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PHYSICAL EDUCATION IN PROTESTANT CHRISTIAN COLLEGES AND UNIVERSITIES OF CHINA

BY

K. A. WEE, PH.D.

NEW YORK
1937

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K. A. Wee

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CHAPTER I

INTRODUCTION

Need of the Study

PHYSICAL EDUCATION has an important place in China where much progress has already been made. The following quotation shows the trend during the last three decades:

> The really tremendous progress made in athletics and physical training—a practical (as distinct from theoretical) recognition of the value of physical training as a vital part of preparation for life—is one of the greatest and most important changes in China's educational outlook.[1]

Games and sports were introduced by the early mission schools.[2] At first little progress was made as the people were not inclined to them.[3] In fact, it was not until 1900 that there were organizations for the promotion of games and athletic competition.[4] The last ten years, however, has witnessed the most marked interest and concern in nearly all forms of physical education activities.

Organizations are now found throughout the country for the promotion of athletic sports. The most important of these is the Chinese National Amateur Athletic Federation (CNAAF), which in 1930 was granted official government recognition. It is intended to serve, ultimately, as the controlling body for all forms of amateur sports. But now its chief functions are to represent China in the international athletic world and to be responsible for teams sent to the Far Eastern Games. This organization has five branch federations in North, Central, South, East, and West China, the object of which is to encourage sports in all parts of the country.

The Far Eastern Games are held once every four years. Selection of team representatives for these games is made at the National Meets which are held once every two years. Competitors for sectional meets are selected from the winners of various provincial and local games which are held

[1] T'ang, Leang-Li, *Reconstruction in China*, Chap. V, p. 92.
[2] Hoh, Gunsen, *Physical Education in China*, Chap. IV, p. 90. Sung, Wm. Z. L., "The Development of Modern Athletics in China," The China Edition of *The China Weekly Review*, Oct. 10, 1928, p. 47.
[3] T'ang, Leang-Li, *op. cit.*, Chap. V, p. 92.
[4] Hoh, Gunsen, *op. cit.*, p. 90.

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annually. It can be seen that in the preparation of all these competitions a great amount of activity takes place in every part of the country.

In the growth of these athletic meets, Christian organizations have had an important part. Much credit should be given to the Y. M. C. A. for its leadership during the earlier period, especially from 1909 to 1926.[5] Christian schools have always been among the leaders in encouraging wholesome sports. The question today is to what extent they should continue their efforts in this field of endeavor. According to the Burton Report, which gives a very complete statement regarding Protestant Christian education in China,[6] the Christian institutions are urged to take advantage of the opportunity which they have to make a distinct contribution to China in the field of physical education. The quotations that follow show the findings and the recommendation of the commission that made the report:

> The training of physical directors. The report of the commission emphasizes, in numerous places, the importance of physical training as a part of all education, and the value of play and recreation in the development of character. The chapter on physical education emphasizes the need of trained directors for physical education and recreation in school and community, and the importance of providing training for such work under Christian auspices. We believe that the Christian associations should consider, as one of their contributions to the whole task of Christian education, the training of physical directors and recreation leaders, for both Christian and government schools, and for service in the community, through the Christian associations or other agencies. We recommend the vigorous development of the work done in the Training Women's Christian Association, and the extension of training, as rapidly as possible, through short-term courses and institutes.[7]
>
> In order to supply the demand for directors of physical education in Christian schools; to take advantage of the great opportunity for Christian service and influence, which lies in the same demand in government schools; and to maintain in some degree the leadership in such matters, the Christian forces must have schools of good capacity and excellent staff for the training of these directors.[8]

The Laymen's Foreign Missions Inquiry Commission[9] has completed a careful examination of the Protestant Mission efforts in the Far East.

[5] Hoh, Gunsen, *op. cit.*, p. 92.

[6] The Report of the China Educational Commission of 1921-22, *Physical and Health Education*, Chap. XV, p. 270.

[7] *Ibid.*

[8] *Ibid.*, Chap. XVI, p. 275.

[9] Laymen's Foreign Mission Inquiry, Report of Appraisal Commission, Beginning in October, 1932.

This commission affirms again the importance of the Christian schools of China in training young men and women for useful service in an era that is witnessing drastic transformations in China's national life. The function of Christian forces, then, in the field of physical education is worthy of consideration.

In view, therefore, of the present situation it seems timely to ask in what direction physical education is tending. Innumerable other questions have arisen and await solution. Thus far, nothing has been published with the definite object of setting standards and policies. All the athletic meets present a host of problems pertaining to administration, management of teams, housing plans, medical care, construction, equipment, finance, and contests, etc. The schools, particularly the universities which have furnished the leadership for all these activities, are in a position to help determine standards and policies for the future. In their particular sphere they are concerned with such phases of health and physical education as administration, required physical education, health examinations, reconstructional activities, intercollegiate and intramural athletics, teacher training, and the like. A study of any one of these topics would be a contribution to the field of physical education.

Purpose and Scope of the Study

The purpose of this study is to describe physical education in the Protestant Christian colleges and universities of China as it exists at present; to record the present standards and policies of the American colleges and universities in this field; and to make recommendations which are appropriate to the Protestant Christian institutions. Table I gives the names and locations of all these institutions.

The study does not include health education. When describing the health examination and medical care of athletes, however, a brief statement is given regarding the amount of provision made by the Christian institutions for the health care of the students. Nor is military training included in this study. In America, many authorities agree that military science and tactics should not be considered as a part of or a substitute for physical education.[10] The Christian institutions have so far given little attention to military training and have in no way related it to physical education.

[10] Hughes, W. L., *The Administration of Health and Physical Education for Men in Colleges and Universities*, Chap. IV, p. 153. Nash, Willard L., *The Stated Aims and Purposes of the Departments of Military Science and Tactics, and Physical Education in the Land-Grant Colleges of the United States.* 1934.

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TABLE I

OFFICIAL NAMES AND LOCATIONS OF CHINESE INSTITUTIONS STUDIED

Institutions	City	Province	Region
Cheeloo University	Tsinan	Shantung	North
Fukien Christian University	Foochow	Fukien	South
Ginling College	Nanking	Kiangsu	East
Hangchow Christian College	Hangchow	Chekiang	East
Hua Chung College	Wuchang	Hupeh	Central
Hwa Nan College	Foochow	Fukien	South
Lingnan University	Canton	Kwangtung	South
Soochow University	Soochow	Kiangsu	East
St. John's University	Shanghai	Kiangsu	East
University of Nanking	Nanking	Kiangsu	East
University of Shanghai	Shanghai	Kiangsu	East
West China Union University	Chengtu	Szechuen	West
Yenching University	Peiping	Hopeh	North

This study of physical education includes:

1. Administration of physical education—organization, staff, and budget.
2. Program of physical education—medical examination, required physical education classes, training courses, intercollegiate athletics, and intramural sports.
3. Equipment of physical education—outdoor and indoor facilities.
4. Physical education for women.

Techniques in the Study

In order to make an adequate survey of physical education in the Christian institutions, several procedures were followed in this study. First, questionnaires were sent to the schools at two periods, once during the academic year of 1930-31 and again during 1934-35. Second, during the years of 1932 through 1935 visits were made to eight of the thirteen institutions. Because of distance, time, and expense, visits were not made to West China Union University, Central China University, Hwa Nan College, and Fukien Christian University. From all these institutions, however, both students and faculty members visited Peiping during this period and interviews with some of them from each institution were helpful in interpreting the replies in the questionnaires. Suggestions and opinions regarding the situation in the schools were also helpful.

Third, data were obtained from catalogues, bulletins, records, registers, announcements, and reports of these institutions. Important material was secured from the publications of the China Christian Educational Association. A conference at Shanghai with members of this association gave the writer a better understanding of the plans and policies of the schools in their effort to work out a correlated program.[11]

Furthermore, the writer attended three North China Athletic Meets during 1932, 1933, and 1934, held at Tsinan, Tsingtao, and Tientsin, respectively, and the National Athletic Meet at Nanking in October, 1933. On these occasions nearly all the men holding important positions in physical education and officials of the government were present. The writer also attended the First National Physical Education Convention held at Nanking in 1932 when the entire problem of physical education in China was discussed. At all these gatherings there were opportunities for discussions with the various leaders whose opinions have helped in the preparation of this study.

Of necessity this study is limited in its scope. It does not attempt to solve the problems of physical education in China. Its conclusions do not cover all aspects of the problem nor are they applicable to all situations. It is made in a period that is transitional and uncertain. Many other studies should follow. This study, however, should provide a guide for the Christian institutions in planning their programs for the immediate future. It may be used later as a basis for further developments.

[11] China Christian Educational Association, *The Correlated Program, as Adopted by the Council of Higher Education.* 1930.

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CHAPTER II

A BRIEF STATEMENT OF THE FUNCTION OF PROTESTANT CHRISTIAN COLLEGES AND UNIVERSITIES IN CHINA

To MAKE it possible to appreciate fully and to understand what the Protestant Christian institutions are doing in China, a statement of their present status is given in this chapter. It describes briefly the avowed purpose and status of these institutions, the early history of physical education, and the relationship of these institutions to government education.

Institutions, like all human agencies, are influenced by the conditions of the times. Economic, social, and political factors are bound to be reflected in institutions of learning. The Christian institutions are functioning with the purpose of developing students for life—it is important that the life should fit the changing order.

Chinese civilization is so old that it is quite natural that the customs and thinking of the people should change slowly. Many of the forces working at the present time are carry-overs of old China; they have come from the old teaching and from the old manner of living.

China is in a changing order. Her people have new aspirations and there is need for different ideals. Poverty prevails throughout the land. The social order is upset. New standards are being sought. The political situation faces a crisis. There is a desire on the part of the people to unite for national salvation. In such a situation, the Ministry of Education has a tremendous responsibility in carrying out the purposes of its educational program. For centuries emphasis has been placed on scholarly achievements and but little attention has been given to the development of the body. As a consequence physical education now assumes an important part in the Ministry's program. The Christian institutions, in order to make their contribution to education of greatest value, must also keep in mind the present situation and the present needs.

Hence physical education in these schools—the kind of physical education that will further the realization of China's own educational plan—must provide the values demanded by the changed conditions.

Purpose and Present Status of the Christian Institutions

The first educational influence of the West upon China was made through missionary schools. In them were educated some of the most

important of today's leaders in every walk of life. Higher education was begun as early as 1864. During its earlier development there were many more institutions than there are now, but with changing conditions and a tendency to consolidate, the number of colleges and universities is at present only thirteen.*

The purpose which the Christian institutions generally state for the schools is, "To provide for the youth of China a college education of high standard, with a view to developing character and intellectual capacity in its students, in order that they may become loyal and useful citizens of China and may be prepared to aid in building up and strengthening their respective communities along moral, intellectual, physical and humanitarian lines, and to promote the general purposes had in mind by each of the several missionary societies which have founded the institutions."[1] In principle it means that the schools will co-operate with the government in all possible ways, provided there is no sacrifice of their Christian purpose and character.

All of the Christian institutions except St. John's are registered with the government in the Ministry of Education.[2] Tables II and III give the enrollment and source of the student bodies; and Tables IV and V show the size and character of the teaching staff and the subject distribution of teaching hours in the schools. Both Christian and non-Christian authorities appear to agree that these schools have an important place in higher education in China.[3] A point of strength in favor of these schools which is noted by many (even non-Christians) is the superiority of the Christian institutions over the government schools in character development. A majority of authorities point to the relatively greater stability of the Christian institutions under existing conditions, and the more effective intellectual discipline which prevails in both faculty and student body.

* Complete historical data concerning the beginning and growth of these schools are given in Bulletin No. 20 of the China Educational Association, *Christian Higher Education in China.*

[1] Laymen's Foreign Missions Inquiry, Vol. II, Chap. V, p. 135.

[2] Wang, Shih-Chieh, *Education in China,* p. 37.

[3] Laymen's Foreign Missions Inquiry, p. 143.

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TABLE II

STUDENT ENROLLMENT IN THE CHINESE INSTITUTIONS STUDIED

Institutions	1920-21	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33	1933-34	1934-35
Cheeloo University	227	260	265	308	275	338	374	*	226	336	220	365	420	471	480
Fukien Christian University	117	119	121	165	181	175	186	—	89	142	126	174	185	175	155
Ginling College	55	70	81	96	133	137	152	—	132	166	164	192	174	212	213
Hangchow Christian College	39	68	110	133	124	148	154	—	*	111	139	215	356	397	438
Hua Chung College	89	95	91	86	100	74	74	—	*	28	41	63	101	126	138
Hwa Nan College	14	21	32	63	66	80	80	—	100	—	97	84	72	72	88
Lingnan University	115	123	173	193	216	226	226	—	230	258	263	244	361	379	462
Soochow University	201	226	288	351	353	392	341	—	489	708	450	713	633	666	618
St. John's University	231	277	247	398	447	218	313	—	191	279	289	371	403	461	535
University of Nanking	71	102	142	138	311	340	390	—	484	504	422	539	582	586	761
University of Shanghai	132	154	252	307	344	376	400	—	452	449	531	566	*403	*564	566
West China Union University	94	144	146	208	130	161	126	—	149	170	201	164	355	347	375
Yenching University	137	142	298	332	437	433	543	—	690	743	798	803	783	779	779

* Not published for this year.

TABLE III*

SOURCES OF STUDENT BODY OF CHINESE INSTITUTIONS STUDIED — BY PROVINCES

Institutions	Anhwei	Chekiang	Fukien	Honan	Hopei	Hunan	Hupeh	Kansu	Kiangsi	Kiangsu	Kwangsi	Kwangtung	Kweichow	Shansi	Shantung	Shensi	Szechuen	Yunnan	Manchuria	Overseas Chinese	Other Nationalitie	Unknown	Total
Cheeloo	15	20	23	8	113	1	15	—	5	19	1	13	—	23	131	3	4	2	27	—	—	57	480
Cheeloo, Theology	1	—	—	9	6	—	—	—	4	—	—	1	—	7	5	—	—	—	1	—	—	1	35
Fukien	—	—	146	—	—	—	—	—	—	—	1	6	—	—	—	—	—	—	1	—	1	—	155
Ginling	14	19	14	—	9	4	17	—	10	108	—	10	—	1	4	—	—	—	1	2	—	—	213
Hackett	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hangchow	29	162	19	1	1	13	11	—	10	105	8	59	3	2	—	—	10	3	2	—	—	—	438
Hua Chung	8	7	—	3	—	32	65	—	9	3	—	2	—	—	—	—	5	—	—	—	3	1	138
Hwa Nan	—	—	87	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	88
Lingnan	1	5	12	—	14	1	4	—	—	62	15	296	—	—	—	—	—	3	—	37	12	—	462
Lutheran	—	—	—	18	1	8	1	1	—	—	—	1	—	1	4	—	—	—	3	—	—	—	38
Moukden	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nanking Seminary	5	4	11	—	5	2	2	—	1	13	—	7	—	—	2	1	1	—	—	—	3	—	57
Nanking University	100	65	43	9	20	50	35	3	31	243	6	77	5	6	18	39	26	7	5	—	2	2	†792
St. John's	5	15	27	2	8	1	7	—	—	355	1	37	—	—	4	—	6	—	—	57	4	6	535
Shanghai	6	48	31	3	4	5	10	—	11	353	—	40	1	—	6	—	6	—	2	39	1	—	566
Shanghai Theology	1	3	—	—	—	—	—	—	—	3	—	3	—	—	1	—	1	—	—	—	—	—	12
Soochow	20	123	12	3	8	10	19	—	4	289	7	91	—	1	3	—	7	—	1	—	1	19	618
Union	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—	—	1	—	2	—	—	27
Weot China	—	—	2	—	1	—	2	1	—	1	1	—	4	—	3	3	342	7	2	1	5	—	375
West China, Religion	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	—	—	—	—	—	9
Woman's	—	1	12	—	—	2	—	—	—	4	—	3	—	—	1	—	—	—	—	1	1	—	25
Yenching	4	19	32	17	336	17	23	—	6	97	2	70	2	8	29	7	6	6	17	52	17	12	779
Yenching, Religion	—	—	2	—	5	—	—	—	—	3	—	7	—	—	2	—	1	—	—	—	—	1	21
Totals	209	491	473	73	531	146	211	5	91	1658	42	748	15	49	213	53	424	29	62	191	50	99	5863

* China Christian Educational Association, Bulletin No. 35, p. 8.

† Including 31 Ginling students.

