as they tried to make a convincing case that zoology had a bright future; namely, zoologists themselves and the public. Though as retrospective observers we may see less stark divisions between the scientific and public sessions than those assumed by scientists themselves, the explicitly distinct aims of the congress’s scientific and public sessions are worth highlighting. Krementsov argues in his analysis of the International Congresses of Genetics that “to succeed on the social scene, any group needs to resolve two distinct, but often interconnected problems: the internal problem of consensus and the external problem of legitimacy.”<sup>6</sup> These two problems are here taken in turn. Ultimately, I argue that the 1963 congress organizers’ efforts to simultaneously resolve the internal problem of consensus and the external problem of legitimacy greatly influenced the ability of the congress participants to deliver a united front to both themselves and the public. As a case study just prior to the rise of the environmental movement and the biodiversity crisis, the 1963 congress highlights how at the end of the twentieth century organismal biologists were not yet able to resolve “these

<sup>4</sup> On the general history of zoology and biology see Maienschein’s 1985 review of the literature to 1985; Allen, 1975; Benson, 1989; Caron, 1988; Nyhart, 1995; Pauly, 2002; Winsor, 1991.

<sup>5</sup> On national traditions and styles in science see Reingold et al., 1987; Nye, 1993b; Harwood, 1993; Glick, 1972.

<sup>6</sup> Krementsov, 2005, p. 14.

distinct, but interconnected problems” in a way that could ensure the persistence of some of their most venerated institutions, including the international congresses.

### **The Disappearing Organism: From Boston 1907 to D.C. 1963**

Though the first International Zoology Congress, convened in Paris in 1889, took place during a wave of idealistic internationalism,<sup>7</sup> zoologists’ desire to address the practical problems of standardization of nomenclature, bibliography, and indexing of zoological literature amid their increasingly chaotic range of methods and goals provided a primary motivation for the first meeting.<sup>8</sup> The first congress program was dominated by the special concerns of its French organizers, including biogeography, the use of embryology for classification, paleontology, and nomenclature. Naturalists’ close ties to the imperial endeavor and the dominance of biogeography were reflected in many papers highlighting regions with insufficiently studied fauna.<sup>9</sup> Subsequent International Congresses of Zoology were held in Moscow (1892) Leiden (1895), Cambridge (1898), Berlin (1901), and Berne (1904), often reflecting particular trends in each host nation, but with a strong emphasis on the naturalist topics of biogeography, systematics, and morphology. Over the years new research programs, changing methods, and a growing range of institutions rapidly diversified the type of work canvassed at such congresses. Nowhere was this more apparent than at the first congress held in the United States, in Boston in 1907, where zoologists faced an overwhelming number of specialties. During a time of aggressive professionalization and institution building, many American zoologists used the Boston congress to campaign for new methods and research. For example, Thomas Hunt Morgan served as program chairman for the section on “Experimental Zoology” (on which he published a textbook that year) in order to promote the new experimental work embodied in the *Entwicklungsmechanik* school.<sup>10</sup> Similarly, William Bateson, who coined the term genetics just 2 years earlier, worked hard to make the Heredity sections stand out, and was thrilled when his particular specialties dominated. “From our point of view the meeting has been a

<sup>7</sup> For studies on international scientific congresses see issue 62 (1990) of *Relations Internationales*; Abir-Am, 1985; Everett-Lane, 2004; Kremontsov, 2005. On internationalism in science, see Crawford et al., 1993; Rozwadowski, 2003.

<sup>8</sup> Stejneger, 1924, p. 5; Everett-Lane, 2004, pp. 306–308.

<sup>9</sup> Everett-Lane, 2004. On the ties of biogeography to imperialism, see Browne, 1996.

<sup>10</sup> Allen, 1978, p. 104.

stupendous success,” he crowed to his wife, “Heredity, Cytology, and Experimental Zoology have kept the whole Congress. Nothing else has had any hearing worth the name.”<sup>11</sup> In his sectional address he announced that though “we shall be glad of anything that the systematist can tell us,” all that could be seen by the means of morphology had been found. From now on genetics would provide the most “fresh points of attack.” What an amazing change, he observed happily, had taken place in zoology since the Cambridge Congress of 1898, when very little had been spoken of genetics. “I think when we meet at the end of another 10 years,” he concluded, “there will be victories to record.”<sup>12</sup>

Some zoologists watched the growing enthusiasm for “more experimental” sections at the congresses guardedly, concerned that attention to the whole organism – the focus of the naturalist tradition for centuries – could rapidly disappear in laboratory studies intent on taking things apart. Congress president Alexander Agassiz already had plenty of experience with the anti-naturalist rhetoric of experimental biologists, and he remained unimpressed by the specialized knowledge arising from such work. In his presidential address to the congress he warned that the new approaches and methods threatened to unduly overshadow the traditional zoological questions of morphology, systematics, and geographical distribution.<sup>13</sup> Similarly, William Keith Brooks used his address to the General Symposium to warn that extreme specialization meant large areas of zoology would become unintelligible to non-specialists, with the result that zoologists would construct theories on a partial and imperfect view of well-known facts, rather than based on “the study of its interrelations with other things.”<sup>14</sup>

This, then, was the crux of the matter. Brooks and Agassiz were both concerned by a lack of emphasis on whole organisms in the study of animals, particularly within the growing number of laboratories. They feared an increasing and dangerous tendency to mistake the parts for the whole. The fact zoologists who traditionally emphasized interrelations between and within whole organisms had lost ground to laboratory-based zoology was reflected in the decreasing number of contributions on natural history subjects at the Boston congress compared to previous congresses. Indeed, just 3 years later, with Boston in the memories of many, entomologists justified their first International Congress of

<sup>11</sup> William Bateson to Beatrice Bateson, August 24, 1907. Letters Vol. I. Nos. 1–96. C52. John Innes Institute.

<sup>12</sup> Bateson, 1907, pp. 306, 307, and 319.

<sup>13</sup> Agassiz, 1912, p. 55.

<sup>14</sup> Brooks, 1912, pp. 93–95.

Entomology in part on the grounds that recently papers at zoology congresses ignored insects, instead focusing on animals of the seashore that could easily be sliced up in the laboratory and placed under the microtome.<sup>15</sup> The entomologists need not have worried. When the zoology congress next met, in Gratz in 1910, the dominance of both experimental zoology and genetics had disappeared, reflecting the tendency for the host country's priorities to dictate the congress program. At the 9th ICZ in Monaco in 1913 U.S. zoologists took note of the small number of titles in experimental zoology. Only two titles appeared on genetics, one reported, "so complete has become the divorce between continental zoology and genetics."<sup>16</sup>

By the time an International Congress of Zoology returned to U.S. soil in 1963, biology in general in the United States had developed from an under-funded and academic endeavor to "become a vast, well-endowed enterprise of considerable scientific as well as social and political significance."<sup>17</sup> Not surprisingly, certain specialties benefited from these changes more than others. War and economic depression destroyed the stable infrastructure of international trade and imperial prosperity upon which huge natural history collections – the traditional residence of the study of organisms – had thrived. Meanwhile, institutes of genetics, able to produce results on more limited resources and immerse their research programs within the methods of experimental science, dominated.<sup>18</sup> Despite the emphasis on the organism emphasized by many of the architects of the evolutionary synthesis such as Ernst Mayr, eventually Watson and Crick's triumphant discovery of the structure of DNA in 1953 seemed to seal the fate of organismal biology.<sup>19</sup> This trend represented a triumph of experimental zoology that overstepped even what Bateson – in many ways a naturalist at heart – had ever envisioned.

Throughout these changes the question of how to provide some unity among life scientists amid rampant specialization and increasing competition remained high on the agenda of some. In 1947, for example, some workers had founded the American Institute of Biological Sciences (AIBS) in order to deal with the fact that, unlike the chemists and the physicists, U.S. biology was made up of 35–40 national societies in a "bewildering array of groupings" devoted to particular areas or taxa.<sup>20</sup>

<sup>15</sup> Lameere, 1911–1912, p. 69.

<sup>16</sup> Kellicott, 1913, p. 594.

<sup>17</sup> Rainger, 1991, p. 15.

<sup>18</sup> Allen, 1978. Also see Kohler, 2002.

<sup>19</sup> Benson, 1989, p. 1072.

<sup>20</sup> Grobman, 1969, pp. 181–183.

Both the intellectual and pragmatic incentives to fight such confusion by portraying more unity within the life sciences were great. As Alfred Romer later explained, “The major argument at the beginning for starting the institute was the real necessity of having someone to speak for biology in general when it came to government relations, grants, and so on.”<sup>21</sup> Although the AIBS made little headway in reducing the “curse” of disunity,<sup>22</sup> the incentives to organize had only increased in the face of greatly expanded federal support of science during the Cold War.<sup>23</sup>

There were other ways to work for unity, of course. The question of unifying life scientists on conceptual grounds dominated the lives of the architects of the “evolutionary synthesis” of the 1930 and 1940s. Here, unity would be established by melding the work of geneticists and naturalists (and thus experimental and organismal biology) through reestablishing Darwinian natural selection as the primary mechanism of evolution. But while the evolutionary synthesis represented a productive research program, there was, not surprisingly, always less unity than its architects claimed. Those telling the story of the synthesis often glossed over the diversity within both genetics and natural history for the sake of triumphant narratives. And they often explicitly broke with the methods and priorities of traditional disciplines by founding new ones like evolutionary biology.<sup>24</sup>

The International Congresses of Zoology had continued to meet amid these changes, despite two decade-long breaks due to world wars (Gratz in 1910, Monaco in 1913, Budapest in 1927, Padua in 1930, Lisbon in 1935, Brazil in 1940, and Copenhagen in 1953). But given the tremendous specialization that had taken place in zoology, some began wondering whether the congress served a useful purpose anymore. One observer worried, for example, whether a glance over the extremely eclectic collection of papers from the 1953 congress in Copenhagen – from zoological nomenclature to the natural history of the eel – would lead many to conclude that zoological congresses were scientifically passé.<sup>25</sup> In response, Professor Ragnar Spärck, president of the 1953

<sup>21</sup> Alfred S. Romer to Gerard R. Pomerat, September 23, 1963, folder 35, box 5, series 200, RG 1.2, Rockefeller Foundation Archives, Rockefeller Archive Center.

