

myself in somewhat greater detail than is perhaps warranted by the importance of the question. I have, however, thought such a critical discussion of the problem of some interest, as it seems of fundamental significance for the evaluation of a pharmacological analysis of this kind.

I have already said that perhaps the highest result of pharmacological investigation may prove to be the winning of an insight into the chemical nature of life processes themselves; indeed, the first important ground in this direction has already been won. You are all familiar with the important investigations of Jacques Loeb, to whom we owe a knowledge of the essential significance of the individual metallic ions, for the general life processes. But what is still more important, Loeb has succeeded in inducing very special biological reactions as the effect of chemical action. He has shown that heliotropism can be excited by definite chemical reagents such as carbon dioxide and other substances, instead of through the action of light, which is a contribution to the understanding of the mechanism of this singular reflex function. Finally, he has shown that through certain definite chemical procedures, like the action of hypertonic salt solutions, combined with ethyl acetate, the unfructified eggs of sea-urchins may be stimulated to parthenogenetic normal development, an observation which may prove of great significance for the understanding of the process of fertilization.

And with the mention of this admirable investigation, permit me to close my address of to-day.

HANS MEYER.

UNIVERSITY OF VIENNA.

*THE GEOGRAPHICAL DISTRIBUTION OF THE
STUDENT BODY AT A NUMBER OF
AMERICAN UNIVERSITIES*

THE accompanying table explains the geographical distribution of the student body of six of the leading universities of

the east and of three western institutions for the academic year 1904-1905, summer session students being omitted in every instance. In the case of Harvard University the students of Radcliffe College (undergraduate women) are not included. Efforts were made to include three other prominent western universities, but it was impossible to secure the necessary figures in shape for comparison. Examining the figures by divisions, we note in the first place that the student clientele of the University of Michigan is by no means confined to the central states, for almost four hundred students at this institution hail from the North Atlantic division. The student bodies of the other western universities included in the table, Illinois and Indiana, are to all intents and purposes local in character, although the former draws some students from the south and west. Harvard has the greatest hold on the New England states, leading in all of them except Connecticut, in which state Yale naturally occupies first place. Columbia has more students from the entire North Atlantic division than any of the other institutions, leading in its own state, and strange to say, drawing more students from the state of New Jersey than Princeton does. The University of Pennsylvania, as we should expect, has the largest following in its own state, Princeton ranking second and Cornell third.

The most striking fact to be noted in the South Atlantic division is the hold that Cornell has on this section of the country. The University of Pennsylvania, chiefly by reason of its proximity to several states in this division—notably Delaware and Maryland—draws the next largest number of students, with Columbia third and Harvard fourth, all of the universities mentioned having over one hundred students from this division. Cornell leads in the District of Columbia, with Harvard a close second.

RESIDENCES OF STUDENTS. A.—THE UNITED STATES

1904-1905	Columbia	Cornell	Harvard	Illinois	Indiana	Michigan	Penn- sylvania	Princeton	Yale
North Atlantic Division...	3554	2405	3235	36	6	394	2372	143	2121
Connecticut	84	55	59	1		7	38	17	1009
Maine	20	10	120	1		8	11	4	23
Massachusetts	61	63	2126	3		17	45	23	166
New Hampshire	4	11	68	1		3	12	3	9
New Jersey	435	142	67			11	193	296	102
New York	2809	1808	512	20	2	195	122	252	580
Pennsylvania	109	296	175	8	4	140	1939	342	194
Rhode Island	13	12	84	1		2	6	2	24
Vermont	19	8	24	1		11	6	4	14
South Atlantic Division...	118	175	114	8	1	38	147	87	99
Delaware	6	5	3				33	2	7
District of Columbia	5	49	40	2		13	23	17	25
Florida	12	3	4			4	8	3	6
Georgia	22	6	6	1		9	6	4	11
Maryland	16	52	24	2		1	39	43	14
North Carolina	20	16	7	1		1	7	3	9
South Carolina	13	8	12	2		1	4	4	12
Virginia	17	26	10			4	16	7	8
West Virginia	7	10	8		1	5	11	4	7
South Central Division...	72	76	88	47	14	64	44	72	80
Alabama	13	15	10	1		1	11	5	9
Arkansas	8	5	7	4		5	2	1	2
Indian Territory				3		2			1
Kentucky	18	10	33	9	9	26	20	28	24
Louisiana	7	8	9	6		1	1	1	9
Mississippi	9	10	3	5	1	1	1	7	3
Oklahoma			4	3		9	1	1	1
Tennessee	5	6	11	2	4	8	1	13	19
Texas	12	22	11	14		11	7	16	12
North Central Division...	262	381	526	3164	1504	3155	139	209	506
Illinois	25	112	115	2683	15	285	23	58	140
Indiana	31	30	38	84	1453	144	18	22	36
Iowa	18	23	47	101	4	84	9	21	32
Kansas	12	2	15	18		27	5	3	21
Michigan	24	24	29	45	1	2199	9	6	35
Minnesota	23	14	23	24	6	19	4	10	40
Missouri	25	25	44	42		43	7	29	51
Nebraska	11	8	13	11	1	14	2	3	8
North Dakota	2	3	6	6		11	1		2
Ohio	73	125	160	35	23	285	52	46	119
South Dakota	4	3	2	15		8	3	1	3
Wisconsin	14	12	34	100	1	36	6	10	19
Western Division...	111	76	126	41	2	134	22	41	78
Arizona	3		1	1		1			
California	31	15	52	11	1	23	5	6	21
Colorado	28	22	24	7		28	4	15	26
Idaho	4	2	3	5		10			1
Montana	13	5	7	7		25		4	3
Nevada	1					1			
New Mexico	1		2	2		6			
Oregon	9	6	12	1		7	2	5	10
Utah	15	13	10	3	1	14	2	7	7
Washington	6	11	12	4		15	9	3	8
Wyoming		2	3			4		1	2
Insular and Non-Contig- uous Territories...	4	17	9	4	4	9	3	2	15
Alaska								1	
Hawaiian Islands	2	5	6	1		1			10
Philippine Islands		9	2	2	4	3	1		5
Puerto Rico	2	3	1	1		5	2	1	
Total	4121	3130	4098	3300	1531	3794	2727	1354	2899