TABLE IV*

TEACHING SEMESTER HOURS — ARTS AND SCIENCES OF CHINESE INSTITUTIONS STUDIED

Courses	Schools														
	Cheeloo	Fukien	Ginling	Hangchow	Hua Chung	Hwanan	Lingnan	St. John's	Soochow	Nanking	Shanghai	West China	Yenching
Biology	86	104	—	54	94	54	132	20	150	96	106	—	132
Chemistry	186	138	—	122	102	28	162	108	82	208	148	—	204
Physics	160	56	—	30	80	16	136	56	100	206	66	—	142
Mathematics	64	16	—	30	28	—	54	48	—	92	24	—	68
Engineering	—	—	—	118	—	—	212	140	—	—	—	—	—
Geography	—	—	—	6	—	—	—	6	—	16	6	—	27
Chinese	96	44	—	96	36	40	150	132	—	122	92	—	118
English	96	—	—	80	54	48	126	120	94	120	132	—	174
Languages	36	26	—	—	14	24	38	48	10	10	18	—	82
History	—	16	—	18	28	24	44	36	12	46	24	—	76
Political science	50	16	—	54	2	—	48	30	50	46	48	—	78
Sociology	—	12	—	—	24	—	40	—	12	50	40	—	98
Economics	38	28	—	74	18	—	—	56	—	46	—	—	106
Business	—	—	—	—	16	—	150	—	—	—	80	—	—
Philosophy	—	32	—	10	12	—	30	6	12	8	20	—	60
Psychology	—	—	—	—	20	—	—	6	—	10	—	—	48
Religion	—	—	—	4	—	—	—	22	—	22	6	—	—
Education	52	48	—	36	54	58	58	24	—	24	70	—	64
Journalism	—	—	—	—	—	—	—	24	—	—	—	—	56
Music	—	—	—	—	58	6	—	—	—	—	94	—	90
Home economics	—	—	—	—	—	—	—	—	—	—	4	—	48
Party principles	(6)	—	—	(8)	—	(4)	30	—	—	(8)	—	—	—
Military drill	(6)	—	—	(26)	—	—	—	—	—	(16)	—	—	32
Physical education	(26)	—	—	(36)	(26)	(8)	—	(36)	(30)	(16)	—	—	(42)
Miscellaneous	—	—	—	—	4	—	6	—	—	28	4	—	—
Totals	864	536	—	732	644	274	1416	882	522	1150	982	—	1671

* China Christian Educational Association, Bulletin No. 33, p. 25.

TABLE V*

PART-TIME AND FULL-TIME TEACHING STAFF IN ARTS AND SCIENCE OF CHINESE INSTITUTIONS STUDIED

Institutions	Total Teachers	Full-Time Teachers		Part-Time Teachers			Full Time Equivalent of Part Time Teaching	Total Equivalent Teaching Staff	Number of Students per Teacher
		Chinese	Missionary	Chinese	Missionary	Honorary			
Cheeloo	44	23	9	7	2	3	4	36	9.9
Fukien	28	13	7	5	1	2	4	24	7.3
Ginling	40	16	13	9	2	----	5	34	6.2
Hangchow	38	18	4	13	2	1	6	28	14.2
Hua Chung	30	14	6	2	4	4	5	25	5.
Hwanan	18	8	2	5	3	----	4½	14½	5.
Lingnan	48	27	17	3	----	1	2	44	5.7
Nanking	65	34	8	22	1	----	8	50	7.5
St. John's	39	20	16	----	----	3	2	38	8.5
Shanghai	34	17	10	1	3	3	3	30	18.8
Soochow	25	13	5	6	1	----	3	21	17.3
West China	37	18	8	3	2	6	5½	31½	8.
Yenching	116	49	37	24	----	6	13	99	8.1
Total	562	270	142	115	21	29	65	475	9.1

The achievements of the Christian institutions are outstanding. Christian education has spread enlightenment and has given training and inspiration to many of the youth of China. Graduates of these schools, according to a report published in 1929, numbered 4,664. Their occupational distribution is as follows:[4]

	Per Cent
In the ministry	4
In social religious work	9
In teaching	24
In medicine	9
In law	2
In engineering	2
In public life	14
In business	15
In other occupations	6
In further study	6
No report of occupation	9

Table VI shows the occupations of graduates of the various schools up to the year 1933.

* China Christian Educational Association, Bulletin No. 33, p. 23.

[4] Laymen's Foreign Missions Inquiry, Vol. V, p. 399.

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TABLE VI*

OCCUPATION OF GRADUATES OF CHINESE INSTITUTIONS STUDIED

Institutions	Ministry	Social and Religious	Christian Schools	Other Schools	Medicine	Law	Engineering	Public Life	Business	Agriculture and Forestry	Study in China	Study Abroad	Other	No Record	Total
Cheeloo	65	114	587	128	301	6	2	—	66	—	11	10	51	78	1,419
Fukien	3	4	50	49	3	—	—	21	16	—	11	8	6	8	179
Ginling	—	18	86	36	7	—	—	5	—	—	11	14	37	4	218
Hackett	—	8	3	—	165	—	—	—	—	—	—	2	—	36	214
Hangchow	46	7	78	32	7	1	9	24	33	—	—	—	20	12	269
Hua Chung	41	7	55	32	6	1	1	13	48	—	1	17	34	32	288
Hwa Nan†	—	6	52	6	12	—	—	—	—	—	3	4	22	—	105
Lingnan	—	1	71	50	2	—	3	42	83	4	5	25	5	20	311
Lutheran	30	45	7	—	—	—	—	—	—	—	4	1	14	2	103
Moukden	—	—	—	—	169	—	—	—	—	—	—	—	—	—	169
Nanking Seminary	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nanking University	21	38	222	216	40	1	2	68	72	87	8	52	19	41	887
St. John's†	27	8	72	120	124	8	21	47	260	—	22	18	38	99	864
Shanghai†	8	38	117	59	1	1	3	47	95	—	27	29	14	22	461
Soochow†	2	10	96	103	6	102	9	63	48	—	21	26	29	76	591
Union Theological	25	5	12	4	—	—	—	1	1	—	—	—	—	1	49
West China†	13	6	57	6	62	—	—	2	10	—	4	5	—	—	165
Woman's Medical	—	—	—	—	11	—	—	—	—	—	—	3	1	—	15
Yenching†	27	115	199	234	3	—	1	103	91	—	81	38	141	—	1,033
Totals	308	430	1,764	1,075	919	120	51	436	823	91	209	252	431	431	7,340

† 1931 figures.

* China Christian Educational Association, Bulletin No. 30, p. 26.

Physical Education in Earlier Periods

The Statistical Reports of the colleges begin only with the academic year of 1924-25. Although these reports are not complete, a fairly accurate general view of the situation may be obtained from them.

TABLE VII

PHYSICAL EDUCATION — TEACHING SEMESTER HOURS OF CHINESE INSTITUTIONS STUDIED

Institutions	1925-26 Gymnasium	1925-26 Vocational	1928-29 Physical Education	1929-30 Physical Education	1930-31 Physical Education	1931-32 Physical Education
Cheeloo University	19	----	8	8	14	15
Fukien Christian University	----	----	----	----	----	----
Ginling College	----	48	65	71	105	92
Hangchow Christian College	----	----	----	2	10	16
Hua Chung College	6	----	----	----	4	6
Hwa Nan College	----	----	----	----	----	----
Lingnan University	----	----	----	----	----	2
Soochow University	18	61	24	43	43	20
St. John's University	24	----	13	14	7	16
University of Nanking	10	----	----	----	----	8
University of Shanghai	12	----	33	36	----	----
West China Union University	4	----	3	----	----	----
Yenching University	4	----	----	----	2	32

Table VII shows the teaching semester hours in physical education in these schools for five academic years. The number of hours for Ginling and Soochow is large because both schools have teacher training programs. Excepting Shanghai, the figures for the other schools, not including 1931-32, are the required physical education hours, no electives having been offered. Shanghai had for a period of two years (1928-30) a trained director of physical education who offered several elective courses. Since his departure the physical education program has been greatly weakened.

Majors in physical education were given only at Ginling and Soochow. The number of students who majored in this field is shown in Table VIII for a period of four academic years. In interviews with the directors in charge of these two schools, the writer was informed that for any single year there were not more than six majors. The numbers given in the table must then include a number of minors, for in five instances the figures are greater than six.

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TABLE VIII

NUMBERS OF MAJORS AND MINORS IN PHYSICAL EDUCATION OF CHINESE INSTITUTIONS STUDIED

INSTITUTIONS	1928-29	1929-30	1930-31	1931-32
Cheeloo University				
Fukien Christian University				
Ginling College	10	12	25	16
Hangchow Christian College				
Hua Chung College				
Hwa Nan College				
Lingnan University				
Soochow University	3	8	5	5
St. John's University				
University of Nanking				
University of Shanghai				
West China Union University				
Yenching University				

Financial data for these schools are given in Table IX for the years 1925-26 and 1928-29. The figures were obtained from Bulletins No. 20 and 26 of the China Christian Educational Association.[5] Individual school accounts of expenses for physical education were not available. Differences in method of bookkeeping show that some of the same items have been put under several headings. For the year 1925-26, the figures in the columns for athletics and physical education together represent the total sum spent for physical education. For 1928-29 the total amount appears under three columns, namely, athletics, staff, and appropriation. Under the column for appropriation, the amount of $800.00 each for Yenching and St. John's is the sum designated for current use. The figures under the column for athletics were sums spent for special purposes. At Yenching, the amount was spent for a staff member's study in the United States. At St. John's the sum was spent for several specific items. It is seen from Table IX that budgets for physical education were small.

Table IX includes also the budgets for medical expenses.

Soochow University. When the writer visited Soochow University he was told that teacher training in physical education would be discontinued there after the academic year 1930-31. For record purposes a brief sketch of its history follows.

The School of Physical Education was opened in the fall of 1924 under the joint auspices of the National Committee of the Y. M. C. A. and

[5] China Christian Association, *Christian Higher Education in China*, Bulletin No. 20; also *Statistical Report*, Bulletin No. 26.

TABLE IX

PHYSICAL EDUCATION FINANCIAL STATEMENT OF CHINESE INSTITUTIONS STUDIED

INSTITUTIONS	1925-26			1928-29				
	Student Service		Instruction	Student Service				Instruction
	Athletics	Medical	Physical Education	Athletics	Medical	Staff	Appropriation
Cheeloo University	$4,209.00	------	------	$1,700.00	------	------	------
Fukien Christian University	412.00	------	------	474.00	$150.00	------	------
Ginling College	------	$1,500.00	$3,349.00	------	1,116.00	$4,908.00	$300.00
Hangchow Christian College	570.00	------	------	------	------	------	------
Hua Chung College	------	------	740.00	------	------	------	------
Hwa Nan College	------	------	------	------	------	------	------
Lingnan University	------	2,200.00	1,040.00	456.00	2,025.00	------	------
Soochow University	5,690.00	442.00	6,345.00	4,000.00	360.00	------	------
St. John's University	1,749.00	------	------	624.00	3,200.00	1,740.00	800.00
University of Nanking	2,801.00	------	------	3,100.00	500.00	994.00	------
University of Shanghai	2,844.00	------	5,595.00	3,035.00	3,201.00	2,070.00	------
West China Union University	511.00	3,042.00	------	900.00	400.00	600.00	------
Yenching University	700.00	------	7,492.00	8,795.00	13,600.00	1,335.00	800.00

Soochow University. The stormy period that followed, due to political disruptions in 1926-27, affected greatly its policy as well as its staff and enrollment. At the end of that year, the Y. M. C. A., facing financial stringency, withdrew its support. The school made efforts to continue, but had to close at the end of the academic year 1930-31. Political difficulties and shortage of funds were the causes for closing the school for teacher training.[6]

This school, although short-lived, exerted a beneficial influence in the field of physical education. Many of its students hold positions of responsibility in schools and colleges. Its faculty numbered as many as seven, having at one time four Americans.[7] The courses offered at that time were adequate to carry out a thorough training in this field. It was the only school for teacher training for men in the Christian institutions. Its closing was a distinct loss to China.

Christian Institutions in Relation to Government Education

The Ministry of Education in the National Government is responsible for the educational policy of the nation. Education controlled by the state is naturally planned to serve the purposes of the state. These purposes were to meet the needs of the people in this period of economic, social, and political change. The aims of education as formulated by the National Education Conference of 1928 under the Nationalist Government have determined that they shall be in accord with the "Doctrine of the Three Principles of the People."[8] These aims are:

> 1. To promote Nationalism, education shall seek to instil into the minds of the people the national spirit, to keep alive the old cultural traditions, to raise the general level of moral integrity and physical vigour of the people, to spread modern scientific knowledge, and to cultivate aesthetic taste.
>
> 2. To attain Democracy, education shall seek to teach such civic virtues as law-abidingness and loyalty, to train for organizing ability and spirit of service and cooperation, to disseminate political knowledge, and to inform the people of the true meaning of liberty and equality.
>
> 3. To increase Economic Well-being, education shall seek to train for productive skill and the habit of labour, to teach the application of science to everyday life, and to enlighten the people on the interdependence and harmony of economic interests of various classes.

[6] Soochow University Bulletin, *Catalog of School of Physical Education*, Vol. XXIX, p. 7.

[7] *Ibid.*, p. 39.

[8] Djung, Lu-Dzai, *History of Democratic Education in Modern China*, Chap. IX, p. 185.

Present government educational facilities are very inadequate. Table X shows how few schools, teachers, and pupils there are in the country. But

TABLE X*

STATISTICS OF SCHOOLS IN CHINA

	Schools	Pupils	Teachers	Staff
Kindergartens	829	31,967	1,580	-------
Lower primary grades	176,062	7,118,581	345,314	-------
Higher primary grades	13,652	774,082	50,144	-------
Middle schools†	3,026	536,848	43,204	17,390
Universities	58	25,018	5,636	-------
Institutions of technical education	29	4,817	747	349

* *The China Year Book*, 1934, "Education," p. 313.

† *Sun Po China Year Book*, 1935, p. 1021.

TABLE XI*

CHINESE GOVERNMENT CURRICULUM STANDARDS
SENIOR MIDDLE SCHOOL CURRICULUM
(Hours per week)

SUBJECTS	First Year		Second Year		Third Year		Total hours
	1st term	2nd term	1st term	2nd term	1st term	2nd term	
Civics	2	2	2	2	2	2	12
Physical education	2	2	2	2	2	2	12
Military training	2	2	2	2			8
Chinese language	5	5	5	5	5	5	30
English	5	5	5	5	5	5	30
Mongolian, Tibetan, Mohammedan or other foreign language	5	5	5	5	5	5	30
Mathematics	4	4	3	3	4	2	20
Biology	5	5					10
Chemistry			7	6			13
Physics					6	6	12
Chinese history	4	2	2				8
Foreign history				2	2	2	6
Chinese geography	2	2	2				6
Foreign geography				2	2	2	6
Total classroom hours per week	36	34	35	34	33	31	
Total extra-curriculum physical exercises and study at school	24	26	25	26	29		

* The China Christian Educational Association, *Educational Review*, Jan., 1933, p. 11.

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it must be kept in mind that in the past three years great progress has been made. The new curriculum of the schools, as shown in Tables XI, XII, and XIII, indicates the efforts of the schools to carry out the general purposes of education. Physical education has an important part in this curriculum.

TABLE XII*

CHINESE GOVERNMENT CURRICULUM STANDARDS
JUNIOR MIDDLE SCHOOL CURRICULUM
(Hours per week)

SUBJECTS	First Year		Second Year		Third Year		Total hours
	1st term	2nd term	1st term	2nd term	1st term	2nd term	
Civics	2	2	2	2	1	1	10
Physical education	3	3	3	3	3	3	18
Hygiene	1	1	1	1	1	1	6
Chinese language	6	6	6	6	6	6	36
English	5	5	5	5	5	5	30
Mongolian or Tibetan or Mohammedan or other foreign language	3	3	3	3	3	3	18
Mathematics	4	4	5	5	5	5	28
Botany	2	2					4
Zoology	2	2					4
Chemistry			4	3			7
Physics					4	3	7
History	2	2	2	2	2	2	12
Geography	2	2	2	2	2	2	12
Manual work	1	1	1	1	2	2	8
Drawing	1	1	1	1	1	1	6
Music	1	1	1	1	1	1	6
Total classroom hours per week	35	35	36	35	36	35	
Total study hours per week at school	13	13	12	13	12	13	

* The China Christian Educational Association, *Educational Review*, Jan., 1933, p. 10.