<sup>22</sup> Appel, 1988, p. 87. In the end the awkward structure of the AIBS – in which individual societies selected board members, each intent on protecting their own specialty’s interests – only seemed to emphasize the lack of unity (Grobman, 1969, p. 185).

<sup>23</sup> Friedmann, 1960.

<sup>24</sup> On the evolutionary synthesis, and the various motives behind calls for unity, from aesthetic goals to disciplinary self-interest see Cain, 2000a, b; Harwood, 1994; Mayr and Provine, 1998; Provine, 1971; Smocovitis, 1992, 1999.

<sup>25</sup> Duryee, 1958.

congress, argued against the recently canvassed idea that general congresses of zoology should give way to congresses of specialists. He urged zoologists to remember that “the problems of cytology, biochemistry, physiology concern living animals,” and insisted the congresses played an important role in “keeping zoology as a unit and keeping all kinds of zoologists as naturalists.”<sup>26</sup>

Some U.S. zoologists agreed with Spärck that the congresses continued to serve a useful purpose within the diverse spectrum of the life sciences. Between the 1948 congress in Paris and the 1958 congress in London, zoologists Emil Witschi of the University of Iowa and H. Burr Steinbach of the University of Chicago and president of the American Society of Zoologists (ASZ), began campaigning not only to increase the U.S. participation in the congresses (traditionally American participation had been light, “made up mostly of ‘tourists’ who for one reason or another happened to be in Europe anyway”<sup>27</sup>) but to invite the congress to the U.S.<sup>28</sup> The plan fit well with an energetic campaign being carried out at the time by the American Society of Zoologists to both combat specialization and highlight the importance of zoology to a national audience.<sup>29</sup> The Permanent Committee of the International Congresses of Zoology, led by Jean G. Baer of the University of Neuchâtel, Switzerland, accepted the American zoologists’ invitation, despite serious concern on the part of some zoologists that the restrictive Cold War visa policies of the United States would prevent those who had once been members of the communist party from attending.<sup>30</sup>

The U.S. zoologists in charge of organizing the congress took the opportunity such a meeting would afford them extremely seriously. As chairman of the initial Organizing Committee for the congress, Emil

<sup>26</sup> Spärck, 1956.

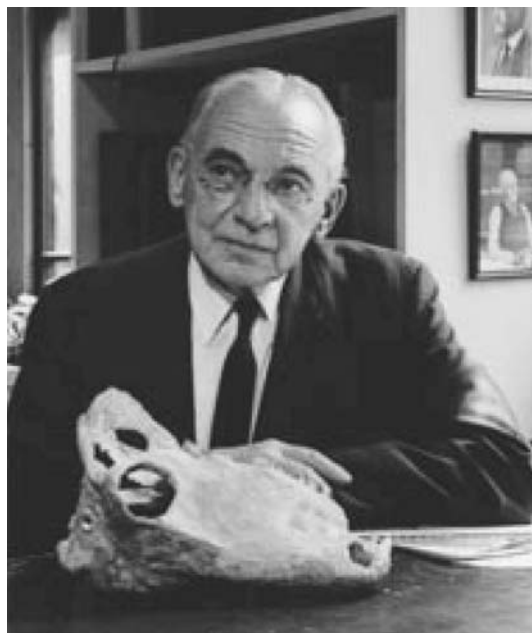
<sup>27</sup> Papers of Alfred Sherwood Romer, ca. 1911–1989. Correspondence on scientific societies and other organizations, ca. 1934–1973. “Contributions to a history of the XVIth International Congress of Zoology,” p. 2 undated, in Box 4, Folder ICZ History, HUGFP 89.10 Harvard University Archives.

<sup>28</sup> H. Burr Steinbach to L.A. Maynard, January 15, 1958. NAS-NRC.

<sup>29</sup> See Benson, 1990.

<sup>30</sup> For example, M. Westergaard of the University Genetics Institute in Copenhagen campaigned for the zoologists’ congress to be transferred to Canada on the grounds “the United States have not yet recovered sufficiently from the late senator McCarthy to be in a position to accept the responsibility as host for International Congresses.” M. Westergaard to Julian E. Mack, Scientific Officer of the Swedish Embassy, October 13, 1959 Box 4, Folder ICZ January–July 1960, HUGFP 89.10.





*Figure 1.* Alfred Romer. Courtesy Harvard University.

Witschi envisioned a program of unity early on by representing the various types of zoology within the organization of the congress. “For the presidency, of course we will have to consider H.J. Muller and others that are particularly known as exponents of the American Society of Zoology and of Experimental Zoology,” he wrote.<sup>31</sup> After some embarrassing confusion arising from the London congress having informally nominated H.J. Muller for the presidency in order to protest the U.S. visa policies that prevented him from attending the Atomic Conference,<sup>32</sup> paleontologist Alfred Romer (director of the Museum of Comparative Zoology at Harvard) took charge of the presidency after a

<sup>31</sup> Emil Witschi to Frank L. Campbell, NAS. September 18, 1958. NAS-NRC. In addition to Witschi, the organizing committee included Curtis W. Sabrosky (USNM), John R. Preer (University of Pennsylvania), Harold J. Coolidge (NAS), Paul Weiss (Rockefeller Institute), Carl L. Hubbs (Scripps), John T. Emlen, Jr. (University of Wisconsin), E.J. Boell (Yale), Ernst Mayr (Harvard), James A. Oliver (AMNH), C.L. Prosser (University of Illinois), and Thomas Park (Chicago).

<sup>32</sup> Jean G. Baer, President of the Permanent Committee of the ICZ, to Romer, April 11, 1960, Box 4, Folder ICZ January–July 1960, HUGFP 89.10.

mail vote (Figure 1).<sup>33</sup> Romer was hardly the representative of experimental zoology Witschi had initially thought appropriate, but many of those polled had expressed a preference for Romer, and the Organizing Committee had unanimously approved his election.<sup>34</sup> Romer was joined by fellow officers Alexander Wetmore (Smithsonian) as Treasurer, Gairdner B. Moment (Goucher College) as Secretary General, John A. Moore (Columbia) as Program Chairman, and Gerard Piel, editor of *Scientific American*, as Finance Chairman.<sup>35</sup>

The number of members expected at the 16th International Congress of Zoology in Washington D.C. – three to four thousand scientists, including more than a thousand members from abroad – reflected the enormous expansion of the zoological sciences.<sup>36</sup> As plans for such a large congress commenced in earnest, Romer took it upon himself to be much more than just a presidential figurehead. Indeed, he sacrificed his first year of retirement for the sake of participating fully in the organization because, as he explained, “this congress may be a crucial one.” He was convinced that unless they focused on “synthesis in opposition to continued fragmentation, this may be the last zoological congress that will ever be held.”<sup>37</sup> Romer would later recount how some

<sup>33</sup> The thirty replies from fifty members of the NAS canvassed for nominations for the presidency (summarized in Emil Witschi to Members of the Organizing Committee, Undated. NAS-NRC) broke down as follows:

Alfred S. Romer	18	Ernst Mayr	8
Paul Weiss	7	Tracy Sonnerborn	6
Theodosius Dobzhansky	5	Herman Muller	4
Francis Goldschmidt	4	Victor Twitty	3
Alexander Wetmore	3	Milislav Demerec	3
Theophilus Painter	3	John Nicholas	3
Evelyn Hutchinson	3	Sewall Wright	3

<sup>34</sup> “Contributions to a history of the XVIth International Congress of Zoology,” p. 5 undated, in Box 4, Folder ICZ History, HUGFP 89.10.

<sup>35</sup> The vice presidents of the congress were; Umberto D’Ancona (Italy), Jean G. Baer (Switzerland), Enrique Beltran (Mexico), N. John Berrill (Canada), L.C. Birch (Australia), P.P. Grassé (France), Sven Horstadius (Sweden), Libbie H. Hyman (U.S.), H.J. Muller (US), Ye. N. Pavlovskii (USSR), Eduardo de Robartis (Argentina), Oswain W. Richards (UK), B.R. Seshachar (India), E.J. Slijper (Netherlands), George G. Simpson (US), Nikolaas Tinbergen (UK), Tohru Uchida (Japan), and C.M. Yonge (UK).

<sup>36</sup> “Proposal for funds for the XVI International Congress of Zoology,” undated. NAS-NRC.