RESIDENCES OF STUDENTS.—Continued. B.—FOREIGN COUNTRIES

1904-1905	Columbia	Cornell	Harvard	Illinois	Indiana	Michigan	Pennsylvania	Princeton	Yale
North America	51	38	43	9		23	41	8	31
Canada.....	30	21	34	5		14	21	6	30
Central America.....	3	2					6		
Cuba.....	8	8	3			1	5	1	1
Mexico.....	8	7	3	4		8	3	1	
West Indies.....	2		3				6		
South America	4	18	1			2	11	1	2
Argentine Republic.....		9				1			1
Brazil.....	1	5	1				4		1
Chili.....	2						5		
Colombia.....						1		1	
Ecuador.....		1							
Paraguay.....							1		
Peru.....	1	3					1		
Europe	26	21	25	3	1	5	28	5	11
Austro-Hungary.....	1	1					2		
Belgium.....							1		
Bulgaria.....		1	1			1			
France.....	1	1	5				3		2
Germany.....	4	1	3			1	5		
Greece.....									1
Great Britain and Ireland...	10	6	9			1	4	4	2
Holland.....	1	2	1			1	1	1	
Italy.....	3		1				1		
Norway.....		1		2					
Portugal.....				1					
Roumania.....		1							
Russia.....	3	2					5		
Spain.....	2		1				1		
Sweden.....	1	2					1		
Switzerland.....							4		
Turkey.....		3	4		1	1			6
Asia	29	14	15	4	6	8	9	6	34
Asia Minor.....	2						1		8
China.....	6	6	1					1	6
India.....	2	2	1		1	2	1		1
Japan.....	19	6	13	3	5	6	7	5	19
Persia.....				1					
Africa	4	2	2				1		2
Cape of Good Hope.....	2								1
Mauritius.....									1
Morocco.....			1						
Natal.....	1								
Transvaal.....	1	2	1				1		
Australasia	3	7	8	2			36		3
Australia.....	3	6	5	1			23		2
New Zealand.....		1	3	1			13		1
Total	117	100	94	18	7	38	126	20	83
Grand Total	4238	3230	4192	3318	1538	3832	2853	1374	2982

Columbia has the largest following in the states of Florida, Georgia, North Carolina and South Carolina, many of these students being registered in the graduate faculties and in Teachers College. Cornell leads in Maryland and Virginia, with Princeton second in the former state and Columbia in the latter. Illinois and Indiana have no

representation to speak of in this section of the country.

In the south central division Harvard leads with 88, Yale is second with 80, and Cornell third with 76, Columbia and Princeton following close behind with 72 each. Cornell leads in Alabama and Mississippi, with Columbia second in each. In

Arkansas Columbia leads, with Harvard second; Harvard and Yale have the largest number from Louisiana; Harvard leads in Kentucky, Yale in Tennessee and Cornell in Texas, with Princeton second in each. The largest Oklahoma delegation is found at Michigan. The large number of students from the state of Kentucky is worthy of mention.

The universities of the middle west are naturally far in the lead in the north central division, Illinois ranking first, although Michigan is not far behind. Of the eastern universities Harvard stands first in this division, with Yale second, Cornell third and Columbia fourth. The University of Indiana has few followers outside of its own state, whereas the Universities of Illinois and Michigan are well represented in all of the states of the division. Of the eastern universities Yale leads in Illinois, with Harvard second, Cornell also having over one hundred students from this state, many of whom hail from the city of Chicago, which, like the city of Washington, is a Cornell stronghold. In Indiana and Iowa Harvard leads the eastern universities, with Yale second, Columbia being third in the former and Cornell in the latter state. In Kansas, Michigan, Minnesota and Missouri Yale leads Harvard, Columbia being third in Kansas, tying with Cornell for third place in Michigan and Missouri, and with Harvard for second place in Minnesota. Harvard has the largest following of the eastern universities in Nebraska, North Dakota, Ohio and Wisconsin, Columbia leading in South Dakota. All of the eastern universities attract more students from Ohio than Illinois or Indiana, although Michigan has by far the largest student body from that state, Harvard, Cornell and Yale also being well represented.