The government has formulated a definite plan for education for the next twenty years. It has been striving to give children of school age at least four years of compulsory education, to train the necessary teachers, to secure plant and equipment, to raise funds, to divide the financial burden between the central and local governments,[9] and to give a wider social emphasis to education. These ambitions are difficult to realize

[9] Laymen's Foreign Missions Inquiry, p. 361.

TABLE XIII*

CHINESE GOVERNMENT CURRICULUM STANDARDS
PRIMARY SCHOOL CURRICULUM
(Minutes per week)

SUBJECTS	Lower Grades 1st yr.	Lower Grades 2nd yr.	Middle Grades 3rd yr.	Middle Grades 4th yr.	Upper Grades 5th yr.	Upper Grades 6th yr.
Civic training	60		60		60	
Hygiene	60		60		60	
Physical education	150		150		180	
Chinese language	390		390		390	
Social science	90		120		180	
Natural science	90		120		150	
Mathematics	60	150	180	240	210	
Manual work	90		120		150	
Fine art	90		90		90	
Music	90		90		90	
Total	1170	1260	1380	1440	1560	

* The China Christian Educational Association, *Educational Review*, Jan., 1933, p. 9.

because of the numerous disturbances ever present in the country, but they reveal in part the purpose of the government.

The radical social and economic changes have placed a heavy responsibility upon education. How successful the government will be in carrying out its responsibility time alone will tell. It is pointed out that what China requires is more emphasis upon content applicable to present-day needs. The need for vocational training is outstanding. After all, education must have predominantly a social emphasis. If China wishes to realize a democracy—her present theoretical ideal—she must make an intelligent effort through education to train the youth into socially responsible citizens with a devotion to public welfare. The success of the Christian institutions depends on the extent to which they achieve these ends in the training of their students.

Little information is available concerning physical education in the government and private schools. A report is given in Bulletin No. 20 of the China Christian Association. Tables XIV and XV from the report give the semester hours offered in the government and private colleges, universities, and professional schools for the earlier period. Graph I, comparing the semester hours in physical education in the Christian schools with those in the government and private schools, shows that the Christian schools provide the greater number of teaching hours. Although the report is ten years old and many of the schools now do not exist or have been reorganized, it reveals the trend of that time. Today no such com-

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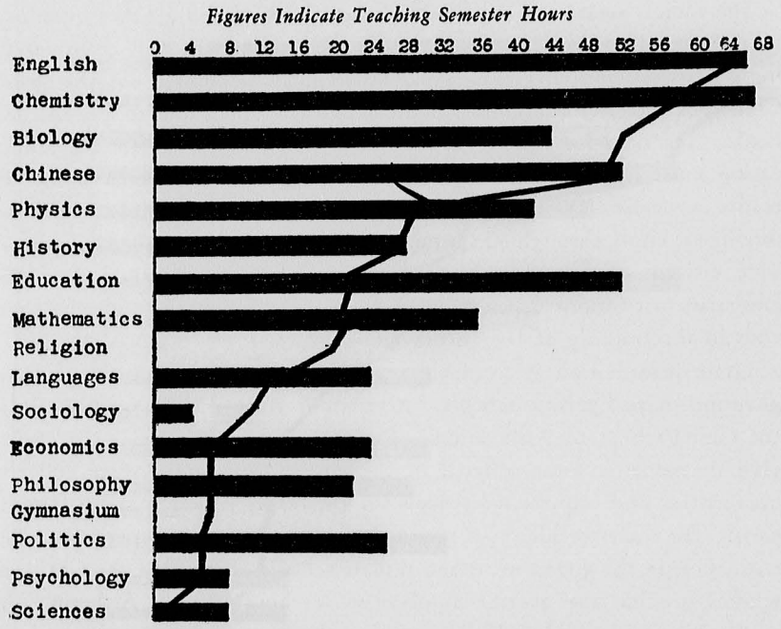
parison is possible because no data are available. Tables XI, XII, and XIII show the required hours of physical education in the public schools of the present time. It is difficult to carry out these requirements but there has been a great increase in the activities since the last study was made.

Schools for teacher training are few in number and their academic standards are not so high as they should be. Of the government schools, Peiping Normal University and Central University are at present conducting teacher training on a satisfactory academic basis. But government schools, unfortunately, are subject to financial uncertainty and political change. Of the private schools there are about twelve, located mainly in Peiping, Tientsin, Shanghai, and Canton. Among these only three are doing work of college grade; the others are of middle school grade. The standards of these schools are still below what has been planned, but the work is being carried on very enthusiastically.

The government concerns itself actively with the development of physical education. There is a National Physical Education Committee, and in

CHART I. Curriculum Emphasis. Comparison of Christian Colleges with Government and Private Colleges in China

Figures Indicate Teaching Semester Hours



Curve—Christian colleges
Bars—Government and private colleges } Departmental medians

China Christian Education Association, Bulletin No. 20, 1928, Chart 17, p. 28

TABLE XIV*

PHYSICAL EDUCATION

TEACHING SEMESTER HOURS IN GOVERNMENT AND PRIVATE COLLEGES AND UNIVERSITIES OF CHINA

	Southeastern	Futan	Kwang Hwa (Credit)	China National	Tung Hua	Taihsia	Southern	Chih Chih	Chun Chih	Shanghai	Kouming	Far Eastern	Wenchih	William's	Nankai	Tsing Hua	Peking Girl's	Hopei	China National	Bing Ming	Yuwen	Peking Franco Chinese	Chung Hua	Amoiensis	Chung Chow (Credits)	Chung San (1st) Shanyu	I Fong Girl's
Arts—General			7	24	8	4																					
Gymnasium																36		2							8		
Vocational—																											
Physical Education	82						57																				

TABLE XV*

PHYSICAL EDUCATION

TEACHING SEMESTER HOURS IN GOVERNMENT AND PRIVATE PROFESSIONAL SCHOOLS OF CHINA

	Teaching Commerce				Engineering			Agriculture			Arts			Medicine			Law	
	Government Girls' Normal	Southeastern Commerce	Chinnan	Communication	Peiyang	Tangshan	Foh-Chung	Government Agricultural	Nantung Agricultural	Shanghai College of Arts	Chung Hua Arts	Nanyang Medical	Shanghai Chinese Medical	Shanghai Fah Chen or College of Law and Politics	Human Law
Arts—General															
Gymnasium	13	4	4	11	—	—	—	—	—	—	—	—	—	—	16
Vocational—															
Physical Education	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* China Christian Educational Association, Bulletin No. 20, p. 302.

1932 a National Physical Education Convention was held at Nanking under government auspices to discuss the problems in the field. There is now a National Director of Physical Education whose office is in the Ministry of Education. He, together with the Provincial Directors of Physical Education, makes and helps to carry out a program for the schools.

Chapter II shows that the Christian institutions have a real place in the education of China. Their main responsibility is to provide the type of educational care which will not only further the cultural life of the students but will also equip them for possible service as leaders in their communities. The Christian institutions must provide a well rounded program, and in this program physical education should be given as much careful attention as other subjects.

CHAPTER III

ADMINISTRATION OF PHYSICAL EDUCATION IN THE CHRISTIAN INSTITUTIONS OF CHINA

THIS chapter describes the administration of physical education in the Christian institutions. For purposes of this study it includes: (1) organization, (2) staff, and (3) budget. The standards and policies of the American institutions with reference to these aspects of physical education are considered; and recommendations which seem appropriate to the Christian institutions are made.

Organization

In the educational program of the Christian institutions little attention has been given to the organization of physical education. Replies to the questionnaires in several instances indicate how difficult it is to learn where the physical education unit is located or what its status is in relation to the other departments of the school. Each school takes up its problem to suit its own situation without any apparent planning for the future.

In Table XVI it is seen that three types of organization exist. Although the types are different technically, each one serves practically the same function. Five of the schools (Hua Chung, Ginling, Soochow, St. John's, and Yenching) have physical education organized as an academic department. Two (Lingnan and West China) have Athletic Committees. Five (Fukien, Hangchow, Shanghai, Nanking, and Cheeloo) have special committees with no specific names as units to undertake the program of physical education. Hwa Nan reports no organization.

The units for taking charge of such work are loosely organized. In the institutions in which there are departments, however, definite effort is made to put physical education on an academic basis. Schools which have Athletic Committees in charge of the program emphasize chiefly athletics. Schools with special committees usually have a very loose organization for both the required work and the athletic program. The work of the whole committee is generally done by one person.

The institutions are composed of one or of several colleges. Physical education may be a department in any one of them. At Hua Chung, Soochow, and St. John's there is only one college in each of the schools. At Yenching there are three colleges—the College of Public Affairs, the

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TABLE XVI

TYPES OF PHYSICAL EDUCATION ORGANIZATIONS OF CHINESE INSTITUTIONS STUDIED

Institutions	Department	Athletic Committee	Special Committee	No Organization
Cheeloo University			×	
Fukien Christian University			×	
Ginling College	×			
Hangchow Christian College			×	
Hua Chung College	×			
Hwa Nan College				×
Lingnan University		×		
Soochow University	×			
St. John's University	×			
University of Nanking			×	
University of Shanghai			×	
West China Union University		×		
Yenching University	×			

College of Natural Sciences, and the College of Arts and Letters. By faculty action it was voted that physical education should be a department in the College of Arts and Letters. At Fukien, Hangchow, Lingnan, Shanghai, Cheeloo, Nanking, and West China, the committees for

TABLE XVII

PHYSICAL EDUCATION ORGANIZATION IN RELATION TO THE COLLEGES IN CHINESE INSTITUTIONS STUDIED

Institutions	In College of Arts and Letters	In College of Arts and Science	In College of Education	Independent
Cheeloo University				×
Fukien Christian University				×
Ginling College	×			
Hangchow Christian College				×
Hua Chung College			×	
Hwa Nan College*				
Lingnan University				×
Soochow University		×		
St. John's University		×		
University of Nanking				×
University of Shanghai				×
West China Union University				×
Yenching University	×			

* No organization.

physical education are organized independently of the colleges. They are administrative units directly responsible to the president. Table XVII indicates in which college in the various institutions the department of physical education is organized.

Organization Standards and Policies of American Institutions

American institutions attach great importance to the organization of physical education. In principle the physical education department is well coordinated with the general program.[1] All activities are usually put under one controlling unit with the idea that they are managed most efficiently this way. Since there is general acceptance of the physical education program as an integral part of education,[2] its organization is in the form of an academic department similar to other departments in the school. The physical education department is in full control of its activities and is directly responsible to the faculty.[3]

This is the most desirable form of organization. There are of course certain difficulties, particularly in the control and management of intercollegiate athletics. Important questions face the American colleges in the determination of the real center of control and the authority ultimately responsible for the administration of college athletics.[4] Many types of organization show that control rests with the faculty, together with joint committees including trustees, students, and alumni.[5] In some cases, actual control lies outside of the school. The general tendency is toward faculty control.[6]

Organization Recommendations for the Christian Institutions

Lack of respect for physical education in the Christian institutions is due in part to its loose organization and in part to its unidentified position. A positive organization is essential for management of the department program. The organization for physical education should be recognized as a unit on a par with the other departments. Control of activities, of

[1] Williams, J. F., Brownell, C. L., *The Administration of Health and Physical Education*, Chap. I, p. 51.

[2] The Carnegie Foundation for the Advancement of Teaching, *American College Athletics*, Bulletin No. 24, p. xi.

[3] Hughes, W. L., *Administration of Health and Physical Education for Men in Colleges and Universities*. Chap. II, p. 28; Chap. IV, p. 134.

[4] The Carnegie Foundation, *op. cit.*, p. xxvii.

[5] *Ibid.*, p. xxvii.

[6] *Ibid.*, p. xxvii.

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intercollegiate athletics in particular, should not on any occasion be outside of the department. The technique of organization in these activities is something which is much needed in the schools.

Recommendations for organization are as follows:

1. Physical education in the Christian institutions should be organized as an academic department on a par with the other departments.
2. Physical education should be in harmony with the general purposes of education.
3. Physical education should include within its scope all physical education activities of the school.
4. The physical education department should have full control of all activities, including intercollegiate athletics.

Staff

Ginling is the only school that considers its physical education faculty adequate. Because of its small student enrollment, the staff of five persons is able to carry a major course in physical education. It takes care of the four years of work required of all the students. All other schools would like to add to the number of their physical education staff members. They feel that a larger staff would increase the efficiency of the department and would enable them also to offer a wider program for the students. Similar feeling does not exist in the schools which have only a limited schedule in such competitive games (Hua Chung, Fukien, and West China). Under existing conditions an undue proportion of the time of the staff is given to the intercollegiate teams. A small staff in most of the schools means, therefore, that the program of the department is curtailed.

Table XVIII gives the number of staff members in the department of physical education in all the institutions. Each school has at least one full-time member. Some have from two to five. In addition to these, three schools (Nanking, Ginling, and Yenching) report that they have part-time members. At Nanking, St. John's, and Lingnan student assistants are employed.

The degrees which the faculty members have received are shown in Table XIX. Trained and qualified persons are conspicuously lacking in a majority of the schools. Of the twelve schools only three (Ginling, Soochow, and Yenching) have members holding academic degrees with majors in physical education. In the remaining schools those in charge of the departments are not sufficiently trained in this field.

TABLE XVIII

PHYSICAL EDUCATION STAFF OF CHINESE INSTITUTIONS STUDIED

Institutions	Full-Time Members	Part-Time Members	Student Assistants
Cheeloo University	1		
Fukien Christian University	1		
Ginling College	5	1	
Hangchow Christian College	1		
Hua Chung College	1		
Hwa Nan College	1		
Lingnan University*	2		4
Soochow University*	3		
St. John's University	3		4
University of Nanking	1	1	2
University of Shanghai	2		
West China Union University	2		
Yenching University	5	1	

* Report for 1930-31.

TABLE XIX

DEGREE OBTAINED BY MEMBERS OF PHYSICAL EDUCATION STAFF IN CHINESE INSTITUTIONS STUDIED

Institutions	M.D.	M.A.	B.A.	B.S.	M.P.E.	B.P.E.
Cheeloo University						
Fukien Christian University						
Ginling College		2	3	1		
Hangchow Christian College						
Hua Chung College						1
Hwa Nan College						
Lingnan University						
Soochow University			1			
St. John's University			3			
University of Nanking			1			
University of Shanghai		1	1			
West China Union University			2			
Yenching University		2	1	1		

Three kinds of degrees have been received by the members of the staff. Five have the Master of Arts, five the Bachelor of Arts, and two the Bachelor of Science. The other seven members with Bachelor degrees did not have their majors in physical education. In addition to these, there is one member who has a B. P. E.

Three institutions (Hua Chung, St. John's, and Yenching) give academic ranking to their physical education staff. At Ginling no ranking

is given any of the faculty members in the school. The remaining institutions do not give any academic status to their men in physical education. Table XX shows the distribution of ranks in the schools.

TABLE XX

ACADEMIC RANKING OF PHYSICAL EDUCATION STAFF MEMBERS IN CHINESE INSTITUTIONS STUDIED

Institutions	Professor	Assistant Professor	Lecturer	Instructor	Assistant	No Ranking
Cheeloo University						×
Fukien Christian University						×
Ginling College*						×
Hangchow Christian College						×
Hua Chung College				1		
Hwa Nan College						×
Lingnan University						×
Soochow University						×
St. John's University				2		
University of Nanking						×
University of Shanghai						×
West China Union University						×
Yenching University		1	2	1	2	

* No Academic Ranking System in the school as a whole.

Staff Standards and Policies of American Institutions

The acceptance of physical education as a part of the general program of education makes American institutions more careful in their selection of staff members. Directors and coaches are regarded as important teachers of students; their personal and professional qualifications are of the best; and they are required to understand how to teach rather than to dominate.[7] In addition to qualities of character and personality, the training of the director essential for leadership includes a good background of scholarship, and experience not only in his specialty but also in the more general fields of education.[8] Other members of the staff are also selected with care. Their educational training and cultural background are expected to compare favorably with that of the other members of the school personnel.[9] Coaches are well trained and carefully chosen.[10]

[7] The Carnegie Foundation, *op. cit.*, p. vi, No. 7.
[8] Williams and Brownell, *op. cit.*, Chap. X, p. 294.
[9] *Ibid.*, Chap. X, p. 299.
[10] The Carnegie Foundation, Bulletin No. 23, Chap. VIII, p. 161.