<sup>37</sup> Romer to Graham DuShane, AAAS, June 6, 1960, Box 4, Folder ICZ January–July 1960, HUGFP 89.10.

participants in the early congress organizers' meetings earnestly asked whether given such fragmentation "there might not be any use in holding a congress at all... Our universal feeling in answer to this gloomy question was 'Hell, no!'" Indeed, the committee decided to launch a "counter-reformation" aimed at establishing a full interchange of information "as to what the other fellows were getting out of their mining pockets," and help zoologists catch up with the latest work in other fields. Most importantly, they aimed to "essentially, start to put the subject – and the animal – together again."<sup>38</sup> Soon after accepting the nomination, Romer composed a manifesto for the congress, in which he framed the meeting as a panacea for the very specialization that had threatened its relevancy:

The history of zoology, in a broad use of the term, has been for the past century and a half one of fragmentation. Students of animal life in the 18th Century and before dealt mainly with rather superficial aspects of natural history, but did, at any rate, consider the organism as an entity. By the beginning of the 19th Century there came the realization that study should be made in a more scientific fashion. Inevitably, however, came the subdivision of the study into fragments – first the (unfortunate) split between structural and physiological disciplines, followed by further subdivisions into a whole series of discrete fields. A century ago the worker in one area of animal biology could at least understand the general nature of results in other areas and have some idea of their application to his own discipline and its part in the total picture. Today, this is not the case, and the situation is increasingly confused by the growth of areas of biological research occupied by workers trained primarily in chemistry and physics who would not recognize an organism if they met it walking down the street. We are, most of us, happily engaged in pursuing our specialties with little regard to the proper ultimate goal of all biological work – a goal toward which all our special interests should be aimed – namely, an understanding of whole organisms, how they have come into being and how they function in nature.

It is high time that some attempt should be made to reverse this process of disintegration and fragmentation of animal biology, and try to work toward synthesis.<sup>39</sup>

<sup>38</sup> Romer to Philip H. Abelson, AAAS, January 7, 1963, Box 5, ICZ Miscellaneous January–May 1963, HUGFP 89.10.

<sup>39</sup> Alfred S. Romer to Members of the Organizing Committee, May 6, 1960. NAS-NRC.

Romer's description of how "half a century or so ago, like every other major scientific discipline, zoology was essentially a discrete unit structure"<sup>40</sup> would have looked somewhat strange to any participant of the eclectic 1907 congress, particularly Agassiz and Brooks. Yet certainly things had become even more defuse and diverse, accompanied by at times intense competition as new specialties like genetics tried to carve out independent professions. Romer had personal experience with how the competition between increasingly specialized fields often inspired scientists to emphasize difference in order to convince both newcomers and funding agencies that their fields deserved more status and funds. Like his predecessor Alexander Agassiz, Romer was an organismal biologist on a campus being overtaken by biologists who not only emphasized the study of life through the methods of physics and chemistry, but in their most enthusiastic moments seemed to imply these were the *only* ways to study life and "all else was stamp collecting."<sup>41</sup>

Romer was not, of course, the only one concerned by this state of affairs. Barry Commoner, for example, would soon use his address as vice president of the AAAS to launch an ardent defense of classical biology in the face of reductionist critiques. Commoner warned that the current trend toward reductionism was turning bright young biologists into biochemists and biophysicists. This increasing separation between 'traditional' and 'modern biology' would soon have "unfortunate effects on the number and competence of students in traditional departments of biology, zoology, and botany, and may be reflected in the level of support these departments command both within and without the university."<sup>42</sup> The question was not only whether congresses were useful, but zoological departments! Ernst Mayr would soon publish a similar manifesto (indeed – surely not coincidentally – 3 days after the congress ended!).<sup>43</sup> The fact that institutional space and funding access were often at stake sometimes turned the tension arising from different methods and approaches into outright animosity. E.O. Wilson has recounted how in the 1960s the heady claims of the molecular biologists, led by James Watson, made the atmosphere in the department of biology at Harvard so stifling that the organismal biologists planned a mass exit.<sup>44</sup> Given what seemed to be at stake, support poured in for

<sup>40</sup> Congress description attached to Romer to Abelson, April 4, 1963, Box 5, Folder ICZ Miscellaneous January-May 1963, HUGFP 89.10.

<sup>41</sup> Johnson, 2007.

<sup>42</sup> Commoner, 1961, pp. 1745 and 1747. Also see Beatty, 1990.

<sup>43</sup> Mayr, 1963.

<sup>44</sup> Wilson, 1995, pp. 225–226.

Romer's new approach. Everyone seemed to agree that things had reached a critical point. Paul Weiss of the Rockefeller Institute, for example, wrote bluntly that "this congress is either to make or break zoology."<sup>45</sup>

### **Selling Zoology Part I: The Zoologists**

Exactly how the congress could "put the organism back together again" then dominated the new organizing committee's correspondence and meetings. In August 1960 Gairdner Moment requested suggestions for general themes, urging members to keep in mind "what seems to be called in Washington the 'overview' or the 'big picture.'"<sup>46</sup> Eventually the committee decided that morning, "plenary" sessions, would focus on broad themes while the afternoon sessions would be devoted to more traditional topic-oriented sessions. Discussion then centered on the nature of the plenary session's broad themes. Echoing Romer's sentiments, some suggested concerning "ourselves particularly with organisms," in part on the grounds that other congresses scheduled to meet in 1963 would be covering genetics, population genetics, speciation, and cellular biology.<sup>47</sup> C.L. Prosser of the Department of Physiology at the University of Illinois argued, for example; "We must certainly emphasize integrated animals, not only integrated as organisms, but also as part of a total ecosystem."<sup>48</sup> Weiss similarly insisted "the program committee must never lose sight of animals, or, to put it another way, should accept papers that would be suitable for other congresses only if they have a bearing on the whole animal."<sup>49</sup>

But while Prosser, Weiss, and Romer emphasized a "return to the organism," others argued that emphasizing recent work on DNA would provide the best means of conferring unity. John Preer, professor of zoology at the University of Pennsylvania, hoped the congress would emphasize the general and unifying principles of zoology rather than "the whole organism." Specifically, in marked contrast to those who

<sup>45</sup> Paul Weiss to Romer. May 9, 1960, Box 4, Folder ICZ January–July 1960, HUGFP 89.10.

<sup>46</sup> Moment to the members of the Organizing Committee, August 14, 1960. NAS-NRC.

<sup>47</sup> John T. Emlen, "Suggestions for Symposia," Minutes of the Organizing Committee, 13 October 1960, Box 5, Folder ICZ August–December, 1960, HUGFP 89.10.

<sup>48</sup> C.L. Prosser to Romer, May 18, 1960. NAS-NRC.

<sup>49</sup> "Recommendations of the Organizing Committee" to the Program Committee, October 13, 1960. NAS-NRC.

wished to “keep zoologists as naturalists,” he hoped that the congress organizers would capitalize upon Sewall Wright’s recent statement that genetics was taking over the role of natural history as the great unifying strand in biology. He disagreed wholeheartedly with the facetious (“but not entirely so”) suggestion by some that the theme of the Congress be “Down with DNA.” A negative approach would be doomed to fail, he urged, and the congress must recognize that important advances were being made at all levels; population, organism, cell and molecule. Preer concluded that “a better and more successful policy will result from joining the DNA’ists and trying to return them to the fold rather than attempting to ignore them.”<sup>50</sup>

As the organizing committee struggled to find the means of unifying zoology, Romer asked the Program Chairman, Columbia University zoologist John A. Moore (Figure 2), to consider the field’s fragmentation and then compose a tentative program for the congress that “emphasizes the unity of Zoology.”<sup>51</sup> Moore took up the task with gusto, not surprising given his own experience with over-specialized biologists. He later recounted how, after a broad education at Columbia where “you were expected to know all branches of biology at a graduate school level – all,” he had been astonished at the specialization complacently permitted elsewhere. Upon arriving at Woods Hole and other laboratories Moore found to his dismay that other zoologists “knew one thing very well, but the rest was just a mystery to them.”<sup>52</sup> Moore had his own hypothesis for why this was the case, a guess that influenced his particular strategy for establishing greater unity through the congress. He believed the cause of such fragmentation and specialization rested in poor communication and specialists presenting their data in the jargon of their restricted fields. As a result he insisted that the congress program’s first priority must be to broaden communication and present zoology in such a way that any zoologist could obtain a real understanding of the major subdivisions of the field. To do so, he envisioned the morning, plenary papers as clear presentations of the current status of concepts and theories ordered along hierarchical levels of organization, namely: The Cell – Structure and Function, Inheritance, Development, Evolution, The Animal Kingdom, and Animal

<sup>50</sup> John R. Preer to Romer. May 17, 1960, Box 4, Folder ICZ January–July 1960, HUGFP 89.10.

<sup>51</sup> “2nd Meeting of Executive Committee, 6 February 1961, Tentative Program Outline,” Presented by John A. Moore. NAS-NRC.

<sup>52</sup> “Transcript of oral history interview with John A. Moore, July 23, 1998,” by Jan Erickson, University of California, Riverside. See <http://www.ucrhistory.ucr.edu/moore.htm>.



*Figure 2.* John A. Moore. Courtesy University of California Riverside.

Behavior (notably, he felt ecology should be included, but confessed he did not know where). Moore envisioned the plenary symposia as reflecting “the emergent structure of common understanding to which all the diverse fields of zoology are contributing.”<sup>53</sup>

The proposed program ultimately submitted by Moore to the Organizing Committee included a nod to the interdependence of organisms in the natural setting (ecology) and the development and integration of the organism (development biology). Morphological and behavioral adaptation (evolution) was also mentioned, as now being viewed as parts of a more coherent whole.<sup>54</sup> But the organism was indeed difficult to find in these proposals, a fact noticed by those worried about alienating organismal zoologists. Romer wondered early on whether they could indeed get individuals from such specialized backgrounds to listen to each other. Can we, he asked Piel, “persuade, say, a tapeworm specialist to be educated on RNA and DNA, a chemical embryologist to be willing to learn about behavior from Nick Tinberger [sic] or such? Maybe, if we give them plenty of time to discuss their own

<sup>53</sup> “2nd Meeting of Executive Committee, 6 February 1961, Tentative Program Outline,” Presented by John A. Moore. NAS-NRC. No solution seems to have been found to the fact ecology had no session of its own.