In the western division Michigan leads, with Harvard second and Columbia third,

all of these institutions drawing over one hundred students from this section, many of whom are enrolled in the scientific schools, at least as far as Michigan and Columbia are concerned. Columbia leads in Arizona, Colorado (with Michigan) and Utah, Harvard in California and Oregon, Michigan in Idaho, Montana, New Mexico, Washington and Wyoming. California and Colorado send by far the largest delegations to the universities included in the table, the representation of Arizona, New Mexico, Nevada and Wyoming at the eastern universities being insignificant.

The insular territories are just beginning to send students to the American universities and their representation will no doubt increase rapidly in the immediate future. Cornell leads all the other universities enumerated in the number of students from these territories. There is only one student from Alaska at any of the institutions in the list, namely, at Princeton. Yale leads in the Hawaiian Islands, Cornell in the Philippine Islands, and Michigan in Puerto Rico.

As for the representation from foreign countries, the University of Pennsylvania is in the lead, with Columbia second and Cornell third, the great majority of Pennsylvania's foreign students being registered in the dental school of that institution. It is worthy of note that there are over six hundred students from foreign countries enrolled at the nine universities included in the table, which is, indeed, a remarkable showing, and it is safe to predict that this number will show a constant increase in the coming years. No less than 125 of these foreign students hail from Europe. In North America Columbia leads, with Harvard second and Pennsylvania third; Cornell has the largest following in South America, with Pennsylvania second and Columbia third; in Europe Pennsylvania leads, with Columbia second and Harvard

third; Yale leads in Asia, with Columbia and Harvard following in the order named; Columbia leads in Africa and Pennsylvania in Australasia. Of the European countries Great Britain furnishes the largest delegation, while the largest number of Asiatic students hail from Japan.

Much has been said and written lately about the decrease in the number of western students in attendance at eastern institutions, but the accompanying figures show that all of the eastern universities enumerated still have a considerable following in the west and south. It is a following that is, in most cases, actually increasing each year, although, of course, not at the same rapid rate at which most of the western universities are growing in number of students. The accuracy of the figures is somewhat marred by the fact that a tendency exists on the part of students who are not residents of the place in which their university is located, to register this place as their permanent residence. This tendency is encountered especially at institutions located in large cities, but the general results are not affected thereby.

The table illustrates in striking manner the truly national character of the leading eastern universities and of several of the western institutions, and it is to be hoped that they will retain this characteristic in the coming years, since it is undeniably an important factor in the ever spreading unification of the various sections of the country.

RUDOLF TOMBO, JR.

COLUMBIA UNIVERSITY.

SCIENTIFIC BOOKS.

Traité de Biologie. Par FÉLIX LE DANTEC, chargé du cours d'Embryologie générale à la Sorbonne. Paris, Alcan. 1903. Pp. 553.

This book, which is the condensation and completion of the numerous studies in biological theory (and in several other subjects) that have come from the productive pen of M. Le Dantec during the past ten years, is one of the

most ambitious and elaborate of the recent attempts to synthetize the general results of biological research. As such, it will be of interest to both the philosopher and the naturalist. M. Le Dantec covers the whole ground and something more, adding a lengthy appendix in which the 'biological foundations' of psychology and sociology are set forth. The psychological chapter is chiefly remarkable for the author's entire innocence of any suspicion that mental phenomena have any peculiarities or complexities of their own. Thus, consciousness is once for all disposed of by this definition: 'Consciousness is the property which our body has of being informed at each moment of its structure at that moment' (*la propriété d'être au courant de sa structure actuelle*); the obvious objection that this definition takes no account of the facts that we know very little of our structure and that consciousness chiefly is representative of 'objects,' is summarily met, *en passant*, by observing that 'this property suffices to bring it about that we are secondarily aware of what goes on about us, as a result of the effect upon our structure of those external events that make an impression upon our sense-organs.' Here all that requires explanation, and correlation with physiological phenomena, is cheerfully taken for granted at the start. This 'property' which is consciousness, moreover, is not confined to our bodies, but—though never aught but an epiphenomenon, functionless in evolution—extends down to the simplest material structure; the argument to which the grounds for the mind-stuff theory reduce themselves, for M. Le Dantec, may be commended to the logician as a classic example of the fallacy of division: "Since our consciousness is so intimately connected with our structure, and since we are formed of chemical substances—carbon, hydrogen, *etc.*—we ought to conclude that these chemical substances contain in themselves the elements of our consciousness, and that, just as our body is built up of atoms, our consciousness is built up out of the elements of consciousness connected with each atom." It is really depressing to find men learned in one science still reasoning like babes and sucklings in another—and convinced, withal, that they alone know