Members of the physical education staff are considered members of the faculty and given the same academic ranking as members of other departments.[11] In view of the qualifications required, this method of ranking is considered justified. In current practice the director of physical education has an M. A. or Ph. D. degree, while other departmental members have a college degree or its equivalent.[12]

The number of staff members in any school depends on its enrollment and program. In general there is at least one person for every 250 students enrolled. A ratio of one to 150 or 200 is considered even more desirable.[13] The load of a teacher in physical education is still a matter for further study.[14]

Staff Recommendations for the Christian Institutions

The success of any department depends on the ability of its staff. In order to carry out an effective program, the standards just described are as essential for the Christian schools of China as they are for the schools in America. The problem of the Christian institutions is how to realize these standards. The number of trained persons in the profession of physical education in China is very small, but the fact remains that there is a sufficient number to allow each Christian school to have at least one trained person. The institutions should provide a salary for such a person not inferior to those of similarly qualified members of other departments. The temptation is to secure a person willing to accept a position at a low salary, perhaps thereby sacrificing essential personal and professional qualifications.

Regular staff members in the physical education department should have academic ranking when their qualifications warrant it. Even one qualified person would probably be able to handle a department on a sound academic basis. In the Christian institutions many teachers of other departments are willing to help in the program of the physical education department. It is important that the chairman be a well qualified person. The extent of the program should depend upon the number on the staff. It is better to start with one qualified person on a limited scale than to attempt an elaborate program with insufficient and untrained personnel.

Recommendations for staff are as follows:

1. Each institution should have at least one member suitably qualified by academic and professional training.

[11] Hughes, *op. cit.*, Chap. IV, p. 145.
[12] *Ibid.*
[13] *Ibid.*, Chap. II, p. 17.
[14] Williams and Brownell, *op. cit.*, Chap. X, p. 315.

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2. Regular staff members should have academic ranking when their qualifications warrant it.
3. The number on the staff should be sufficient to manage efficiently a defined program. At least one person is necessary for every 200 students enrolled.

Budget

There is only one source of income to provide for all the activities of physical education in the Christian institutions. Table XXI shows that all the schools provide funds for this work in their general budgets.

TABLE XXI

SOURCE OF PHYSICAL EDUCATION BUDGET IN CHINESE INSTITUTIONS STUDIED

Institutions	University	Athletic Association	Gate Receipts
Cheeloo University	×	×	
Fukien Christian University	×	×	
Ginling College	×	×	
Hangchow Christian College	×		
Hua Chung College	×		
Hwa Nan College	×		
Lingnan University	×	×	
Soochow University	×		×
St. John's University	×	×	
University of Nanking	×		×
University of Shanghai	×	×	
West China Union University	×		
Yenching University	×		×

Athletic associations organized in some of the schools are of little financial help. They serve mainly as advisory bodies to the departments of physical education. On special occasions, these associations have provided small prizes for competitions or have raised small amounts for the purpose of sending teams on trips. The sums involved have not amounted to more than $100 to $200. Such associations exist at Cheeloo, Fukien, Ginling, Lingnan, St. John's, and Shanghai.

Gate receipts from intercollegiate games are not sources of support for the teams. Only two schools (Soochow and Nanking) state that they have been successful in making charges for special games. The admission tickets were $.30 each; the total amount collected did not exceed $300. Yenching at one time charged $.50 for the front row seats for a championship game with Nankai. Three seats were bought by faculty members.

The remaining spectators preferred to stand! Students are not accustomed to pay to see games. So far all intercollegiate games are free.

All schools except one charge athletic fees. Ginling has no athletic fee, but its medical fee is higher than that of any other school. Its athletic association membership fee is $.50 for each student. It is reported that more than half of the students belong to this association. At Shanghai an additional fee of $1.00 is required of students who wish swimming privileges. The general practice is to have the athletic fees go to the schools to be used as the main support for physical education activities.

The amount of the fee varies with different schools as Table XXII indicates. It ranges from as low as $1.00 to as high as $8.00 per year.

TABLE XXII

ATHLETIC FEE ASSESSMENT IN CHINESE INSTITUTIONS STUDIED

Institutions	Amount per Year	Remarks
Cheeloo University	$4.00	
Fukien Christian University	2.50	
Ginling College		$5.00 Medical Fee
Hangchow Christian College	6.00	
Hua Chung College	4.00	
Hwa Nan College	2.00	
Lingnan University	2.00	
Soochow University	8.00	
St. John's University	4.00	
University of Nanking	6.00	
University of Shanghai	6.00	$1.00 Swimming Fee
West China Union University	1.00	
Yenching University	4.00	

There are reasons for this variation. Activities of the department have determined the amount of the assessment. In schools where athletic activities are not numerous the fees are low, while in schools where intercollegiate games are on regular schedules the fees are higher.

Table XXIII shows the salary budget for the Christian institutions. The salary scale for physical education instructors is comparatively low. There is a tendency to provide a uniform salary scale for all teachers, based on training and number of years of service. Such a salary schedule has already been put in practice in Yenching.

Most of the institutions fail to specify whether any definite part of their annual budget is to be devoted to a particular purpose. Usually it is left to the person in charge of physical education to decide how the budget

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TABLE XXIII

ANNUAL BUDGET OF PHYSICAL EDUCATION IN CHINESE INSTITUTIONS STUDIED

Institutions	Salary	Current Expenditure	Construction or Special Equipment
Cheeloo University	$1,128.00	$2,192.00	
Fukien Christian University	*	300.00	$300.00
Ginling College	8,500.00	600.00	600.00
Hangchow Christian College	960.00	200.00	800.00
Hua Chung College	*	800.00	
Hwa Nan College	*		
Lingnan University	4,112.00	900.00	
Soochow University	6,500.00	5,000.00	
St. John's University	3,600.00	4,000.00	
University of Nanking	2,000.00	3,300.00	
University of Shanghai	3,110.00	3,300.00	
West China Union University	1,900.00	500.00	250.00
Yenching University	12,060.00	7,811.77	

* Undetermined.

should be divided. Table XXIII shows that four schools (Fukien, Ginling, Hangchow, and West China) have allocated definite sums for expansion purposes which may not be used for repairs or current needs.

The sum appropriated for physical education varies widely. In all the schools, however, the person in charge has stated that the allotted amount is not sufficient to meet the actual needs. Table XXIII shows the current budget for each school. At Hangchow, Lingnan, Shanghai, Soochow, St. John's, and Nanking, the greater part of the current sum is spent for the support of intercollegiate games. At Hua Chung, Fukien, Ginling, and West China, intercollegiate games are carried on in a limited way, because each of the schools is located in a region where there are few schools with which games can be scheduled. In such schools there are no intercollegiate athletic problems. At Yenching, only one-third of the current budget may be spent for intercollegiate athletics. This regulation insures sufficient funds to care adequately for all intramural equipment, upkeep, and current expenses. Tables XXIV and XXV show the physical education budget in comparison with other departments. While these figures are for the year 1928, they are indicative of the ratio of support that is given this work.

Since all the appropriations are quite small, there are no problems regarding the handling of them. All bills are approved by the director of

TABLE XXIV*

SALARY BUDGETS FOR INSTRUCTION—CHINESE AND FOREIGN STAFF—BY DEPARTMENTS IN CHINESE INSTITUTIONS STUDIED (Fall, 1928)

	Yenching	Shantung	Nanking	Ginling	Soochow	St. John's	Shanghai	Fukien	Hwanan	Lingnan	West China	Total
Astronomy	—	—	—	—	—	—	—	—	—	—	—	—
Biology	15,054	5,920	1,830	4,956	—	2,160	7,882	8,900	—	—	4,720	51,422
Business	—	—	—	—	—	—	4,950	—	—	—	—	4,950
Chemistry	16,150	5,550	10,462	2,328	—	1,140	7,810	9,150	—	—	9,800	62,390
Chinese	22,260	2,560	6,000	3,320	—	4,020	6,337	3,720	—	—	3,500	51,717
Economics	18,254	—	2,130	—	—	2,100	—	700	—	—	—	23,184
Education	16,200	8,600	1,835	3,108	—	—	14,644	2,000	—	—	17,440	63,827
Engineering	—	—	—	—	—	—	—	—	—	—	—	—
English	31,560	6,000	5,487	3,168	—	—	13,163	4,933	—	—	14,750	79,061
French	2,000	—	600	—	—	600	502	—	—	—	360	4,062
Geography	900	—	—	—	—	—	—	—	—	—	—	900
Geology	9,050	—	—	—	—	—	3,956	—	—	—	—	13,006
German	2,000	—	—	—	—	600	—	—	—	—	—	2,600
History	14,440	4,720	9,084	2,784	—	3,480	8,238	1,021	—	—	4,750	48,517
Home economics	6,280	—	—	—	—	—	—	—	—	—	—	6,280
Japanese	—	—	—	—	—	—	—	—	—	—	—	—
Journalism	—	—	—	—	—	—	400	—	—	—	—	400
Library training	—	—	991	—	—	2,160	—	—	—	—	—	3,151
Mathematics	12,256	3,120	2,635	—	—	240	—	—	—	—	4,600	22,851
Music	4,000	1,000	—	2,928	—	—	1,670	—	—	—	—	9,598
Philosophy	3,000	—	3,656	—	—	—	—	1,933	—	—	550	9,139
Physical education	1,335	—	994	4,908	—	1,740	2,070	—	—	—	600	11,647
Physics	10,630	7,720	4,774	3,000	—	2,160	7,240	6,605	—	—	8,840	50,969
Politics	20,300	—	—	—	—	—	—	606	—	—	—	20,906
Psychology	8,500	—	—	—	—	—	—	2,000	—	—	—	10,500
Religion	4,000	1,000	2,152	2,928	—	—	15,494	5,152	—	—	600	31,326
Sociology	23,247	600	3,710	2,664	—	—	12,835	1,021	—	—	4,500	48,577
Total	241,416	46,790	56,340	36,092	56,000	20,400	107,191	47,741	—	206,697	75,010	893,677

* The China Christian Educational Association, Statistical Report, Bulletin No. 26, Table 28.

TABLE XXV*

BUDGETS FOR INSTRUCTION—APPROPRIATION FOR DEPARTMENTS IN CHINESE INSTITUTIONS STUDIED
(Fall, 1928)

	Yenching	Shantung	Nanking	Ginling	Soochow	St. John's	Shanghai	Fukien	Hwanan	Lingnan	West China	Total
Astronomy	—	—	—	—	—	—	—	—	—	—	—	—
Biology	4,700	1,200	—	750	2,000	500	9,554	1,640	—	19,519	730	40,593
Business	—	—	—	—	—	—	288	—	—	—	—	288
Chemistry	9,280	4,000	—	900	4,000	1,750	7,281	3,219	—	8,115	800	39,345
Chinese	860	300	—	300	—	200	226	—	—	865	—	2,751
Economics	4,320	—	—	—	—	50	—	—	—	—	—	4,370
Education	1,025	800	—	1,180	—	25	1,445	—	—	435	900	5,810
Engineering	—	—	—	—	—	275	—	—	—	—	—	275
English	200	100	—	—	—	25	407	—	—	—	—	732
French	75	—	—	—	—	12	—	—	—	—	—	87
Geography / Geology	300	—	—	—	—	—	545	—	—	830	—	1,675
German	75	—	—	—	—	13	—	—	—	—	—	88
History	425	400	—	—	—	50	418	—	—	—	—	1,293
Home economics	500	—	—	—	—	—	—	—	—	500	60	1,060
Japanese	—	—	—	—	—	—	—	—	—	—	—	—
Journalism	—	—	—	—	—	25	45	—	—	—	—	70
Library training	—	—	—	—	—	250	—	—	—	—	—	250
Mathematics	450	200	—	—	—	25	—	—	—	185	—	860
Music	250	—	—	250	—	—	1,315	60	—	250	—	2,125
Philosophy	30	—	—	—	—	—	—	5	—	305	—	340
Physical education	800	—	—	300	—	800	—	—	—	—	—	1,900
Physics	9,670	1,500	—	150	1,000	300	5,121	766	—	7,085	1,390	26,982
Politics	4,213	—	—	—	—	—	—	—	—	—	—	4,213
Psychology	300	—	—	—	—	—	—	—	—	—	—	300
Religion	—	200	—	—	—	50	154	—	—	—	—	404
Sociology	9,352	250	—	—	—	50	334	—	—	—	—	9,986
Total	46,825	8,950	—	3,830	7,000	4,400	27,133	5,690	—	38,089	3,880	145,797

* The China Christian Educational Association, Statistical Report, Bulletin No. 26, Table 29.

physical education and then paid by the treasurer of the institution. No detailed accounts are kept for physical education in any of the schools except Yenching, where for the past three years itemized accounts have been kept in the books of the department and in the university treasurer's office.

Budget Standards and Policies of American Institutions

The main support of physical education in American institutions is derived from the central budget, fees, and paid admissions to games.[15] Not all schools have sufficient appropriations to carry out the desired program, especially the schools which do not take in large gate receipts from games. Many schools have fees which average about $10.00 a year. This method of financing is not considered by American authorities the most desirable since it assumes that required physical education and athletics are "extra-curricular."[16] In schools where the income from gate receipts is large, physical education has been helped substantially. But large gate receipts have led to lavish expenditures for personnel and equipment and have produced a false idea of the importance of athletics.[17]

Responsibility for the administration of athletic funds varies. It may be in the hands of the faculty, of the athletic director, or of a graduate manager; but American authorities without exception consider it more satisfactory to have the treasurer or the business office of the institution in actual control of the athletic funds.[18] Accounts of athletic funds in the American institutions are as a rule well kept.[19]

Experience has shown that physical education operates best on a budget plan financed by the institution.[20] Fees for the physical education program are charged only when an adequate appropriation is not available. American authorities agree that control of all finances should be in the hands of the authorities of the institution, and official accounts should be kept showing all transactions.[21]

Budget Recommendations for the Christian Institutions

The Christian institutions are functioning in a situation different from that in America, particularly with respect to money. The students as a

[15] Hughes, *op. cit.*, chap. XVIII, p. 353.
[16] *Ibid.*
[17] The Carnegie Foundation, Bulletin No. 24, Chap. V, p. 88.
[18] *Ibid.*
[19] *Ibid.*
[20] Hughes, *op. cit.*, Chap. IV, p. 153.
[21] *Ibid.*, p. 159.

group are poor. One must understand their general background to appreciate the problem. Of China's huge population, 80 to 90 per cent is rural and 71 per cent agrarian. The people live in villages, generally of less than 2,500 in population, tilling land averaging about three *mow* per capita (8 *mow* is equal to an acre). The income of a family (average 5 in number) is low. According to reports made in various provinces, it ranges upward from $146 a year, including all produce used by the family from the farm.[22] Industrial development has thus far not improved the economic life of the worker.[23] The working and living conditions of the factory employees are appalling; their wages are low and barely cover necessary expenditures.[24]

The typical family budget gives an idea of the level of living maintained by a majority of the people.[25] From 55 to 60 per cent of the income is spent for food. A family in the United States spends only 40 per cent for food. The Chinese family must use 84 to 90 per cent of its income for necessary articles of life, while the American family need spend only 74 per cent for the same items. The poorer the people, the greater the proportion of the income which must be spent for physical necessities, leaving little indeed for luxuries, education, or recreation. This description of the economic condition is general, but it accounts in part at least for the fact that the students as a group, including those in the Christian institutions, are poor.

The Christian institutions should provide adequately from the general budget for the needs of all departments. No exception should be made in the case of physical education. The tuition fee should cover the general program of the physical education department. A special fee gives the students the idea that the required program of physical education is "extracurricular." It has also given the idea to the students that they should have the right to control the athletic program and to take charge of the finances. The problem of fee alone has caused a great deal of trouble for the school. Some students who pay fees do not take any required work in physical education or participate in the athletic program. They naturally feel that the assessment is unjust.

The physical education department should have a detailed budget to cover the program for the year. The budget should be based upon a careful estimate of needs and expenditures. It should include the salary of

[22] Laymen's Foreign Missions Inquiry, Vol. V, Part II, p. 180; Part I, p. 24.
[23] *Ibid.*, Vol. II, pp. 14 and 27. Buck, J. L., *Chinese Farm Economy.*
[24] *Ibid.*, p. 225.
[25] *Ibid.*, p. 225.

the staff members, cost of equipment, cost of maintenance of equipment, and cost for each division of the work in the department. It cannot be over-emphasized that the accounting should be systematic and the bookkeeping should show record of all receipts for monies spent and purposes for which expenditures were made. Such a budget plan would not only indicate the scope and purpose of the work but would give the school authorities confidence in the efforts of the department to carry out a useful program.