<sup>54</sup> “Proposed Program,” November 13, 1962, Folder 189, Box 26, Series 200 U.S., RG 1.2, Rockefeller Foundation Archives, RAC.

pet fields in the afternoons.”<sup>55</sup> He wrote to Moore that he knew many of the congress attendees would be “plain, down-to earth zoologists, who tend to deal simply with the bugs or bats or what have you, and may be scared off by primary symposia which are in great measure general biology, unless we can have some more specific fare dangled before their noses.”<sup>56</sup> Romer would often repeat his concern that they avoid scaring, say, “the echinoderm taxonomist from New Zealand. When we get him here, we want to educate him; but first we have to decoy him here, and if we start in, hot and heavy, on biochemistry, etc., he may stay home.”<sup>57</sup> He was even concerned that the special symposia would have “too strong a slant toward the academic-laboratory type of zoological workers.” The sessions must, he insisted, provide appropriate attractions to the ecologists, field men, and systematists who always made up a good fraction of the congress members.<sup>58</sup> There was a practical reason, as well, for keeping traditional zoologists happy, illustrated by Romer’s insistence that the congress enlist the American Museum of Natural History given its importance “both as regards staff and number of very potent and wealthy trustees.”<sup>59</sup>

Despite their different strategies, both Moore and Romer agreed that the goal of the congress was to discipline the disparate parts of zoology into unity and renewal, and they and others put a lot of thought into an appropriate symbol for such an important event. The final design by the scientific illustrator Rudolf Freund exemplified the compromise that had been reached between Moore’s emphasis on unity through underlying concepts, and Romer’s emphasis on unity through a return to the organism. Emblems were customary for such meetings, gracing the heading of letters, programs, proceedings, and commemorative pins. The first tentative emblem for the congress had been an American bison standing in front of the Washington Monument (Figure 3), until Witschi pointed out that “So far, emblems and placards of the International Zoology Congress, as far as I remember them, have strictly kept away from national and political implications. Obviously if we depart at this moment, this will be taken as a challenge and license for the Russians to

<sup>55</sup> Romer to Gerald Piel, March 23, 1961, Box 5, Folder January–July, 1961, HUGFP 89.10.

<sup>56</sup> Romer to Moore, May 24, 1961, Box 5, Folder January–July, 1961, HUGFP 89.10.

<sup>57</sup> Romer to Moore, February 19, 1962, Box 5, Folder ICZ January–March 1962, HUGFP 89.10.

<sup>58</sup> Romer to Hermann, Moment, Piel, and Moore. March 28, 1962. NAS-NRC.

<sup>59</sup> Romer to Hermann, December 5, 1960. Box 5, Folder ICZ August–December, 1960. HUGFP 89.10.



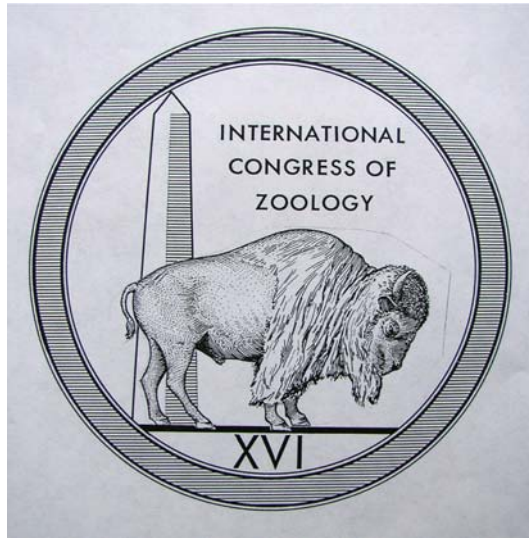


Figure 3. A draft emblem. Courtesy of the National Research Council.

put a hammer and sickle on the next emblem.”<sup>60</sup> For his part Romer was “not so much worried about it as a nationalist symbol as perhaps a possible interpretation by foreigners that it might be a phallic emblem.”<sup>61</sup> Moment, who thought the emblem should match the unique aims of the 1963 congress, was disappointed that “there is nothing about this emblem that could not have been drawn in 1910 or earlier.” He queried the organizing committee; “Should we attempt to indicate the present decade in some way such as by using electron orbits for a border or inserting symbols of present-day concerns like DNA molecules, population formulae, etc. into the frame?”<sup>62</sup> The entomologist Curtis Sabrosky of the USDA promptly replied that he thought fancy symbols should be forgone in favor of simplicity.<sup>63</sup> But in the end the organizers chose complexity in the name of emphasizing the broader aims for the meeting. The final version (Figure 4) featured a phoenix in front of a map of the globe, standing on a microscope and surrounded by helical “flames” to symbolize the basic structure of the molecules of life. The mythological phoenix’s ability to consume itself in fire only to arise again

<sup>60</sup> Emil Witschi to Romer, February 24, 1961, Box 5, Folder ICZ January–July 1961, HUGFP 89.10.

<sup>61</sup> Romer to Witschi, March 7, 1961, Box 5, Folder ICZ January–July 1961, HUGFP 89.10.

<sup>62</sup> Moment to Members of Organizing Committee, Early 1961. NAS-NRC.

<sup>63</sup> Curtis W. Sabrosky to Moment, April 4, 1961. NAS-NRC.



*Figure 4.* The final 1963 International Congress of Zoology emblem. Courtesy of the National Research Council.

in youthful vigor from the ashes provided an apt metaphor for the congress organizers' hopes to restore zoology and the organism as a central theme of study. As the congress approached, the press releases enthusiastically explained the significance of the phoenix; "As the immortal creature that renews its life every aeon or so, it is an appropriate symbol for the present reunification and renaissance of the animal sciences resulting from the fundamental advance of the past decade or so."<sup>64</sup> And in case the symbols on the emblem left any doubt, a caption was added that read; "The Phoenix symbolizes the Reunion of Zoology from its Separate Specialties."

In the end Romer supported Moore's approach, even as he encouraged him to tone down the prevalence of DNA and biochemistry. But others continued to express concern with Moore's emphasis on genetics and cell biology as the grounds on which reunion would be achieved. The Russian zoologist, M. S. Ghilarov, pointed out that some of the sessions included issues, such as the problem of genetic continuity and cell biology, for which special congresses were being held that same summer.<sup>65</sup> But Moore would not back down, replying;

<sup>64</sup> Undated Letter from Detlev Bronk to Postmaster General. NAS-NRC, requesting that a commemorative stamp be issued in honor of the congress.

<sup>65</sup> M.S. Ghilarov to Secretariat XVI International Congress of Zoology. October, 1962. NAS-NRC.

We must all admit with pride ... that the field of zoology is not static and I would hope that its Congresses should reflect the newer developments in the field. Our discussions in the general areas of cell biology and genetics will emphasize the broad principles of those fields and not the plethora of specific details. It is no longer possible for the program of a Zoological Congress to be complete if it avoids considering the basic contributions to our science that have been made by genetics and cell biology.<sup>66</sup>

Despite Romer's cautious advice, Moore's triumphant tone regarding the source of reunion – which he and fellow organizers began portraying as already found rather than a goal of the congress – dominated applications for funding and, eventually, press releases. Applications for funds announced that the symposia would be dedicated to “comprehensive presentations of the broad generalizations from recent work in molecular biology, cell biology, developmental biology, comparative physiology, and animal behavior” in order to “promote the fruitful confrontation of specialists in diverse fields and the bridging of the gaps among sub-disciplines.”<sup>67</sup> The Rockefeller Foundation was informed that the morning sessions would “provide specialists with a synthesis of the growing body of common understanding that unites the life sciences today.”<sup>68</sup> As the congress approached, press releases announced how “Molecules of DNA, the hereditary material, have been found to exhibit a uniform double-helix structure – in protozoa as well as presidents. And evidence is accumulating for the universality of the biochemical code which guides the synthesis of protein from amino acids in living systems.” While departing in method and philosophy from traditional approaches, such work had demonstrated a remarkable similarity in the structure and function of all types of cells. This had resulted in “a rebirth of an integrated science of animal biology,” in which incomprehensible complexity was yielding to order and understanding in terms of a few major processes.<sup>69</sup> Notably, as Moore continued his strategy of focusing on the unifying qualities of DNA, Romer kept to

<sup>66</sup> Moore to Ghilarov, November 16, 1962, Box 5, Folder ICZ Miscellaneous September–October 1962, HUGFP 89.10.

<sup>67</sup> “Proposal for funds for the XVI International Congress of Zoology,” undated. NAS-NRC.

<sup>68</sup> “Proposed Program,” December 13, 1962, folder 189, box 26, series 200, RG 1.2, Rockefeller Foundation Archives, RAC.

<sup>69</sup> Press release, “News from the XVI International Congress of Zoology, Washington, August 20–27, 1963,” May 27, 1963, p. 2. NAS-NRC.

his own initial emphasis on restoring the concept of the total organism when he announced the congress in the June 1963 issue of *Science*.<sup>70</sup>

While Moore insisted on the importance of including genetics and cell biology in the program – indeed, as the unifying threads of the congress – unfortunately geneticists found little incentive to “join the fold.” Of 36 sessions and 510 papers, the congress could put together only one session (with 17 papers) on genetics.<sup>71</sup> As Moore self-consciously explained, “There is very little on genetics proper on the program... This is largely a consequence of the fact that nearly all American geneticists will be in Europe for their congress, which meets one week after ours closes.”<sup>72</sup> The fact systematics, paleontology and zoogeography, traditionally dominant topics at zoological congresses, expected few speakers apparently required no explanation. But even if a large contingent of geneticists had shown up, the “integration” of zoologists at the meeting would have been difficult since, for practical purposes, the organizers put afternoon sessions devoted to experimental biology in the Sheraton Hotel and non-experimental biology in the Shoreham Hotel.<sup>73</sup> Despite this pragmatic admission that zoologists of experimental and non-experimental branches could get along quite well in isolation, organizers obviously hoped that the plenary sessions would establish connections between these approaches. Moore, at least, hoped that “all of us will be broader zoologists on August 27 than August 20.”<sup>74</sup> But the plenary contributors had indeed been given quite a task!

The fate of the published volume based on the plenary sessions, a text entitled *Ideas in Modern Biology*, demonstrates how difficult reviving and unifying a dead animal, particularly a mythical one, really is. Eager

<sup>70</sup> Alfred S. Romer, “International Congress of Zoology, 20–27 August 1963,” *Science* 140(1963):1113–1116.

<sup>71</sup> The most sessions (6, with 86 papers) were categorized as invertebrate zoology, with, in descending order of number of papers, sessions on physiology, embryology, ecology, endocrinology, parasitology, cell biology, evolution, behavior, marine zoology, genetics, vertebrate zoology, systematics, zoogeography, and paleontology.

<sup>72</sup> Moore to Organizing Committee, April 30, 1962. Box 5, Folder ICZ April–May 1962, HUGFP 89.10.

<sup>73</sup> Report of the Program Chairman, John Moore, p. 20. Box 4, Folder ICZ History, HUGFP 89.10. Moore reported that “the experimental versus non-experimental grouping seems to have worked relatively well though obviously it could not take care of the unique interests of all members – some were forced to walk up or down that long hill between the Shoreham and Sheraton (but if they went via rout [sic], at least, their eyes were diverted by the denizens of the swimming pool; this route became increasingly popular as the Congress progressed).”

<sup>74</sup> Moore to Organizing Committee, July 26, 1963. Box 6, Folder ICZ Miscellaneous June–December 1963, HUGFP 89.10.

Table 1. Table of contents for *Ideas in Modern Biology*

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Part one – Genetic continuity

1. The duplication and recombination of genes *Matthew S. Meselson*
2. Gene action *S. Spiegelman*

Part two – Cell biology

3. A general view of cell structure and function *E. De Robertis*
- 3a. Illustrations of cell fine structure *Keith R. Porter*
4. The synthesis of macromolecules *Vernon M. Ingram*
5. The transfer of energy within cells *Albert L. Lehninger*

Part three – Development

6. Questions posed by classical descriptive and experimental embryology *Jane M. Oppenheimer*
7. Mechanisms of cellular differentiation *Clement L. Markert*
8. Cellular interactions in development *M. Abercrombie*

Part four – Evolution

9. The effects of genetic change at different levels *J.M. Rendel*
10. Selection in and of populations *R.C. Lewontin*
11. Evolution at the species level *Ernst Mayr*
12. Evolution in geological time *Björn Kurtén*

Part five – Phylogeny

13. Levels of biological organization and their physiological significance *C. Ladd Prosser*
14. Comparative morphology and physiology of excretion *Bodil Schmidt-Nielsen*
15. Phylogenetic relations of the major groups of animals *G.S. Carter*

Part six – Behavior

16. Physiological basis of behavior *Theodore Holmes Bullock*
17. The ontogeny of behavior *W.H. Thorpe*
18. Behavior and natural selection *N. Tinbergen*

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to extend the influence of the congress beyond those who actually came to Washington, the committee had discussed early on how if the plenary sessions succeeded, the text of such sessions would surely interest a publisher. The organizing committee soon began envisioning a volume based on the major symposia, that would bring their “attempt to summarize and integrate the present state of zoological sciences” to a broader audience.<sup>75</sup> Moore worked hard after the congress to compile the plenary session contributions into book form (Table 1). With the manuscript complete less than a year after the congress, Moore canvassed the contributors for a better title than the preliminary *Zoology Today* on the grounds “It isn’t very good.”<sup>76</sup> How the organizers ultimately justified the title, given the complete lack of botanical viewpoints is not clear, but certainly “*Ideas in Modern Biology*” implied more wide-ranging significance than “*Ideas in Modern Zoology*.” Moore enthusiastically introduced the volume, describing how in spite of the exponential increase in knowledge that had occurred in the middle years of

<sup>75</sup> Moment to Albert Wolfson, Dept. Biol. Sci., Illinois, before August 7, 1961. NAS-NRC.

<sup>76</sup> Moore to the authors, June 26, 1964. Box 4, Folder ICZ General, HUGFP 89.10.

the 20th century, biologists now felt a unity due to the development of a few major conceptual schemes. “In the Plenary Symposium of the XVI International Congress of Zoology, many of us feel that we saw our Phoenix, symbol of unity and synthesized from the varied data of biology.” Moore was optimistic that the volume provided the “most brilliant up-to-date synthesis of the major ideas in modern animal biology.”<sup>77</sup>

But as Moore worked to get the volume “in the hands of every biology teacher in the world that would [find] it useful,”<sup>78</sup> a critical review by one of the giants of twentieth century zoology – and a vice president of the congress – appeared. Though George Gaylord Simpson thought *Ideas in Modern Biology* summarized *some* of the most important biological questions that had been answered in recent years, he faulted the book for failing to provide the synthesis Moore portrayed.

It is inevitable and therefore is not open to criticism that a single volume on ideas in biology should present only a small sample of such ideas. The fact that five out of nineteen contributions are centered on the DNA–RNA system is probably fair sampling from a strongly biased population. It represents an imbalance of a few years ago, now passing at the primary level of research, although probably with some time to run in textbooks and other second- or third-hand works.

In contrast to congress organizers’ hope that the volume would represent “where we stand” in 1963, Simpson ironically thought it a fine statement of where zoology had stood in 1953. Echoing Romer’s admonition to Moore, he hoped readers would remember that subjects not even mentioned, including systematics and ecology, are also “replete with modern ideas, constitute major parts of zoology, and are pursued by great numbers of zoologists, probably in sum a majority of zoologists today.” Indeed, in criticizing its attention to one or two level questions rather than multilevel ones, Simpson faulted the volume for lacking the very integration for which the congress had strived. He concluded with the pointed warning that “Reunion and synthesis in science are not obtained by mere physical juxtaposition of disparate and independent studies.”<sup>79</sup>

<sup>77</sup> Moore to Fellow Members, November 1965, NAS-NRC. The Executive Committee appropriated the remaining funds of the congress to publish and distribute the volume widely, supported by the State Department and NSF. (M.R. DeCarlo to Drs. Byerly and Stevens, January 21, 1965. NAS-NRC).

<sup>78</sup> Moore to Arthur Roe, International Scientific Activities, NSF, December 29, 1965, Box 6, Folder ICZ Current, HUGFP 89.10.

<sup>79</sup> Simpson, 1965.

## Selling Zoology II: The Public

The congress organizers aimed at internal consensus through convincing zoologists of the unity of a wide range of specialties. Simpson argued that the strategy chosen – to focus on the unity conferred by the recent developments in genetics and biochemistry – proved a misguided path, inevitably unable to reinvigorate and synthesize zoology as a discipline given the many other levels at which organisms could and should be studied. The fact geneticists had little incentive to join in on the chosen unification scheme hardly helped matters. The congress's efforts to synthesize various approaches to the study of animal life may have seemed like a laudable ideal, but it simply was not convenient for all biologists to 'join the fold' of a zoological congress, whether it was unified by a focus on the organism or DNA. More generally – and importantly – by the 1960s geneticists and molecular biologists had developed lucrative external legitimizations of their work, justifications that at the time could proceed without attention to the whole organism, and inspiring little incentive to join with organismal biologists keen to resurrect what some saw as a nineteenth century creature. By contrast, those organismal biologists not safely housed in agricultural or bio-medical institutes, were still casting about for a cause that would ensure long term support and status.

For decades some organismal zoologists had emphasized their field's usefulness to human and national welfare.<sup>80</sup> Pauly has described how progressive era biologists, for example, aimed to provide “the scientific facts that formed the bases for secular thinking about organisms, including humans” which would guide society.<sup>81</sup> The inspiration for providing such justifications, both in the visions of practically-inclined zoologists, and in the pragmatic need to justify requests for government funding, had not gone away. Shifts from private to state patronage particularly strengthened the need to court new sources of funding on applied grounds. But while physics, chemistry and medical and agricultural fields had been able to carve out important spaces as useful sciences during the first half of the twentieth century, biologists had wavered both in their confidence regarding the role of applied biology and their ability to form a united agenda for proving their sciences' social relevance.<sup>82</sup> By the 1950s the example of Nazi Germany had

<sup>80</sup> Largent, 2000.

<sup>81</sup> Pauly, 2002, p. 9.

<sup>82</sup> Pauly, 1988, p. 140.

(seemingly) sealed the fate of eugenics, biologists' most active foray into serving the "public good."

That by the 1960s zoologists felt the need to create recognition of their importance to society was evident in the correspondence of the 1963 congress organizers. The most efficient way of doing this, of course, was to explicitly connect zoological research to public concerns, something oceanographers had recently done well through the venue of an international congress. Zoologists noted enviously that the 1959 International Oceanographic Congress held in New York City had already led to a great increase of facilities, projects and support.<sup>83</sup> With this example in mind, discussions regarding zoology's social relevance became prominent in the early discussions regarding what organizations might patronize the congress. Indeed, Moore had set to work creating a tentative program outline as early as possible for the "simple reason" that in order to request funds from the NSF, NIH, AEC and other federal agencies and foundations, they had to be able to describe fairly exactly what they wished to do.<sup>84</sup> Well aware of how funding in Washington worked, NAS-NRC's administrative assistant, Inger Hermann, advised the committee to provide more "meat and punch," in their proposals; the scientific 'meat' to provide individual agencies with something on which it could hang its hat and the 'punch' to show that the congress should get financial support in preference to some other applications. The text needed to explain not just the scientific justification for the congress, she wrote, but "why it is in the national interest, its significance, and purposes."<sup>85</sup> At a meeting of the Executive Committee, Coolidge had suggested symposia which had public health appeal as particularly "effective in raising money."<sup>86,87</sup> Despite the difficulties zoologists had long experienced with providing tangible and realistic panaceas to humanity's ills, the organizing committee dutifully

<sup>83</sup> Friedmann, 1960, p. 592.