Recommendations for budget are as follows:

1. Physical education in the Christian institutions should be operated on the budget plan, the funds to be provided by the institutions.
2. No special fees either for required physical education or for athletics should be imposed.
3. No admission should be charged to athletic contests.
4. Accounts should be kept as they are for all other departments—in the office of the treasurer of the school.
5. In all connections with student managers, the sale of tickets and expenditures of athletic teams should be made in detail (with proper receipts) to the director of physical education or direct to the treasurer's office.

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CHAPTER IV

PROGRAM OF PHYSICAL EDUCATION IN THE CHRISTIAN INSTITUTIONS

THE general program of physical education in the Christian institutions is described in this chapter. For purposes of this study it includes: (1) medical examination, (2) required physical education classes, (3) intercollegiate athletics, (4) intramural sports, and (5) training courses. As in the procedure of Chapter III, the standards and policies of the American institutions are noted in the various phases of the general program described, and recommendations suitable to the Christian institutions are given.

Medical Examination

A medical certificate is required of all applicants entering the Christian institutions. By this regulation many physically unfit students are excluded, but the certification by no means indicates that students who are admitted are all in fit physical condition to do their school work. It simply means that those having contagious disease or any major illness are refused admission.

All schools provide for physical examinations of their students. These examinations are made in eleven of the schools by their own physicians. The remaining two schools (Cheeloo and Hangchow) give their examinations through special arrangements with local doctors. At Fukien only freshmen and special students are examined. A greater thoroughness in these examinations is to be desired. Lack of facilities and insufficient staff are the main reasons given for not having better examinations. Although many years have passed since such examinations were introduced, not a single school is able to make a complete report of the health of its students. Special physical tests and measurements for physical education purposes are not included. Soochow, St. John's, Ginling, and Yanching report that their examinations are made in a fairly thorough way. Table XXVI gives the medical examination facts for each school.

Provision for the care of health in these institutions is inadequate. Facilities available are shown in Table XXVII. Health service is organized in seven of the schools (Hwa Nan, Fukien, Ginling, Lingnan, Shanghai, St. John's, and Yenching). The fact that a school has a health program

TABLE XXVI

MEDICAL EXAMINATION OF STUDENTS IN CHINESE INSTITUTIONS STUDIED

Institutions	Are Medical Examinations Made	Persons Examined					Who Makes Them	Frequency		Tests Given
		Freshmen	Sophomores	Juniors	Seniors	Others		Annually	Semi-Annually	
Cheeloo University	Yes	×	×	×	×	×	Special doctor	×		None
Fukien Christian University	"	×				×	School doctor		×	"
Ginling College	"	×	×	×	×		"	×		"
Hangchow Christian College	"	×	×	×	×		Special doctor	×		"
Hua Chung College	"	×				×	School doctor		×	"
Hwa Nan College	"	×				×	"	×		"
Lingnan University	"	×	×	×	×	×	"	×		"
Soochow University	"	×	×	×	×	×	"	×		"
St. John's University	"	×	×	×	×		"	×		"
University of Nanking	"	×	×	×	×	×	"	×		"
University of Shanghai	"	×	×	×	×	×	"	×		"
West China Union University	"	×	×	×	×		"	×		"
Yenching University	"	×	×	×	×	×	"		×	"

TABLE XXVII

HEALTH ORGANIZATION IN CHINESE INSTITUTIONS STUDIED

INSTITUTIONS	Health Service	Health Service Related to Physical Education	Infirmary Building	Special Rooms	Hospital
Cheeloo University					×
Fukien Christian University	×				
Ginling College	×			×	
Hangchow Christian College					
Hua Chung College					×
Hwa Nan College	×			×	
Lingnan University	×		×		
Soochow University					×
St. John's University	×		×		
University of Nanking					×
University of Shanghai	×			×	
West China Union University					×
Yenching University	×		×		

indicates that there is a medical officer on its staff. At Yenching there are three doctors in charge of the health work of the school.

None of these health services is related to the physical education organization. Both units function quite independently of each other excepting at Ginling and Yenching where the medical officers and persons in charge of physical education cooperate closely to improve the students' health.

Hospitals are provided at five of the institutions. They are supported at each place by the missions that support the school, but there is no organic relationship between the two. The hospitals render health service to the schools.

Schools with a health service usually have infirmaries. Fukien is an exception. Hua Chung does not have an infirmary, but there is a hospital located near the school. Three schools (Lingnan, St. John's, and Yenching) have special infirmary buildings, each of which has a capacity of about twenty beds. Three schools (Ginling, Hwa Nan, and Shanghai) have special rooms in dormitories for infirmary use. Each school provides room space adequate to care for six patients.

Medical Examination Standards and Policies of American Institutions

Not all American institutions are giving complete health care to their students, but many of them, especially the larger schools, have excellent

provision for such work.[1] The purposes of the health and physical examination are stated as follows:[2]

1. "To disqualify students whose health defects, physical, mental, and social, preclude them from college activity.
2. "To prevent students from carrying a study load which would menace health.
3. "To prevent students from entering into physical activity which would menace health.
4. "To discover and arrange for appropriate treatment of a student with a communicable disease.
5. "To discover physical defects, and arrange for their correction, thus preventing disease and future health failure."

These are the objectives. The American schools, as a whole, have gone far toward realizing them. Many schools provide facilities for thorough examinations and follow-up inspections. They have done enough along this line so that their standards and policies deserve attention.[3] The following statement of standards and policies suggests the importance of a good health division to cooperate with the work of physical education:[4]

"The health of the student is the responsibility of the institution.

"Every institution should employ a full-time physician as director of health service. He should be licensed to practice in the community and should also be trained as an educator.

"An entrance health examination should be a prerequisite to matriculation. It may well be given during Freshman week as a part of the routine for registration.

"Health examinations should be required of athletes before each sport season, of students who have been absent because of illness, or of any students requested to report for examination by the college physician.

"At least 30 or 40 minutes per student should be given for examination and consultation.

"The health service should be responsible for the health supervision of athletes and employees of the institution.

"It is suggested that students be classified on the basis of the health examination into at least two groups: those able to carry a normal academic load, and those able to carry a normal physical education load.

[1] Williams, J. F. and Hughes, W. L., *Athletics in Education*, Chap. XIV, p. 292.
[2] Hughes, W. L., *Administration of Health and Physical Education in Colleges*, Chap. IV, p. 64.
[3] *Ibid.*, Chap. III, p. 31.
[4] Williams, J. F. and Brownell, C. L., *The Administration of Health and Physical Education*, Chap. VI, p. 141. Hughes, *op. cit.*, p. 110.

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"All students, whether defective physically or not, should return to the physician for a follow-up health conference once or more during the year in the order of the urgency of the case.

"Dispensary, infirmary or hospital, and laboratory service should be provided by the institution or otherwise made easily available to students.

"A complete up-to-date health record, or unit record system, including all information available covering data pertaining to the individual's physical welfare, should be kept of each student throughout his college life.

"Student health records should be accurately filed and easily accessible but held strictly confidential and available only to properly qualified officers.

"Annual, and in some cases, daily and monthly reports of dispensary, infirmary, and hospital cases should be made to the proper authorities, as for example, the deans, and director of physical education."

Medical Examination Recommendations for the Christian Institutions

The Christian institutions have not made adequate provision for the health care of their students. Reports from the questionnaires and from persons visited at some of the schools show that facilities and budgets are not sufficient and that the general examination of the students is far from satisfactory. It would seem that the schools with hospitals near by or in some way affiliated would have better provisions for health work. But such is not the case. It is encouraging, however, that these schools realize the state of the health work and are ready to improve it. The situation, also, is such as would press them to do so.

Recommendations for medical examination are as follows:

1. There should be a Health Division in each school adequately staffed to give every student of the school a thorough examination at least once a year.
2. All students should be classified, on the basis of the health examination, according to their ability to carry a normal academic load and a normal physical education load.
3. A complete up-to-date record covering data pertaining to the student's physical welfare should be kept throughout his college life.

Required Physical Education Classes

Among the Christian institutions, Fukien alone reports no requirement of any kind in physical education. At Lingnan, one year is required of

freshman students. Five schools (Cheeloo, Hangchow, Nanking, Soochow, and St. John's) have required work for their freshman and sophomore students only. Yenching requires three years for women and two years for men. Ginling, Hua Chung, Hwa Nan, and West China require physical education classes for the entire four years. Shanghai requires three and one-half years. The tendency is to have required work for two years.

There is also a tendency toward having classes meet only twice a week. Six of the schools (Hwa Nan, Soochow, St. John's, Nanking, West China, and Yenching) report such a schedule. At Soochow the two hours are given in one double period. Lingnan requires only one period a week. At Hangchow, Hua Chung, Shanghai, and Cheeloo, three periods a week are required, while at Ginling four periods a week are compulsory.

The type of work is about the same in all the schools. Every school reports that the greater part of the time is spent in playing games. Calisthenics, gymnastics, and apparatus exercises are given as a very small part of the total program. One of the problems is to get the students to take showers after the class work. The Women's Division of Yenching has corrective classes which are conducted by a trained person who prescribes individual activities to suit particular needs.

Regulations provide that absences, excused or unexcused, must not exceed three periods per credit point. The ruling applies automatically to all students. Students are failed in subjects in which the ruling is broken. The only classes from which athletics may be excused are the required physical education classes. They may be exempt from these during any season in which they are members of any university team. West China is the only school reporting that such an exemption is not made, but it must be remembered that this school is one of the institutions where intercollegiate athletics are not carried on extensively.

Academic credit for physical education work is given at Hua Chung, Ginling, Soochow, St. John's, and Yenching where the required work is considered to be of academic quality. Grades are given and absences are allowed on the same basis as for other subjects of the school. In three of these schools, Ginling, Soochow, and Yenching, the grades affect the student's academic standing. The remaining schools do not put this work on a basis of academic credits. Tables XXVIII and XXIX show facts pertaining to required physical education in all the institutions included in this study.

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TABLE XXVIII

PRESCRIBED COURSES OF PHYSICAL EDUCATION IN CHINESE INSTITUTIONS STUDIED

Institutions	For Whom				Periods a Week				Type of Work							
	Freshmen	Sophomores	Juniors	Seniors	1	2	3	4	Apparatus	Athletics	Gymnastics	Correctives	Positive Credit	Grades Given	Grade-Ratio	Absences Count
Cheeloo University	×	×					×			×	×					
Fukien Christian University								×			×		×	×	×	×
Ginling College	×	×	×	×							×					
Hangchow Christian College	×	×					×		×	×	×		×	×		×
Hua Chung College	×	×	×	×			×			×	×					
Hwa Nan College	×	×	×	×		×				×	×		×	×	×	×
Lingnan University	×				×					×	×		×	×	×	×
Soochow University	×	×				×			×	×	×		×	×	×	×
St. John's University	×	×	×			×	×		×	×	×		×	×	×	×
University of Nanking	×	×	×	×		×	×		×	×	×		×	×	×	×
University of Shanghai	×	×	×	×		×	×		×	×	×		×	×	×	×
West China Union University	×	×	×	×		×	×		×	×	×		×	×	×	×
Yenching University	×	×	*×			×	×		×	×	×	×	×	×	×	×

* For women only. † ½ year only.

TABLE XXIX

ACADEMIC CREDIT FOR PHYSICAL EDUCATION IN CHINESE INSTITUTIONS STUDIED

Institutions	Positive Credit is Given	Grades are Given	Grades Affect Ratio	Absences Count
Cheeloo University				
Fukien Christian University				
Ginling College	×	×	×	×
Hangchow Christian College				
Hua Chung College	×	×		×
Hwa Nan College				
Lingnan University				
Soochow University	×	×	×	×
St. John's University	×	×		×
University of Nanking				
University of Shanghai				
West China Union University				
Yenching University	×	×	×	×

Required Class Standards and Policies of American Institutions

In America students are classified generally into two groups on the basis of their health examinations.[5] The first is composed of students who are without any significant physical handicaps. These may be further classified according to motor ability or physical capacity. The second group includes those who are restricted because of physical limitations. They have a restricted physical education program. On the basis of classification, therefore, students are given activities suited to their capacities and needs.

Ideals for class organization have not been determined.[6] The optimal size of a class varies with the activity. A good class may be held with ten or twelve members but a desirable number is usually about twenty-five or thirty. Classes meet, as a rule, three times a week. These required classes are usually compulsory for students in their first two years of college.[7] As long as the credit system is accepted for other subjects it is the consensus of opinion that it should be followed in physical education.[8]

[5] Hughes, *op. cit.*, p. 156. Williams and Brownell, *op. cit.*, p. 284.
[6] Williams and Brownell, *op. cit.*, p. 286. Hughes, *Administration of Health and Physical Education in Colleges*, p. 156.
[7] Williams and Brownell, *op. cit.*, p. 283.
[8] *Ibid.*, p. 288. Hughes, *op. cit.*, p. 168.

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Worthiness of credit depends on acceptable program and adequate facilities. In many institutions grades are given in the classes for actual achievement and for evaluations of the students' work on the basis of the accepted criteria for evaluation of physical education activities;[9] absences and excuses are treated as in other departments;[10] and no students are excused from these classes for intramural or intercollegiate competitions unless they have fulfilled the requirements of the class.[11]

Required Class Recommendations for the Christian Institutions

Physical education in the modern sense is a product of the twentieth century as far as China is concerned.[12] There were sports in the olden times in China, but the idea of physical education as a means of recreation or as a part of one's education is not common to the present Chinese mind.[13] It was the scholar and not the man of physical activity who was considered the ideal man.[14] So in actuality today, although some sports have become very popular, the majority of the students in the colleges are still more inclined to study than to participate in physical education activities.

The only way in which the program of physical education can become an educational influence in these institutions is to provide for it in the manner described in the paragraph on standards and policies of American institutions. No other plan will succeed because there already exists a misunderstanding of the purpose of physical education as a result of the way in which required work has been carried out. A suitable explanation of the purpose of the physical education program, and demonstration of the value of individual corrective work will aid in inducing a proper attitude and enabling students to appreciate the fact that the classes are definitely educational in character.

Recommendations for required classes are as follows:

1. Health examinations should be made before registration in the required classes.

[9] Williams and Brownell, *op. cit.*, p. 290. Hughes, *Administration of Health and Physical Education in Colleges*, p. 184.
[10] Williams and Brownell, *op. cit.*, p. 273. Hughes, *op. cit.*, p. 160.
[11] Hughes, *op. cit.*, p. 160.
[12] Hoh, Gunsen, *Physical Education in China*, p. 90.
[13] T'ang Leang-Li, *Reconstruction in China*, p. 93.
[14] *Ibid.*, p. 93.

2. Students should be classified mainly into two groups: those who should be in restricted classes and those who need not be.
3. When possible, the number in a class should not exceed twenty-five to thirty.
4. There should be at least two classes a week.
5. One of the requirements for class work should be a shower at the end of the class period.
6. Absences should be treated in the same manner as they are in other departments.
7. Credit should be given for courses in physical education, just as it is for courses in other departments.
8. Grades should be given and should affect the academic standing of the student.

Intercollegiate Athletics

The aspect of physical education which attracts most attention in the Christian institutions is intercollegiate athletics. These activities consume most of the time and attention of the staff members, and the maintenance of college teams also constitutes the largest item of the department budget (except at Yenching). This condition exists and will continue to exist until school authorities realize that such activities are a part of the school's responsibility. As it is, the situation is due not so much to over-emphasis on intercollegiate athletics as to the lack of an intramural program capable of arresting the attention and arousing the interest of the majority of the student body.

At Yenching a great deal of effort has been put into the plans for physical education activities. Tables XXX to XXXVIII inclusive and Charts II and III give a picture of the result of this effort. In this institution, by faculty action, emphasis is put on intramural sports rather than on intercollegiate competitions. To be sure that this ruling is carried out it is further required that the Department of Physical Education allow only one-third of its current budget for intercollegiate contests. This action was taken not so much with the idea of limiting intercollegiate sports as with that of providing out of a small budget a fair amount to be spent for intramural activities in which a larger number of students might participate.

Kinds of Sports

Football, basketball, volleyball, track and field events, and tennis are regular intercollegiate sports for men in all the Christian institutions.