<sup>84</sup> Moore to Organizing Committee, April 30, 1962. Box 5, Folder ICZ April-May 1962, HUGFP 89.10.

<sup>85</sup> Inger Hermann to Romer, January 23, 1962. NAS-NRC.

<sup>86</sup> Meeting of Executive Committee, February 6, 1961. Box 4, Folder ICZ General, HUGFP 89.10.

<sup>87</sup> Ironically, in private correspondence Romer blamed zoology's fragmentation on its overlap with medical research "which does not give a hoot for animals per se unless they are *H. sapiens*," He further noted that botanists, who were not troubled in this way, "have tended to keep a bit more unity in their ranks, although a botanical physiologist may cock his snoot at a systematist and vice versa." Romer to Philip H. Abelson, AAAS, January 7, 1963, Box 5, Folder ICZ Miscellaneous January-May 1963, HUGFP 89.10.



emphasized the fact animal biology “impinges directly upon human concerns at many points.”<sup>88</sup> A public information officer for the zoology congress outlined an ambitious program that included TV, radio, books, and magazines, “designed with considerable impact on the lay public’s image of biology and biologists in mind.”<sup>89</sup>

Press releases boldly proclaimed that the congress would improve the public’s “understanding of the relevance of the life sciences to human welfare.”<sup>90</sup> It would do so through holding a series of evening ‘Science and Man’ symposia. Given the explicit advice from Hermann to connect the congress to national interests, it is not surprising that these figured prominently in funding proposals. Moore explained to the Rockefeller Foundation, for example, that the evening symposia would be “devoted to questions of public interest in which the life sciences illuminate the making of public policy.”<sup>91</sup> He envisioned that the sessions should be advertised and open to the public – perhaps even televised – and held in the evening to accommodate a more general audience.<sup>92</sup> Moore hoped the discussions would ultimately be published for a broader audience, perhaps even as paperback books for wide distribution to the public. “The congress can perform a real public service,” he wrote, “by providing a forum where questions of vital importance to man can be given a sober and balanced consideration. ‘The Biological Effects of Radiation’ and ‘Population Growth, its Consequences and Control’ suggest themselves at once. Many other topics from the fields of Conservation, Public Health, and the Philosophy of Science would be important and timely.” Here, zoologists would examine problems “of great concern to mankind on which the specialized knowledge of zoologists can contribute to greater public awareness and understanding and to potential solutions.”<sup>93</sup>

In retrospect, the fact the evening sessions were poorly attended (a fact Moore blamed on a lack of publicity) may have been a hidden blessing, since the sessions tended to bring out zoologists’ lack of unity

<sup>88</sup> Letter from President Bronk to Postmaster General, 1963. NAS-NRC.

<sup>89</sup> Mr. Howard Lewis, 7th Meeting of the Executive Committee, 3 November, 1961. NAS-NRC.

<sup>90</sup> Press release, “News from the XVI International Congress of Zoology, Washington, August 20–27, 1963,” May 27, 1963, p. 1. NAS-NRC.

<sup>91</sup> “Proposed Program,” December 13, 1962, Folder 189, Box 26, Series 200, RG 1.2, Rockefeller Foundation Archives, RAC.

<sup>92</sup> “2nd Meeting of Executive Committee, 6 February 1961, Tentative Program Outline,” Presented by John A. Moore. NAS-NRC.

<sup>93</sup> John A. Moore, “XVIth International Congress of Zoology. Plans for its Scientific Program.” October 20, 1961. NAS-NRC.

on the very issues they claimed a special ability to contribute solutions. Each of the sessions proposed covered extremely sensitive, highly politicized subjects, some so controversial that in the end they could not be organized. Moore had to cancel a proposed session on “Man’s ability to control his biological destiny,” to be organized by Dennis Flanagan, on the grounds zoologists had thought the subject “too hot to handle.” There had been a “general reluctance on the part of those asked to participate.” Zoologists were in this case unwilling to touch a subject that could presumably be construed as a reincarnation of eugenics. At least one member of the organizing committee confessed great disappointment and noted that many members were similarly regretful that a topic of such great interest should not be addressed; “Undoubtedly this topic will be discussed elsewhere and biologists will surely be irresponsible if they do not contribute to the discussion.”<sup>94</sup>

Moore did not shy away from other controversial topics. He hoped, for example, they could have “a really bang-up” session on “Man, Nature and Pesticides.”<sup>95</sup> Rachel Carson’s *Silent Spring* had recently appeared, indicting both American science and industry as polluters of the environment. And in reply to a rumor that he was backing away from holding the session, Moore protested that “Possibly the members of the Organizing Committee of the Congress jumped to the conclusion that the ‘Evil Forces’ of the chemical industry were bringing pressure on the Program Chairman! They certainly are not at the moment and if they do in the future, it will not make one iota of difference.” Moore insisted that, on the contrary, he hoped the congress would provide a forum for discussion of the topic.<sup>96</sup> Moment went further, insisting that zoologists were duty-bound to address such controversies. “Certainly to help enlighten the general public and ourselves on such a topic (pesticides) is an obligation that biologists can scarcely deny. If we turn our back on this problem zoologists should not complain when ignorant politicians and industrialists ignore and despise such gutless pussyfooting creatures.”<sup>97</sup>

Despite Moore and Moment’s optimistic hopes for rational discussion, in reality the symposium on “Nature, Man and Pesticides” was shadowed by the emotions raised by *Silent Spring*. Indeed, the session

<sup>94</sup> Report of the Program Chairman, John Moore, p. 15. Box 4, Folder ICZ History, HUGFP 89.10.

<sup>95</sup> Moore to Romer, Moment, Piel and Hermann, October 15, 1962. Box 6, Folder ICZ Miscellaneous June–December 1963, HUGFP 89.10.

<sup>96</sup> Moore to Members of the Organizing Committee. September 21, 1962. NAS-NRC.

<sup>97</sup> Progress report from the Secretary IV. September 1962, Box 5, Folder ICZ Misc. September to October, 1962, HUGFP 89.10.

emphasized the wide range of priorities and divisive institutional allegiances of animal scientists involved in the issue of pest control, providing starkly differing views of whether there was even a problem in the first place. Wayland J. Hayes, a toxicologist, criticized what he called “scare articles” by arguing that mortality and morbidity from pesticides such as DDT arose almost entirely from inadequate labeling, improper storage and use.<sup>98</sup> D.J. Keunen, by contrast, of the Zoological Laboratory of the University of Leiden, called Carson’s book an “admirable summary of facts regarding the terrible consequences of too free use of insecticides.”<sup>99</sup> Ecologist Paul B. Sears of Yale University defended Carson and allies from those who would stigmatize them as emotional, impractical, mere birdwatchers, aesthetes, or “the bugs and bunny crowd.” “When it comes to emotion,” he warned, “neither side has a monopoly.”<sup>100</sup> In an effort to explain the tension evident among contributors, session organizer I.L. Baldwin, who had himself written a highly critical review of Carson’s work for *Science*, pointed out that “the differing value judgments which each of us place on various items (public health, agricultural production, and wildlife)” meant that, in the face of firm opinions and few facts, values threatened to outweigh the concerns of science. Still, he insisted that the issue of pesticides was “a subject on which the people of the world properly look to the biologist for thorough analysis and sound judgment.”<sup>101</sup>

The problem was that each of these scientists came from one of a diverse range of disciplinary backgrounds and institutions, factors that influenced their reaction to this “important matter.” The symposia reflected an increasing dilemma facing the entire scientific community during this period, as some scientists insisted that science must be made “socially responsible.” K. Moore has described how “entering the public, political realm posed serious problems for scientists because it suggested that multiple interpretations of evidence were possible among scientists, undermining the claims of scientists to universal standards of interpretation.”<sup>102</sup> Controversies within those topics drawn upon for external legitimization, in other words, could expose the extraordinary lack of internal consensus on methods and values among experts.

These public sessions also became embroiled in the long-standing polemics of competition over the best place and way to do zoological

<sup>98</sup> Hayes, 1965.

<sup>99</sup> Kuenen, 1965.

<sup>100</sup> Sears, 1965.

<sup>101</sup> Baldwin, 1965.

<sup>102</sup> See Moore, 1996, p. 1613.

research. Agassiz and Brooks would have been proud of the defenses of organismal biology given during a special symposium on the scientific use of natural areas. Importantly, and foreshadowing future successful external justifications of zoology and other naturalist traditions, it was here that field zoologists staked out their claim as advisers to the growing conservation movement. Harold J. Coolidge, for example, called for zoologists gathered at the congress to lend their support and scientific knowledge to governments to help set aside nature reserves.<sup>103</sup> Kasimierz Petruszewicz of Poland then condemned the disregard of field research among “laboratory experimenters intoxicated with their undoubtedly great successes, enchanted with the exactitude and precision of their own research work.” Humanity relied on the whole rather than the parts for its well being, he insisted.<sup>104</sup> Echoes of Bateson’s enthusiasm and Agassiz’ anxiety over trends at the 1907 congress could be heard as Raymond Hall reflected that Theodore Roosevelt claimed to have abandoned all ideas of being a scientist because the college he attended “ignored the possibilities of the faunal naturalist,” treating biology purely as a science of the laboratory and the microscope.” Surely a proper balance was needed in modern teaching of biology to avoid turning away those interested in the “economy of Nature.”<sup>105</sup> These are the defensive polemics of disunity and competition rather than unity, precisely where zoologists claimed to be able to adjudicate on issues of public concern. Given the quarrels voiced in both these sessions, it was perhaps just as well that a session on the “Biological Effects of Radiation,” – a subject on which life scientists differed considerably depending on their disciplinary homes<sup>106</sup> – was cancelled.

The arguments over both the danger of pesticides and the best way to study animals paled in comparison to the ideological differences between East and West that arose during preparation for a session on “Population Growth in Man and its Consequences” organized by Gerard Piel. The organizing committee had worried a great deal about visa laws, and had been particularly “anxious to establish good scientific relations with zoologists behind the Iron Curtain.”<sup>107</sup> A scientific congress should never be used for political purposes, Moment insisted as the congress opened, since “Science belongs to humanity” and “has

<sup>103</sup> Coolidge, 1963, p. ix.

<sup>104</sup> Petruszewicz, 1965, pp. 7–8.

<sup>105</sup> Hall, 1965, p. 10.

<sup>106</sup> See Jolly, 2003.

<sup>107</sup> Moment to Anastos (Chairman, Department of Zoology, University of Maryland), June 21, 1963. NAS-NRC.

neither religion nor politics.”<sup>108</sup> But the sessions on Science and Man showed how politics in science could be about much more than whether a zoologist obtained a visa. As the preparations for the evening sessions proceeded, M.S. Ghilarov wrote on behalf of the National Committee of Soviet Biologists’ Zoological Section to say that while the organization of the Congress according to a planned program seemed to be useful, “the concrete themes of sessions are discutable.” In particular, Ghilarov pointed out that “such problem as ‘Human Population Growth’ is not the subject of zoological studies.”<sup>109</sup> Ghilarov proceeded to outline symposia he and his colleagues would like to organize; (1) ecology and animal populations and problem of the regulation of their abundance (2) phylogeny and evolution (3) soil fauna (4) deep sea fauna (5) litoral fauna (6) fauna of deserts and its changes after the irrigation.

In fact, Ghilarov’s government did not hold that population growth represented a problem at all. Soviets blamed worldwide iniquities on capitalism rather than over-population, inequalities that would disappear under the correct socioeconomic structure.<sup>110</sup> But the question of whether population growth was an appropriate subject for zoological study entailed even more profound differences between East and West, namely differences regarding the very nature of human biology. The population control movement had strong ideological roots in both eugenics and Cold War concerns regarding the spread of communism.<sup>111</sup> To the Soviets, anything remotely tied to eugenics was seen as “anti-Marxist, antiscientific,” and the “biologization” of social problems.<sup>112</sup> But congress organizers knew the “population problem” now formed central targets of potential patrons. Indeed, since John D. Rockefeller, Jr. had convened 30 experts to examine the issue in 1952 (including prominent American conservationists) the issue of population control had obtained establishment credentials and soon formed one of the Rockefeller Foundation’s main areas of research support.<sup>113</sup> The fact that the U.S. government was also increasingly involved in funding such work only increased the incentive to include it in the

<sup>108</sup> Moment to Members of the Organizing Committee, August 14, 1960. NAS-NRC.

<sup>109</sup> M.S. Ghilarov to Secretariat XVI International Congress of Zoology. October, 1962. NAS-NRC.

<sup>110</sup> Vorfrank, 1984 examines how during the 1960s this policy became much more complex as Soviet writers acknowledged that population growth can be independent of economic systems.

<sup>111</sup> See Allen, 1991, Hartmann, 1997, and Kay, 1996, pp. 28, 36–39 for the shift from eugenics to population control.

<sup>112</sup> Kremontsov, 2005, pp. 35 and 80.

<sup>113</sup> Hartmann, 1997, pp. 530–531.

program. And so, despite Ghilarov's complaint, the session remained, Moore replying simply that the congress must consider those problems where biology could contribute to an understanding of the problems facing man.<sup>114</sup> In this case the drive for national patronage trumped the question of international unity on whether the question was even a "zoological" problem.<sup>115</sup>

Moore blamed the lack of public attendance at the Science and Man Symposia on the lack of willingness on the part of the mass media to publicize the congress.<sup>116</sup> He failed to mention that one of the pinnacle events of the Civil Rights Movement, the March on Washington, convened on the Mall on August 28, 1963, the day after the congress ended. Indeed, the only mention of the movement gripping the nation was a stern request by Sabrosky to change the wording used in the press releases. "Let's keep integration out of this," he had written curtly, a month before the Freedom Rides began a dangerous campaign to desegregate the south.<sup>117</sup> This silence is in some ways hardly surprising. Many zoologists probably would have reacted to a discussion of race with a claim similar to Ghilarov's regarding the population session, namely, that it was not a zoological problem. But no matter what most zoologists believed or wanted to claim, segregationists like Carleton Putnam were insisting that "the weight of scientific evidence" showed that human capability is racially determined.<sup>118</sup> In the midst of such claims, a contemporary activist would soon take biologists to task for both "illogically" denying that "their disinterested scientific endeavors have anything to do with the question of civil rights," or being bemused when someone else used their own work to argue against segregation.<sup>119</sup> Certainly Dobzhansky harnessed the latest synthesis science to oppose

<sup>114</sup> Moore to Ghilarov, November 16, 1962, Box 6, Folder ICZ – Moore – September–December 1962, HUGFP 89.10.

<sup>115</sup> The fact that the anxieties inspiring session-proposals on population control and 'man's biological destiny' were both reminiscent of the concerns of the discredited science of eugenics raises the question why the first could capture both funding and support in the United States, while the second was considered "too hot to handle." With the benefit of hindsight, we see here early evidence that, at the time, anxieties over humanity's "biological destiny" might be better channeled through conservation of tangible natural resources rather than vague ideas about genetic fitness.

<sup>116</sup> Report of the Program Chairman, John Moore, p. 16. Box 4, Folder ICZ History, HUGFP 89.10.

<sup>117</sup> Sabrosky to Moment, April 4, 1961. NAS-NRC.

<sup>118</sup> Jackson, 2001.

<sup>119</sup> Black, 1965, pp. 69 and 71.

scientific racism.<sup>120</sup> In doing so he brought some of the data of zoologists to bear on a problem “of great concern to mankind,” and certainly congress organizers had hoped to highlight the ability of zoologists to comment on matters of great concern to the public.<sup>121</sup> Dobzhansky, however, had chosen to attend the International Congress of Genetics meeting in Europe, and no one remaining – pussyfooting or no – was willing to take zoology directly into debates over racism, the topic dominating the U.S. media. This external legitimization was indeed “too hot to handle.”

The lack of unity, both domestically and internationally, evident on those topics where (at least some) zoologists insisted they could contribute to human welfare is not surprising given the fact that issues like pesticide use, population control, man’s biological destiny, radiation, and conservation brought all life scientists into a realm where diplomacy, nationalism, industry, and all the vagaries of public opinion entered into debates. The boundaries between science and society blurred, shifted, and disappeared amid these issues. Still, the tensions that arose in the very sessions organizers included in their fund-raising campaigns illustrate how the “external legitimization” required to convince patrons to support such endeavors like congresses (and disciplines in general) can, ironically, expose a lack of internal consensus, especially at the sites of international science. This in turn raises the question whether disciplines can indeed deliver on those external legitimizations, without abandoning their commitment to the internationalist and universalist ethos scientists claim. That organismal zoologists had not yet become confident in nor united by any particular external legitimization in 1963 is apparent from the fact that, despite the prominence of the sessions on the use of zoology to man within applications to funding agencies, none of the work on population growth, pesticides, or conservation graced Moore’s *Ideas of Modern Biology*. The odes to the usefulness of zoology to humankind did not even appear in Moore’s enthusiastic preface, and not a single contribution appeared on ecology. As a statement on “Where zoology stands” the text highlighted the difference between the grounds upon which Moore tried to build internal consensus, and the arguments zoologists could cite for their own social relevance.

<sup>120</sup> Farber, 2003.

<sup>121</sup> Moore had originally asked Dobzhansky to organize one of the ‘Science and Man Symposium’ (though it is not clear which one) but he had “rejected this proposal rather distainfully [sic].” Moore to Romer, May 27, 1963. NAS-NRC.

## Reviving the Organism

In the end, how well did the American zoologists in charge of the congress reach their goal of raising zoology's elusive, unified Phoenix from its ashes, either before themselves or the public?<sup>122</sup> There is no doubt zoologists enjoyed the plenary sessions, the primary vehicles of the scheme to build unity, or internal consensus. The Rockefeller Foundation's science officer, Gerard Pomerat, congratulated Romer on the fact that every one of the Europeans who dropped by after the congress spoke "spontaneously about the Plenary Session meetings." Indeed, Pomerat "could not remember ever having heard so many people say so many nice things about a very large international scientific gathering."<sup>123</sup> And whether zoologists could offer tangible answers to pressing social concerns or not, within the highly pragmatic realm of finances, the salesmanship by Moore, Romer, Moment and others paid off. The full amount requested of the NIH, \$50,000, was granted. NSF contributed \$75,650 and the USDA \$10,000. \$5,000 arrived from the Airforce Research Services, \$20,000 from the AEC; ONR gave \$15,000, Department of the Interior \$10,000 and NASA \$20,000.<sup>124</sup> Money also came from the Rockefeller Foundation, the Population Council, duPont, Lilly, Monsanto and others companies, and numerous "animal science societies." Indeed, the organizers did such a good job fundraising – and the congress was as a result so lavish – that some expressed concern that in future no country lacking the resources of American zoologists would be able to hold a congress.