TABLE XXX

STUDENT ATHLETIC PARTICIPATION AT YENCHING UNIVERSITY, 1931-32

(Men's Division)

Intercollege (31)	
Field hockey	16
Tug of war	21
Interclass (192)	
Football	56
Basketball	45
Volleyball	71
Playground baseball	55
Track	47
Cross country	11
Tug of war	33
Intercollegiate (87)	
Football	27
Basketball	16
Cross country	6
Track	23
Playground baseball	27
Volleyball	24
Tennis	8
Ice hockey	12
Field hockey	12
Baseball	27
Open Tournament (118)	
Basketball	68
Playground baseball	44
Tennis	57
Ping pong	26
Bicycle race	16
Individual (408)	
Tennis	372
Handball	62
Track	103
Badminton	37
Chinese boxing	87
Ping pong	287
Hiking	151
Bicycle	286
Swimming	265
Equitation	48

TABLE XXX (Continued)

Fishing	197
Skating	240
Horseshoe pitching	53
Desired Facilities (397)	
Golf	115
Archery	78
Swimming (indoor)	450
Wrestling	51
American boxing	33
Bowling	35
Marksmanship	100
Rowing	185
Fencing	73

CHART II. Percentages of Men Student Participation in Sports at Yenching University, 1931-1932

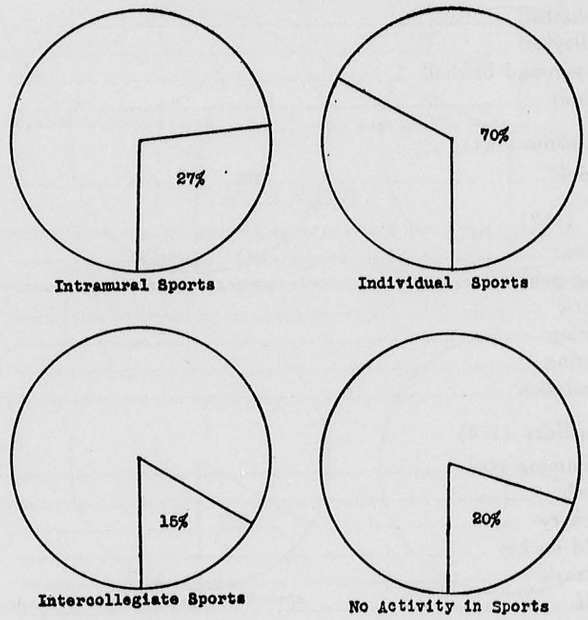

TABLE XXXI

STUDENT ATHLETIC PARTICIPATION AT YENCHING UNIVERSITY, 1931-32
(Women's Division)

Required Class (127)	
Volleyball	42
Basketball	51
Tennis	85
Gymnastics	48
Croquet	13
Folk dance	42
Corrective	31
Interclass (41)	
Basketball	30
Volleyball	28
Playground baseball	22
Tennis	12
Intercollegiate (20)	
Basketball	12
Volleyball	14
Playground baseball	10
Tennis	5
Open Tournament (15)	
Tennis	15
Individual (169)	
Tennis	138
Ping pong	90
Track	14
Hiking	81
Skating	110
Equitation	27
Desired Facilities (178)	
Swimming pool	171
Track	37
Archery	47
Field hockey	28
Football	12
Golf	79
Equitation	38
Deck tennis	41
Ice hockey	35
Badminton	42

CHART III. Percentages of Women Student Participation in Sports at Yenching University, 1931-1932

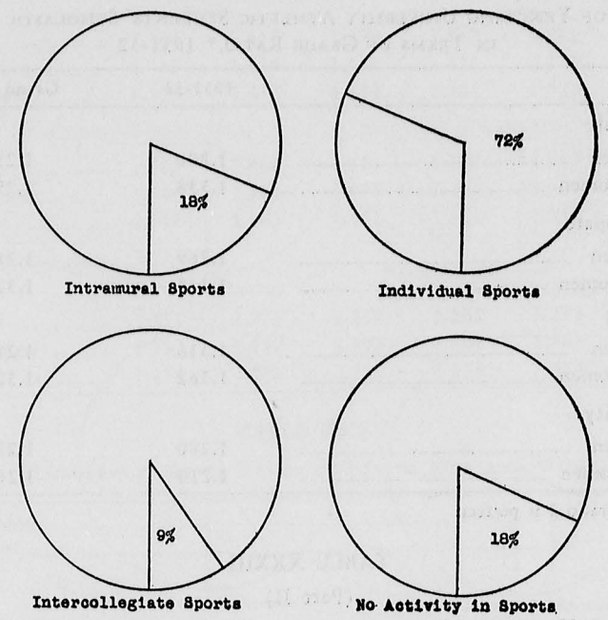

TABLE XXXII

PERCENTAGES OF STUDENT PARTICIPATION OF ATHLETICS AT YENCHING UNIVERSITY, 1931-32

	Percentage
Intramural	
Men	27
Women	18
Intercollegiate	
Men	15
Women	9
Individual	
Men	70
Women	72
No Activity	
Men	20
Women	18

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TABLE XXXIII

(Part I)

A Study of Yenching University Athletic Students' Scholastic Records in Terms of Grade Ratio,* 1931-32

	1931-32	Grand Ratio
Intramural		
Men	1.280	1.258
Women	1.338	1.295
Intercollegiate		
Men	1.269	1.282
Women	1.353	1.320
Individual		
Men	1.316	1.258
Women	1.362	1.324
No Activity		
Men	1.280	1.280
Women	1.210	1.200

* Grade ratio 2 is perfect.

TABLE XXXIII

(Part II)

A Study of Yenching University Athletic Students' Scholastic Records in Terms of Grade Ratio, 1929-34

	1929-30	1930-31	1932-33	1933-34
Intercollegiate	1.259	1.208	1.266	1.314
Intramural	1.216	1.238	1.183	1.218

TABLE XXXIV

A Study of Undergraduate Students' Scholastic Records in Terms of General Grade Ratio, Yenching University, 1928-1932

	1928-29	1929-30	1930-31	1931-32	1932-33	1933-34
Freshmen						
Men	1.133	1.183	1.133	1.182	1.150	1.098
Women	1.105	1.240	1.228	1.179	1.850	1.169
Class	1.126	1.201	1.166	1.181	1.162	1.124
Sophomores						
Men	1.196	1.251	1.282	1.250	1.253	1.232
Women	1.245	1.316	1.314	1.296	1.281	1.302
Class	1.211	1.265	1.292	1.266	1.261	1.255

TABLE XXXIV (Continued)

Juniors						
Men	1.302	1.350	1.299	1.282	1.282	1.309
Women	1.417	1.439	1.357	1.423	1.371	1.370
Class	1.323	1.376	1.312	1.321	1.314	1.325
Seniors						
Men	1.367	1.406	1.414	1.343	1.309	1.341
Women	1.306	1.384	1.438	1.421	1.387	1.364
Class	1.307	1.403	1.421	1.361	1.333	1.349
Three Undergraduate College						
Men	1.215	1.277	1.259	1.261	1.238	1.224
Women	1.222	1.317	1.307	1.308	1.288	1.274
Total	1.218	1.287	1.273	1.276	1.254	1.240

TABLE XXXV

Yenching University: Grade Ratios of Letter Men and Women, 1929-33

List of Men	141
List of Women	29
Average	
Men	1.242
Women	1.298
Both	1.252
Percentage of Honor Grades	
Men	35%
Women	55%
Both	39%
Percentage from:	
College of Arts and Letters	27%
College of Natural Sciences	43%
College of Public Affairs	30%
Grade Ratio of General Student Body	
1929-30	1.287
1930-31	1.273
1931-32	1.276

Cross country appears for competition in seven of the schools (Fukien, Hangchow, Shanghai, Soochow, St. John's, Nanking, and Yenching). Lack of facilities excludes swimming as an intercollegiate event in many of the schools. Lingnan and Fukien are the only schools which have

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TABLE XXXVI

YENCHING UNIVERSITY: BUDGET FOR PHYSICAL EDUCATION

Books	$ 150.00
Office	200.00
Printing	100.00
Equipment	1,000.00
Four permanent workmen	480.00
Upkeep of Warner Gymnasium	300.00
Upkeep of grounds	1,270.00
Awards	300.00
Intercollegiate athletics	2,000.00
Total	$5,800.00

TABLE XXXVII

YENCHING UNIVERSITY: BUDGET FOR INTERCOLLEGIATE ATHLETICS

Tennis	$ 220.00
Track and field	300.00
Volleyball	230.00
Basketball	250.00
Football	380.00
Playgroundball	230.00
Cross country	100.00
Ice hockey	100.00
Field hockey	100.00
North China Meet expenses	90.00
Total	$2,000.00

TABLE XXXVIII

YENCHING UNIVERSITY: INTERCOLLEGIATE ATHLETIC RECORDS, 1926-35

GAME	*1926-27	*1927-28	*1928-29	*1929-30	*1930-31	*1931-32	1932-33	*1933-34	*1934-35
Football		2	1	1	2	3	Japanese Invasion Competitions Unfinished	2	2
Basketball		3	2	3	1	3		3	2
Tennis	1	1	1	1	1	1		1	2
Volleyball	1	1	1	1	1	1		2	1
Track		2		1	1	1		2	2
Baseball		1						1	1
Playgroundball					1	1			
Ice hockey			1	1	1	2		1	1
Cross country					3	4		2	2

* General Championship for Wu Ta Hsueh League.

competition in this sport. Baseball, playgroundball, ice hockey, field hockey, and Chinese boxing have regular intercollegiate schedules at Yenching. Chinese boxing is done on an exhibition basis. Table XXXIX gives the games in which there is intercollegiate participation.

Control of Athletics

In all the institutions there is faculty control of intercollegiate athletics. This control is delegated to the physical education unit, the chief function of which is in most cases to take charge of the college teams. Competitions in the sports have not become so extensive, nor have budgets become so large as to present problems regarding their control.

Eligibility Regulation

The Big Four Conference is composed of Nanking, St. John's, Shanghai, and Hangchow. Games among these institutions are governed by their conference rules. Freshmen are not permitted to participate in these conference games but may participate in games with other institutions. Schools other than those in the Big Four Conference permit freshmen on all intercollegiate teams. Graduate students in all the schools are eligible for intercollegiate competition. There are no regulations (except at Yenching) which limit the number of years that a player may participate for any one school. Yenching, as a member of the Big Five in Peiping, sets five years as the limit for any one player to represent the school in the Big Five games. No freshmen are eligible to play in any of the Big Five games. The one-year residence ruling also applies in the Big Five games but not in any others.

In all the schools, students whose grades are too low cannot hope to continue long on any team. A student failing to reach a certain average at the end of each semester is required to leave the school. This regulation is very severe for students who have put much time on any phase of athletic sports. The schools are rigid in applying this ruling and no exceptions are made for athletes.

Coaching

Special coaches are not employed by any of the institutions. Usually teams are coached by members of the school faculty, generally by the person in charge of physical education. As a result, expert coaching is lacking in most of the schools since it is impossible for one man to be sufficiently well trained in all sports.

The method of coaching is very informal. The coach is looked upon

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TABLE XXXIX

INTERCOLLEGIATE SPORTS IN CHINESE INSTITUTIONS STUDIED

Institutions	Football	Basketball	Volleyball	Track and Field	Tennis	Baseball	Cross Country	Chinese Boxing	Swimming	Playground Baseball	Ice Hockey	Field Hockey	Golf
Cheeloo University	×	×	×	×	×		×		×				×
Fukien Christian University	×	×	×	×	×		×						
Ginling College													
Hangchow Christian College	×	×	×	×	×		×		×				
Hua Chung	×	×	×	×	×	×	×		×				
Hwa Nan College													
Lingnan University	×	×	×	×	×	×	×		×				
Soochow University	×	×	×	×	×		×	×	×				
St. John's University	×	×	×	×	×		×	×	×				
University of Nanking	×	×	×	×	×		×	×				×	
University of Shanghai	×	×	×	×	×		×	×					
West China Union University	×	×	×	×	×		×						×
Yenching University	×	×	×	×	×	×	×		×	×	×	×	×

as the leader of the squad to hold the team members together and help improve the game from the technical point of view. In the selection of team members the captain and manager have as much responsibility as the coach, although it is the coach who makes the final decision. The general attitude in the schools is to regard the captain and manager as equally responsible with the coach for the result of games and the general welfare of the teams. Teams are frequently organized with no faculty coaches at all, students themselves managing their own affairs.

Scouting

This phase of intercollegiate games is absent in China. Coaches do not send observers to watch their opponents. The desire to know whether an important rival is strong or weak is, of course, not lacking and many students are always present at the games in which their chief opponents are playing and inform the coach of the general strength of their rivals; but systematic professional scouting is not practiced by the Christian institutions.

Schedules

The intercollegiate schedule of games is generally not excessive. Members of the Big Four use a single "round robin" system in their games for championship. The Big Five uses the double "round robin" system for most of the sports. Even with this system the number of games in the schedule is not unduly large. The maximum number is only eight conference games. In China two or three intercollegiate sports may be going on during the same season. It is, therefore, almost impossible for one student to be on two teams since the games usually are played on Saturdays and begin at the same hour.

In track and field competitions, dual meets are rare. In the Big Four, there is only one meet in which all the members participate. The same is true of the Big Five, where all the members join together at one meet only. The schools which are not in conferences join the city track meet, in which from four to eight schools compete. Each school holds its own home interclass track and field meet annually. At this meet the university team members are selected, and begin practice for the more important intercollegiate meet.

There are also sectional meets which are held once in two years. These meets are sponsored by the China National Amateur Athletic Federation, which has divided the country into five sections for competitive purposes. These competitions are generally held on October 10th of the year in

which the National Meet is not held. (The National Meet is held once in two years.)

Training and Special Consideration of Athletes

Much is to be desired in the line of training. Most teams are undertrained rather than overtrained. This is chiefly due to the fact that coaches are lacking to manage the team members carefully, and to require observance of strict training rules. The coaches are generally not experts in regard to rules of training.

Athletic stars are not favored in any way. In a few schools they must even supply their own uniforms. When they play away from home they are lodged in the classrooms of the competing school. Frequently they must supply their own bedding. Transportation for trips is made in third class cars. Scholarship aid is not known to be given to students in any of the schools on the basis of athletic ability.

Medical Care

Medical supervision of athletes is deplorable. No special examinations are given in any of the schools. At Yenching the Department of Physical Education examines all the Health Department medical records of all athletes. During intercollegiate contests, the presence of doctors provided by the schools is a rare exception. All the schools feel the desirability of taking better care of their students, particularly those who participate in strenuous competitions.

Award System

Ginling and Yenching are two institutions which give athletic awards as a part of a regular athletic program. The remaining schools either give no awards or give them only for certain activities. The whole question of the award system should be studied to find out what should be done in this respect in the schools. This is the feeling expressed by nearly all persons in charge of physical education in the various schools.

Shanghai, Soochow, and St. John's give letters for intercollegiate competitions. They also give medals for intramural track meets, and banners to the winning groups in other sports. Other schools report that on special occasions awards may be given to the contestants. The question of awards is not attracting a great deal of attention at present from either staff or students.

Intercollegiate Athletic Standards and Policies of American Institutions and Their Relationship to the Christian Institutions

That college athletics possess educational value very few will deny.[15] Whether a school is intended primarily for training the habits and powers of the mind or is meant to be essentially a socializing agency, athletics have important relationship to both.[16] The ultimate justification for college athletics, then, lies in what the program does for the individual. Any phases that contribute to his welfare should be fostered, and any that tend to impair it should be discarded. American college athletics have made marked improvement in the last thirty years. But despite progress there are some obvious needs which indicate that commercialism and materialistic interest have crept in.[17] It is the purpose to consider here what standards and policies regarding intercollegiate athletics are considered acceptable in the American institutions, and this should lead to suggestions desirable for the Christian institutions to follow.

Kinds of Sports

The games in which there is intercollegiate participation among American colleges are listed below:[18]

Football	Track and field	Baseball
Basketball	Boxing and wrestling	Swimming
Tennis	Cross-country	Golf
Rowing	Soccer	Hockey
Lacrosse	Gymnasium	Fencing
Rifle or pistol	Polo	Water basketball

Christian institutions should not hasten to increase the number of sports for intercollegiate competitions. Their efforts at present should be to improve the conditions of intercollegiate games which already are taking place; and their chief emphasis should be on intramural sports. A sport should be added only when it has become popular and there is sufficient staff and budget to take care of it.