Money was not the only problem, however, in ensuring the congresses' future as a recurring symbol of the health and coherence of zoological science. The decade immediately following the congress provided little evidence the congress had helped alleviate some of the dangers of specialization; indeed, some would eventually blame the congress for making matters worse! Though the head of the Permanent

<sup>122</sup> The tendency, often noted in correspondence, for the host country's priorities to dictate the congress program, makes it difficult to generalize from any single congress to the international community of zoologists as a whole, and further comparative study is needed to assess how well the story of the 1963 congress reflected broad international concerns and approaches. Certainly concerns regarding specialization were voiced at congresses prior to 1963, but the specific solutions posed by Romer and his friends could be, as noted, challenged by members of other national traditions.

<sup>123</sup> Gerard R. Pomerat to Romer, October 3, 1963, Folder 35, Box 5, Series 200, RG 1.2, Rockefeller Foundation Archives, RAC.

<sup>124</sup> Progress report from the Secretary IV. September 1962, Box 5, Folder ICZ Misc. September to October, 1962, HUGFP 89.10.



Committee of the International Congresses of Zoology and chairman of the division of zoology of the International Union of Biological Science, Professor Jean Baer, had announced that the attendance and quality of the 1963 sessions “had assured the continuance of the congresses,”<sup>125</sup> in fact, the next congress was not held for almost a decade. “No one wanted the responsibility for organizing such a large meeting,” Mayr explained.<sup>126</sup> An invitation from New Delhi was withdrawn for lack of funds, and a suggestion that the congress be held in South Africa quickly abandoned to avoid endorsing the “restrictive racial practices” of that country.<sup>127</sup> Ultimately, Raymond Vaissiere of the University of Nice succeeded in organizing a small congress (with 240 members) in Monaco in 1972, primarily – and this is telling – in order to formally sever the ties of the International Commission on Zoological Nomenclature so that if the congresses failed to meet, the ICZN could continue its work.<sup>128</sup> Notably, and in contrast to the 1963 congress, the Monaco congress was dominated by systematics, phylogeny, biogeography and ecology, the very subjects slighted by *Ideas in Modern Biology*. In reflecting on the 1972 Monaco congress, Mayr repeated Simpson’s claim that these subjects would provide the integration biology required, rather than molecular biology or biochemistry.<sup>129</sup> Meanwhile, however, the International Congresses of Zoology died a quiet death.

The American zoologists who developed the unifying vision of the 1963 congress were driven by both the need to court public support for zoology, and the desire of any science to recruit new members and provide a coherent intellectual structure for teaching and research. Different reasons were given for the enormous difficulty of fulfilling such desires. H.J. Muller, for example, had, in wishing the congress success, described how “Things are moving so fast these days that there is every promise of this, it being only a question whether we can integrate fast enough the multitude of individual finds and thoughts.”<sup>130</sup> But zoologists’ ability to integrate diverse fields involved much more than a question of speed. A year to the day of the closing of the congress, Dobzhansky analyzed the tension between organismal and molecular

<sup>125</sup> “Final Plenary Session.” Box 4, Folder ICZ History, HUGFP 89.10.

<sup>126</sup> Mayr, 1973.

<sup>127</sup> Moment to Jean G. Baer. March 26, 1965, Box 6, Folder ICZ Current, HUGFP 89.10.

<sup>128</sup> Mayr, 1973.

<sup>129</sup> Mayr, “The last International Congress of Zoology?,” p. 883.

<sup>130</sup> H.J. Muller to Romer, May 20, 1963. Box 6. Folder ICZ Miscellaneous June–December 1963, HUGFP 89.10.

biology during his presidential address to the summer meeting of the American Society of Zoologists. In suggesting an explanation for the tension, he hinted at a factor no amount of congress organization could surmount. The world, he wrote, can be studied from two fascinating points of view – that of its unity and that of its diversity. “Some biologists find the unity more inspiring, others are enthralled by the diversity.” he wrote, “This is evidently a matter of personal taste, and a classical adage counsels that tastes are not fit subject for disputation (although this is what most disputations are about). The consequence of the polymorphism of tastes is that there always will be different kinds of biologists and different subdivisions of biology.”<sup>131</sup> Of course, the problem was not simply that these matters of taste led to specialization, but that these differences had become the subject of hotly contested turf battles during which antagonists commonly insisted that certain kinds of biology are more fundamental and important than others. Though he had been at the forefront of efforts to surmount such rhetoric, Moore himself would learn how profoundly difficult achieving the ideal of integration in such an environment was when he eventually left Columbia in 1969 due to his growing disillusionment with the fact that Columbia’s traditionally broad-based department “decided that it wanted to specialize in the new stuff, molecular biology only.”<sup>132</sup>

As the International Congresses of Zoology disappeared, some hoped that the new International Congress of Systematic and Evolutionary Biology convened in Boulder, Colorado in 1973 would establish a more integrative approach to zoology, this time including botany. But by “integrative approach” organizers of the ICSEB meant something quite different than the 1963 plenary sessions’ emphasis on unifying via highlighting a few basic processes. Rather, integration would be found – as both Romer and Simpson had wished – through the study of higher levels of organization via systematics and evolutionary biology. By its 1980 congress in British Columbia, the ICSEB made resolutions urging greater employment opportunities for biological systematists, an international federation of systematics and evolutionary biology, public education regarding the importance of museum collections, and – illustrating the increasing dominance of what would become a successful external legitimization – the provision of an international voice “to help

<sup>131</sup> Dobzhansky, 1964, p. 448. Stern described a similar dichotomy; “There are those who rejoice in simplicity and those who delight in complexity” (Stern, 1962, p. 579).

<sup>132</sup> “Transcript of oral history interview with John A. Moore, July 23, 1998,” by Jan Erickson, University of California, Riverside. See <http://www.ucrhistory.ucr.edu/moore.htm>.

guide man's expanding populations to understand, manage, and protect their national environments."<sup>133</sup> Indeed, in the study of biological diversity for the purposes of conservation, those who had traditionally had a difficult time establishing legitimization within the infrastructure and funding agencies of biology found a new and powerful foundation for developing both financial and institutional support and disciplinary worth.<sup>134</sup> It is no coincidence that the same zoologist who had experienced the most famous turf battle between reductionist and organismal biologists, E.O. Wilson, popularized the movement's new catchword, biodiversity.

Those who eventually convened the "New" International Congress of Zoology in Athens in 2000 – nearly a quarter-of-a-century after the 1972 congress – would draw extensively on zoology's new found role in biodiversity conservation in order to emphasize the importance of zoology to the public. Organizers bemoaned zoologists' incapacity to scientifically describe zoological biodiversity, a problem they attributed to the organization of biology world wide. "A critically depleted and weakened community of zoological systematics is unlikely to manage the task of documenting and possibly protecting our animal heritage."<sup>135</sup> Ironically, the organizers blamed the "general depreciation of Zoology in the academic world as such, and the replacement of this discipline by a plethora of euphemistically more fashionable designations" on the cessation of the International Congresses of Zoology. Indeed, confusing symptom with cause, they attributed the fact zoology had been excluded from university curricula to the impression left by the 1963 congress, which had demonstrated through the sheer number of participants and the overwhelming number of sections, that zoology had imploded under the weight of its many sub-disciplines and specialties. This was certainly quite a different legacy for the congress than Romer or Moore had intended. Yet their dream continued. In an echo of the 1963 manifestos, the organizers of the "new" Congress insisted on the need to emphasize "the rich and unifying aspects of Zoology and to reassert its general global, human and philosophical role."<sup>136</sup> But the means of integration and legitimization had shifted, this time due to changes in technology and new problems of public concern. Organizers of the 2004 congress in Beijing explained how "After a hiatus of nearly

<sup>133</sup> Simpson et al., 1981, p. 456.

<sup>134</sup> On naturalists' new relevance, see Farber, 2000.

<sup>135</sup> Por, 2003, p. xiv.

<sup>136</sup> <http://www.globalzoology.org/index-new/road-to-iszs.htm>. Accessed August 4, 2007.

30 years, computers, molecular technology and the biodiversity crisis made the renewed integration of zoology possible and necessary.”<sup>137</sup> “Cybernetics,” they urged, “could become the means which could “raise again the Phoenix of unified zoology on ‘wwwings!’”<sup>138</sup> The zoology to be unified via the web and defended through appeals to concern regarding biodiversity is, notably, a very different zoology than that which had triumphantly dominated the congress of 1963 and 1907. It is the zoology of diversity and organismal biology (with some molecular biology incorporated in the service of taxonomy) rather than molecular biology and biochemistry. Given successful external legitimizations, it seems, organismal biologists could afford to strike out – once again – on their own. The predilections of taste had been tied to a unifying and convincing justification for why society should support the naturalist tradition on its own terms.

The fate of the International Congresses of Zoology after 1963 illustrates how what Dobzhansky called the various “tastes” brought to the study of animals has tended toward further segregation rather than integration of those studying animals, even while it has led to integration of life scientists on other grounds (botanists and zoologists, for example). For since the 1963 congress, zoologists of different “tastes” have successfully formed very distinct loyalties within the patronage network available to scientists. Each of the Science and Man sessions – so different from the plenary sessions – had dealt with problems that were the province of organismal biologists. If funds indeed poured in according to such external legitimizations, such support would reduce the need to turn rhetoric about a zoology unified according to broad underlying concepts like DNA into reality. Indeed, the need to ensure the continued availability of funds would inspire increasing emphasis on how certain zoologists – namely, organismal zoologists – are better placed to deal with certain problems, emphasizing specialization and difference rather than unity. In other words, successful external legitimization may reduce the need for broad internal consensus, at least on the grounds laid out by the 1963 congress, whatever problems it may create down the road.

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<sup>137</sup> Xie et al., 2006.

<sup>138</sup> Por, 2003, p. xiii.

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