Control of Athletics

In American institutions, control of intercollegiate athletics has, owing to its rapid growth, often shifted from the undergraduate, and in some

[15] Carnegie Foundation for the Advancement of Teaching, Bulletin No. 23, p. 292. Hughes, *Administration of Health and Physical Education in Colleges*, p. 224. Williams and Brownell, *op. cit.*, p. 406.

[16] Carnegie Foundation, *op. cit.*, p. 292.

[17] *Ibid.*, p. 310.

[18] *Ibid.*, p. 348.

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cases from the authority of the school itself, to sources outside the school.[19] The alumni have often exerted a great deal of influence over the policies of athletics in their school. At the present time, however, authorities agree that control of athletics should be given entirely to the fac[illegible] the school.[20] All activities, including intercollegiate athletics, should be put in one department under the leadership of the director of physical education, and all student managers should be scholastically eligible for their appointments.[21]

The Christian institutions so far have no serious problems in controlling their intercollegiate athletics. The responsibility for them rests with the faculty of the school. The important point to remember is that control should remain centered there even when athletics assume larger proportions, as has occurred in American institutions.

Eligibility Regulation

Eligibility standards of American college students for participation in intercollegiate athletics are of two kinds. One is set by the athletic conference and the other is imposed by the individual institution. The regulations of both groups include points concerning freshman participation, health condition, monetary aid, transfer students, number of credits required, and grades necessary.[22] The whole problem of the effectiveness of scholastic eligibility involves the quality of academic work, the delegation of responsibility, and the keeping and use of certain records. The standards of the athletic conference are sometimes lower than those of the institutions, which have often lowered theirs to meet the conference regulations.[23] Records of the registrar and special committee on eligibility, although generally dependable, are not always infallible.[24] The opinion is expressed, however, that the president should appoint an eligibility committee from the faculty to examine and determine the eligibility of students for intercollegiate competitions.[25]

The Christian institutions in China have experienced no difficulty regarding eligibility ruling. Their record in keeping conference regulations

[19] Carnegie Foundation, *op. cit.*, pp. 77-100.
[20] Hughes, W. L., *The Administration of Health and Physical Education for Men in Colleges and Universities*, p. 158.
[21] *Ibid.*, p. 158.
[22] Carnegie Foundation, *op. cit.*, p. 97. Williams and Hughes, *op. cit.*, p. 302.
[23] Carnegie Foundation, *op. cit.*, p. 97.
[24] *Ibid.*, pp. 97-98.
[25] Hughes, *op. cit.*, p. 109. Williams and Brownell, *op. cit.*, p. 466.

is greatly respected. There is so far no need for a set of rules made by the individual school, but it is advisable to have one for the purpose of establishing a standard. The Christian schools have an opportunity for leadership in setting up standards and for carrying them out in a sportsmanlike way. It is recommended, therefore, that each school have eligibility regulations for participation in extramural athletics; and that the determination of eligibility be made by the registrar with the assistance of the medical officer and director of physical education.

Coaching

The "paid coach" or "professional coach" in American institutions has been subjected to much criticism by educators. They complain that he has not always been an educated man; that he has been a dictator exploiting his men and often using unsportsmanlike tactics; that his salary has been too high and his tenure has depended on victories; and that he has done special recruiting of men for his team.[26] The day has passed, however, when the character and education of a coach in these colleges is either taken for granted or disregarded.[27] The consensus of expert opinion at the present time is that coaches should have requisite academic training to be granted faculty rating similar to that in any other department; that they be selected by the director of the department of physical education with the advice of the athletic committee; and, on recommendation by the president, be appointed by the board of trustees.[28]

The Christian institutions have been fortunate in having faculty members (generally Americans) who are able to coach athletic teams. The Americans who coach do so in order to become acquainted with the students and to help the school. As a rule they were athletes in their college days. The coach with the captain and manager manages the team. The players are always encouraged to make any suggestions they wish. This kind of coaching has not always prepared a team for victory, but it is a type that is considered educational and practical in China. It is this kind of coaching which may need improving but which the Christian institutions should always encourage and continue to practice.

Scouting

Scouting is defined "as an organized attempt on the part of a coaching staff to ascertain in advance the principle, methods, and details of play to

[26] Carnegie Foundation, *op. cit.*, pp. 161-189.
[27] *Ibid.*, p. 162.
[28] Hughes, *The Administration of Health and Physical Education for Men in Colleges and Universities*, p. 158. Williams and Brownell, *op. cit.*, p. 449.

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cases from the authority of the school itself, to sources outside the school.[19] The alumni have often exerted a great deal of influence over the policies of athletics in their school. At the present time, however, authorities agree that control of athletics should be given entirely to the faculty of the school.[20] All activities, including intercollegiate athletics, should be put in one department under the leadership of the director of physical education, and all student managers should be scholastically eligible for their appointments.[21]

The Christian institutions so far have no serious problems in controlling their intercollegiate athletics. The responsibility for them rests with the faculty of the school. The important point to remember is that control should remain centered there even when athletics assume larger proportions, as has occurred in American institutions.

Eligibility Regulation

Eligibility standards of American college students for participation in intercollegiate athletics are of two kinds. One is set by the athletic conference and the other is imposed by the individual institution. The regulations of both groups include points concerning freshman participation, health condition, monetary aid, transfer students, number of credits required, and grades necessary.[22] The whole problem of the effectiveness of scholastic eligibility involves the quality of academic work, the delegation of responsibility, and the keeping and use of certain records. The standards of the athletic conference are sometimes lower than those of the institutions, which have often lowered theirs to meet the conference regulations.[23] Records of the registrar and special committee on eligibility, although generally dependable, are not always infallible.[24] The opinion is expressed, however, that the president should appoint an eligibility committee from the faculty to examine and determine the eligibility of students for intercollegiate competitions.[25]

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be employed by opponents."[29] It is a phase of American college athletics (particularly football) that has brought forth much criticism from educators. Their criticisms are centered around two points: first, that it creates institutional suspicion and distrust, especially among the coaches; and, second, that it costs money.[30] So far attempts to enforce non-scouting agreements have not been very satisfactory.

In the Christian institutions scouting does not exist at present and its introduction should be guarded against. Friendly relationship with other schools is far more important and desirable than any number of victories. It is obvious that of the funds available for sports none should be used for this purpose. It is recommended that the Christian institutions emphasize the value of friendly relations with schools in athletic contests above victories, and that they discourage scouting as unsportsmanlike and prohibit its practice.

Schedules

Authorities in physical education believe that schedules of games in American institutions are commonly excessive and that schedule making is influenced by many factors, among which are the monetary consideration and the desire to please the alumni.[31] In addition to the usual intercollegiate competitions, there are also national games and meets. Concerning these competitions, it is felt that, although they possess advantages, the points unfavorable to the school and especially to the individual students more than counterbalance the advantages.[32] Emphasis in intercollegiate games should be upon their educational values to students and should not depend upon public appeal or tradition.[33]

The schedules of games of the Christian institutions in China are not excessive. With rare exception they are not permitted to interfere with special holidays, vacations, and examination periods. The problem of these schools is their participation in sectional and national meets. One or the other of the meets is held annually on October 10th (a day to China as July 4th is to America). It covers a period of about ten days. The Christian institutions, unlike many other schools, do not give special class excuses to those who wish to participate. The regular academic ruling is enforced that a student be failed for absences with or without excuse in

[29] Carnegie Foundation, *op. cit.*, p. 181.
[30] *Ibid.*
[31] *Ibid.*, p. 99.
[32] *Ibid.*, p. 214.
[33] Hughes, *The Administration of Health and Physical Education for Men in Colleges and Universities*, p. 160.

any class for more than a certain number of the total number of periods for that particular class. For adhering strictly to this ruling the Christian institutions are accused at times of being unsympathetic and unpatriotic to the cause of China. The accusation is due not to the ruling itself but rather to the manner and attitude in which it has been carried out by some of the institutions. Considering the entire situation, there is no doubt as to what the Christian institutions should do with regard to their extramural athletic programs. They should encourage them but not to the detriment of scholastic standards, the maintaining of which is also a patriotic duty. It is recommended that these institutions should encourage games for their educational merit and not because of their momentary popular appeal. They should be extremelly sympathetic to the national athletic program of the National Government but not at the sacrifice of academic standards which the National Government is just as eager as the schools to keep at a high level.

Training and Special Consideration of Athletes

Training of athletes in these institutions needs attention. Comparatively speaking, it can be said that American college athletes are overtrained while those in the Christian institutions in China are definitely under-trained. Heavy daily practices and occasional meetings at night are routines characteristic of American college athletics. In the Christian institutions, it is difficult to get as many as two or three practices a week. When members of teams are more or less selected, practices are very poorly attended in many of the institutions.

Since all intercollegiate competitions are strenuous, some minimum requirements should be made of those who participate. Membership on any intercollegiate team should, at least, depend on a definite amount of participation in intramural sports or a certain number of practices a week. It is recommended that any member of intercollegiate teams should have at least two regular practices a week or the equivalent in the intramural program. These recommendations should be strictly carried out.

Reports of recruiting and subsidizing of athletes cover many pages of American college athletic history. "Recruiting" is the soliciting of athletes with the view to persuading them to attend a particular college; and "subsidizing" is the financial or other assistance given to athletes for their services on athletic teams. The present trend is against these practices.[34]

[34] Carnegie Foundation, *op. cit.*, pp. 225, 240, 265.

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The Christian institutions of China are not faced with these problems at present. In the two possible situations in which one might expect to find favoritism shown to athletes, no special consideration is given. When the athletes' grades have been low on entrance examinations, their admittance has frequently been urged on the ground that they would render the school valuable athletic service; and in the awarding of school scholarships, it has been urged that favor be given to athletes. In such circumstances, however, faculty committees give little heed to the pleas. Students should be treated impartially whether in matters of scholarship aid or of employment. It is recommended that all institutional agencies designed to assist needy students be officially recognized and brought under proper supervision by the institution; a scholarship should be awarded on the basis of need and not for athletic ability; employment for athletes should be secured on the same basis as for all other students.[35]

Medical Care

A great amount of medical care is given to American athletes. Yet some authorities consider that from the point of view of physical health there is yet room for improvement in the present-day athletic practices of American colleges;[36] because (*a*) not all athletic aspirants are given adequate physical examination to determine their physical fitness for participation, or sufficient medical care and supervision during the period of training and competition,[37] and (*b*) excessively heavy schedules, participation in too many sports in one season, and over-rigorous training requirements are practices injurious to health which are permitted to continue.[38]

A complete report by the Carnegie Foundation on American colleges, covering the preceding points, was made to discover the relation of athletics to student health.[39] As a result suggestions were made that might increase the value to health of participation in athletics. These suggestions are important in their bearing on the establishment of standards, and are pertinent to this study. The full text follows:[40]

[35] Hughes, *The Administration of Health and Physical Education for Men in Colleges and Universities*, p. 161.
[36] Carnegie Foundation, *op. cit.*, p. 157.
[37] *Ibid.*, p. 158.
[38] *Ibid.*, pp. 158, 178.
[39] *Ibid.*, pp. 135-160.
[40] *Ibid.*, p. 159. Hughes, *The Administration of Health and Physical Education for Men in Colleges and Universities*, pp. 158, 160.

A. "The athletic team physician should be considered the key man in the supervision of the hygiene of athletic training and competition and be given full authority:
   1. To decide whether or not the physical condition of a student is such as to make athletic practice or competition justifiable and safe;
   2. To direct the medical and surgical care of ill or injured athletes;
   3. To direct the diet and in most instances the regimen of athletes in training;
   4. To act in advisory capacity in the making of athletic schedules;
   5. To act in advisory capacity in the choice of coaches and trainers;
   6. To determine what athletic events are within the physiological limits of the athletes under his care. (For instance, the desirability of the six and one-half mile cross-country run and the four-mile crew race for college men, and of four-mile cross-country runs for high school players, may be seriously questioned on medical grounds.)

B. In view of these large responsibilities, the athletic team physician should be given proper equipment and assistance and be very carefully chosen with the following qualifications in mind:
   1. He should have a considerable knowledge and appreciation of athletic competition.
   2. He should have a medical degree from a Grade A medical school and at least one year's postgraduate surgical training in a hospital or surgical clinic with a large traumatic surgery practice.
   3. He should have taken at least a six-weeks' postgraduate course in the hygiene of athletic training and the care and prevention of athletic injured.

C. Adequate provision should be made in every school, college, or university for a thorough medical examination, health history, and health-habit inventory of every student at least once a year. Upon the basis of this examination each student should be advised as to the type of athletics that he can take up with safety and benefit. The usual six to ten minute physical examination, given annually in accordance with many state medical inspection laws without even stripping the child, is inadequate. It is an open question whether the very limited funds now used for this purpose would not be better spent in providing for each child a thorough physical examination three times during his school life, until the day when funds for more frequent, complete examinations are made available.

D. Participation in some form of athletic sport should be assumed for the vast majority of students, but since the games must be suited to the individual, facilities should be provided for a wide variety of sports. The success attending the policy of "athletics for all" has been such in the few institutions where it has become a reality that its expansion to all educational institutions is unquestionably indicated. At no time, however, should those few be lost sight of who need rest rather than exercise, or medication more than physical activity.

E. Opportunity should be provided for out-door games during daylight hours, and without interference with the regular meal hours.

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F. The coach should not usually be requested to take care of athletic injuries.
G. A student should be permitted to participate in not more than two training seasons a year.
H. Every effort should be made to match teams with opponents of approximately equal weight and skill, not for the sake of contests without victory, but as a safeguard of health.
I. Although, in order to obtain from athletics the best values that they afford, each athlete must desire to win, nevertheless the notion that victory is to be achieved, no matter what the cost, must be eliminated if the values of athletics in respect to health are to be conserved and realized."

For the Christian institutions in China there is much to be hoped for in the improvement of health care of athletes. That promotion of health is one of the purposes of education and is a responsibility of the school, is a principle widely accepted. In those institutions, in which the need is actually greater than it is in American schools, the provision for health care is found to be conspicuously inadequate. Since no record has been kept, it cannot be determined accurately how much injury to health has resulted from the participation of students in athletics without proper care. Many accidents and serious impairment of health have occurred, and the school authorities are looking forward to improvement in conditions. The suggestions given for health care should point the way for these schools to follow.

For the Christian institutions, therefore, it is imperative that something be done to improve health supervision. It is recommended that the suggestions made for health care on page 41 of this study be carefully considered, and that the more important ones be followed immediately.

Awards

The present trend in American colleges is against giving valuable athletic awards.[41] The principle of giving inexpensive symbols to show achievement rather than expensive gifts is being accepted. Colleges are tending to adopt a plan whereby a larger number of students may work for awards and not any one individual secure so many. The kind of award may vary in the different divisions of sport. Little has been done about awards in the Chinese Christian institutions. It is recommended, however, that a plan be adopted in accord with the principles stated above.

Intercollegiate Sport Recommendations for the Christian Institutions

Recommendations for intercollegiate athletics are as follows:

[41] Hughes, *Administration of Health and Physical Education in Colleges*, p. 238. Williams and Brownell, *op. cit.*, p. 482. Williams and Hughes, *op. cit.*, p. 262.

1. All physical education activities, including intercollegiate athletics, should be in the department of physical education under supervision by the director of physical education.
2. Control of all athletics should be in the department of physical education which is directly responsible to the general faculty of the school.
3. Coaches should be appointed to the staff as other faculty members are, preferably recommended by the director of physical education, and when having requisite academic training should be given faculty rating.
4. The democratic method of coaching permitting captain, manager, and player to help in the plan of the team should continue to be encouraged. The final control of the team should, however, rest with the coach.
5. There should be eligibility regulations for participation in extramural athletics, determined by the registrar with the assistance of the medical officer and director of physical education.
6. Schedules should not be so heavy as either to interfere with academic work or to put physical strain on the players. They should be made with a view to their educational value, and should not be influenced by monetary reasons or by popular appeal.
7. Health examination should be required of all participants in the competitions. Their health should be carefully watched during the entire period of contests.
8. No person should be a member of any team unless he attends practices regularly at least twice a week, or their equivalent in the intramural program.
9. Scouting should continue to be considered unsportsmanlike and its practice prohibited.
10. Recruiting and subsidizing of athletes should not be permitted.
11. All students, including athletes, should be treated alike whether in matters of scholarship aid or of employment.
12. A system of award should be planned. Awards should be given as symbols of achievement and not for their monetary value.

Intramural Sports

It was difficult in this study to secure accurate data regarding intramural programs in the schools. Accounts of the organization through which these sports are carried on are given in a vague way. From the

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questionnaires, however, and from the interviews it is known that all schools have intramural competitions, but that with the exception of Ginling and Yenching, there exists no definite organization for the care of these activities. Competitions in most of the schools are left to the initiative of the students. Games may be suggested either by the students or by the person in charge of physical education. The limited number of faculty members and lack of funds are reasons given for not having better intramural programs. Table XL shows the activities in which the students of various schools have participated in intramural competitions.

At Yenching preponderant emphasis is given to the intramural program with the purpose of attracting and interesting the largest possible number of students. Tables XXX-XXXVIII inclusive, and Charts II and III show what has been done in that institution.

Intramural Standards and Policies of American Institutions

Intramural sports are the games in which competition takes place between different units within the student body of the college, organized as a rule on the basis of group associations and loyalties. Reports of the American institutions show that participation in some form of athletic activity among undergraduates has nearly tripled in the last thirty years; and that on the average at the present time 50 to 60 per cent of the students participate.[42] Many kinds of intramural sports are available, as will be seen from the list which follows:[43]

Baseball	Basketball	Horseshoes	Volleyball
Tennis	Swimming	Bowling	Handball
Speedball	Cross country	Boxing	Lacrosse
Soccer	Golf	Diamond ball	Polo
Wrestling	Relay	Freethrow	Fencing
Gymnasium	Hockey	Rifle or pistol	Cageball
Mass track	Rowing	Hare and hound	Bicycling
Indoor baseball	Water basketball	Squash	
Pushball	Badminton	Playgroundball	
Hiking	Track and field	Football	

The main problem of intramural sports is to increase the per cent of participation of the student body. In addition to the meager facilities, there are other handicaps to a large participation. One is inadequate supervision. So much attention is paid to intercollegiate athletics that supervision of intramural sports has suffered. Sometimes too much of the

[42] Carnegie Foundation, *op. cit.*, p. 115.
[43] *Ibid.*, p. 349.

TABLE XL

INTRAMURAL SPORTS IN CHINESE INSTITUTIONS STUDIED

Institutions	Tennis	Basketball	Football	Volleyball	Playground Baseball	Cage Ball	Baseball	Handball	Track	Relay	Cross Country	Swimming	Ice Hockey	Ice Events	Field Hockey	Ping Pong	Archery	Deck Tennis	Quoits	Horseshoes	Croquet
Cheeloo University	×	×	×	×					×	×	×	×			×	×		×		×	×
Fukien Christian University	×	×	×	×	×				×	×	×	×									
Ginling College	×	×	×		×				×	×	×	×									
Hangchow Christian College	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×
Hua Chung College	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×
Hwa Nan College	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×
Lingnan University	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×
Soochow University	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×
St. John's University	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×
University of Nanking	×	×	×	×	×		×	×	×	×	×	×	×	×			×			×	×
University of Shanghai	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×
West China Union University	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×
Yenching University	×	×	×	×			×	×	×	×	×	×	×	×			×			×	×

responsibility for them has been left to the students.[44] Another handicap is that intramural sports have not been made to appeal to the individual student. Colleges are giving increasing attention to the organization of these games, and are enlisting students on the basis of individual needs and interests. The experience of American institutions with intramural sports is long and extensive. Their present standards not only show how extensive intramural sports should be and what factors are involved, but also show the intention of attaining desirable goals. For purposes of this study these standards are cited below:[45]

Intramural athletics are a part of physical education and should be organized and controlled by that department.

There should be an intramural council or committee made up of unit (fraternity, boarding house, etc.) and sport managers. This council or committee should assist the director and staff in determining policies and regulations regarding eligibility, protests, program of activities, units of competition, awards, etc.

The student managerial organization should be a part of a manager system for all athletics, intramural and intercollegiate.

Intramural officials should be trained and examined by the department. They might well be required to pass knowledge tests on the rules and demonstrate ability in actual officiating.

Units for intramural competition should be small in size, permanent in nature, and as nearly equal as possible in playing strength.

Playing equipment, that is, balls, bats, etc., should be provided by the department.

ALL intramural participants should be urged to wear the regular physical education costume.

Team games and individual sports should be included in the intramural program.

Activities should be the type that are easily learned, and easily equipped. They should be suited to mass participation and the available facilities. Activities should be physically wholesome, that is, vigorous (but not too strenuous), yet safe for the novice. Furthermore, activities should be interesting to students.

Schedules should be made well in advance.

Group all-year scoring plans to keep the interest alive and prevent overconcentration in a few sports.

Point system should place major emphasis upon the participation of large numbers throughout the entire year and only minor emphasis on a championship or the standing in a league.

There should be no transfer from one team to another during a sport season.

[44] Carnegie Foundation, *op. cit.*, p. 116.
[45] Hughes, *Administration of Health and Physical Education in Colleges*, p. 261.

The department should definitely discourage protests. They may be reduced, or entirely eliminated, if a field supervisor, manager, or director is available to settle the dispute during the contest.

If protests are made they should be based on mistakes in rules rather than mistakes in judgment, and they should be submitted in writing within 24 hours after the contest.

Forfeitures should be definitely discouraged by the department.

Intramural awards should be symbols of achievement rather than a prize of great monetary value and the kinds and number should be limited. Soliciting prizes from business men is not generally commendable.

Detailed records of games by means of score books, scrap books, or typewritten sheets filed in cabinets or bound in permanent volumes should be carefully kept by the intramural managers or by secretarial help.

Intramural Sport Recommendations for the Christian Institutions

Physical education in the Christian institutions of China should have values for individual development. With the breakdown of the family system, more and more emphasis is being put on the need of training an individual for the independent management of his life. The Christian institutions should devise means of developing the qualities necessary in the exercise of this freedom: should see to it that their students understand how to maintain and improve their physical health, and should devise situations that will develop courage, character, and independent thought.

The Christian schools are not meeting such needs. The health and physical care of their students is poorly handled. It has been shown how inadequate their provisions are in this respect and how little attention is given to health examinations even of those students who participate in intercollegiate competitions. Ginling and Yenching are the only schools to which this statement does not apply.

High standards of sportsmanship and physical courage should be developed on the field of play. Activities should be planned so that students may have opportunity to think out problems for themselves and to develop their ability to organize. Keeping these points in view, all the Christian schools should improve their programs so as definitely to provide opportunity for developing these qualities. It means that the intramural program under able leadership should be carried out mainly through student initiative and management, and that the intercollegiate teams should be managed in such a way as to give the students the responsibility of planning for games with the coach as adviser.

Physical education should teach a proper attitude toward play. The

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philosophy of the Chinese for centuries back has exalted the quiet man. The idea of physical education as a recreation valuable in the preparation for life is new to the Chinese mind. There is need of a change in attitude. Activities that can be enjoyed after college days not only by groups but also by individuals should be encouraged. Toward the realization of these ends, required work in physical education can contribute, and the Christian schools should utilize the opportunities which it offers. The facts are, however, that except in three schools the required program falls short of meeting the needs of the students. Haphazard planning has created difficulties, and has lost to physical education the chance to further a well-rounded development that a more carefully thought out plan might have been able to seize upon. It must be kept in mind, however, that required work, so distasteful to students in the past three years, has been fairly well accepted by both students and administrators as an important part of the school requirements. Recognition of the need of training along the lines indicated above should lead to better planning of future programs.

Physical education should have social values. The meaning given to social values here is the development of qualities of the individual in relation to society at large. Any society to have permanence must have social control and stability. The family system exerted the necessary social control in the old order, but in the present society new ideals are necessary. Physical education can contribute to the furthering of this new social control by teaching group cooperation.

China greatly needs social qualities which may be put under the headings of sociability and standards of conduct. The Chinese are inclined to be provincial and cliquey. Activities which bring them together, fostering friendly interest and a sense of solidarity, would therefore help toward steadying the social order. The new conditions require different concepts of social relationships between men and women. Conventions of etiquette have become more simple and frank. New standards of conduct must be set. Physical education encourages social behavior. The recreational activities in its program, its festivals, pageants, and competitive games have definite contributions to make to the social attitude.

Personal qualities such as the sense of fair play, law abiding disposition, cooperativeness, and discipline are essential characteristics for China's new social order. Physical education with trained leadership provides an excellent opportunity in the schools for training in these qualities. The gymnasium and the playground are the laboratories in which high standards may be exemplified, practiced, and established.

The Christian institutions should provide opportunities in their physical education program for fostering these essential traits. Intramural and intercollegiate sports when conducted by capable leaders afford rich possibilities as a training ground for developing such traits. Unfortunately, the schools have not taken full advantage of these possibilities. Intercollegiate athletics have been on the whole conducted creditably. In these sports, however, too much emphasis has been put on forming teams for the few students and on winning games rather than on development of body or character. The intramural program provides the most natural situations to bring students together, for the program can be made varied and interesting to all. Yet except in Ginling and Yenching programs for intramural games have been most disappointing.

Physical education should inculcate national spirit. Recent history records nothing but one humiliation after another as a result of foreign aggression. The loss of Manchuria is still fresh in the minds of the Chinese. At this moment a large area of North China is threatened with separation from the control of the national government. All these events have driven the people to realize that nothing will save the country except a united effort on the part of all its citizens. The new order requires that the state, the central government, should be supreme in power. The individual and family must learn to put aside their selfish interests for the sake of the national welfare and advancement. Only this kind of unity will lead to national salvation.

The national spirit is widespread, but to make it an effective force certain qualities in the people are essential. They should learn to be unselfish; they should learn to cooperate; and they should learn how to be loyal to the state. These qualities of unselfishness and willingness to cooperate have possibilities of development through the activities of physical education. Every effort in the program should be made to foster and increase the growth of this national spirit.

The present government is promoting physical education as a means of strengthening the physical vigor of the people and arousing their national spirit. Physical education is required in all the schools in the country. The central, provincial, and local governments are supporting and encouraging physical education most enthusiastically in their respective places. In the preparation of the sport meets in the various communities the national significance of these meets is explained to the people. At every gathering there is a patriotic ceremony in which the athletes take the athlete's oath and vow solemn allegiance to the national flag. There is a

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feeling of unity and national spirit stirred in the thousands who attend these gatherings. To promote this feeling of national unity is one of the responsibilities of physical education.

The Christian schools in their plans for physical education should link themselves with this growing national spirit. All the students should realize not merely that the physical education program is useful for their personal development but that it is also preparation for national usefulness. From this point of view it is important that as soon as possible a program be prepared that requires participation on the part of every student in the schools. Home meets held in these schools must have as patriotic an atmosphere as those which have just been described. Students of these schools must be encouraged to take part in Sectional and National Meets in order that they may experience further this feeling of national spirit. Every student in Chinese schools must be a patriot. Those in Christian schools must not be exceptions—they should be examples!

The program of physical education in the Christian schools has thus far not particularly stressed this idea of national spirit. Plans for the future should correct this omission as soon as possible. So doing will not only add to the program, but will also show that the schools are conscious of the hopes and aspirations of the Chinese people.

The experiences of American colleges in intramural activities are valuable only in so far as they serve as guides to the Chinese Christian institutions. It must be remembered that active competition in sports traditionally is not a part of the life of the Chinese students, and that many of them come to college with little or no background in athletics from middle school days. Hence sympathetic and competent leadership in sports is far more important than mere efficient organization. The students must be shown values in physical education that will benefit them later in life; and so personal health, the value of association with others, and patriotic feeling of the need of every citizen's development, are the incentives which are used to lead the students to thoughtful and active participation in sports and in a well planned intramural program.

The variety of sports in the program must not be too great. Effort should be made to increase the number participating in the games already popular. A smaller number of games will decrease schedule difficulties. It is better to manage a few games well than to have an elaborate program that is not carried out. Equipment for games should not be expensive. Games that will have carry-over values as tennis, soft ball, and swimming should be made available.

The units for competition should be carefully planned. Divisions according to provincial groups should be discouraged. A plan permitting general mixing on a basis that provides teams of equal playing strength should be developed. The games should have a high degree of cooperation and be under the guidance of the department of physical education. This program should be a part of the regular work so that the students will feel that it is a program of the school in which they themselves have an important part.

Recommendations for intramural sports in the Christian institutions are as follows:

1. The Christian institutions should put preponderant emphasis on intramural athletics as a part of the physical education program, organized and controlled by the department.
2. Physical education should have values for individual development.
3. Physical education should teach proper attitude toward play.
4. Physical education should provide opportunities for lessons in social values.
5. Physical education should inculcate national spirit, group solidarity, and cooperation.
6. Each institution should have a competent director of physical education who is responsible for the plans and management of the sports.
7. There should be an intramural executive committee made up of representatives of the units. This committee should assist the director in determining policies and rules regarding eligibility, protest, program, units of competition, etc.
8. The department should provide competent officials for all the games (training them if necessary).
9. Units for competition should be small in size, permanent in nature, and as equal as possible in playing strength.
10. Special facilities and equipment should be provided by the department.
11. Participants should be encouraged to wear playing clothes (regular physical education suits if they wish) and not their classroom clothing.
12. Activities should be the kind easily learned, needing only easily obtained and inexpensive equipment, and interesting to the students. They should be suited to mass participation, teams, and individuals.
13. Schedules should be made well in advance in keeping with the required program and not seriously interfering with academic activities.

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14. A scoring plan on point system for the year should be made to keep interest going and prevent over-emphasis on a few sports.

15. Records of all intramural sports should be kept by the department of physical education.

16. Rules should all be strictly kept. All protests should be discouraged. The spirit of sportsmanship and cooperation should permeate the entire organization and atmosphere of the program.

Training Courses

Table XLI shows the elective courses that are given at Ginling and Yenching. The subjects are offered at Yenching to give opportunity to majors in sociology and education to acquaint themselves with the principles of physical education. A course in officiating at games has been of value to graduates who later in their teaching positions have had to help in athletic work. Ginling offers a full training course which will be described later in a separate chapter.

TABLE XLI

ELECTIVE COURSES OF PHYSICAL EDUCATION IN CHINESE INSTITUTIONS STUDIED

Institutions	Major	Minor	No. of Courses	No. of Credits	No. of Persons Registered	No. of Majors
Cheeloo University						
Fukien Christian University						
Ginling College	×	×	12	35	14	4
Hangchow Christian College						
Hua Chung College						
Hwa Nan College						
Lingnan University						
Soochow University						
St. John's University						
University of Nanking						
University of Shanghai						
West China Union University						
Yenching University			4	6	32	

American institutions have an excellent opportunity for selecting competent staff members for physical education. Throughout the country there are special schools, colleges, and universities that provide for majors in this field.[46] The courses of study in many of the universities lead to the

[46] Hughes, *The Administration of Health and Physical Education for Men in Colleges and Universities*, p. 155.

degrees of M.A. and Ph.D. Trained and competent persons in all phases of the work of physical education are available, owing to the large number of such schools and the large number of students who have entered this field.

The Chinese Christian institutions are aware that physical education must provide trained and capable leaders for its work. This is one of the most urgent and obvious needs. Most of the staff members in this field in the schools of China are not trained for their work at all. Some have had courses in physical education but their training was not completed before they accepted their positions. Directors of physical education who have studied in the United States or Europe do not number more than sixty persons, counting both men and women. There has therefore been a very marked shortage of trained persons to take the numerous important positions which are waiting to be filled.[47]

It is fortunate that one trend in the new educational system is the attempt of schools to provide vocational training departments. The need for trained men in physical education is recognized by both government officials and leaders of education, but up to the present time only three schools in China have provided departments with good standards. There are other physical education schools located at Peiping, Tientsin, Shanghai, and Canton. Their academic standards are not high.

The Christian institutions are well fitted for providing teacher training in physical education. They have departments of education, biology, sociology, and psychology. These departments offer courses which are important in a physical education curriculum. The standard of work should be kept at a high level. Already the work of the Christian institutions in teacher training has shown good results. Persons trained at Soochow and Ginling have in the past held some of the important positions and have helped to promote physical education in various parts of the country. It was unfortunate that Soochow was forced to close.

There remains, then, at the present time only Ginling (College for Women) of the Christian schools which provides teacher training. With the need so great, the Christian schools should take immediate steps to provide for such training as would be consistent with the purposes of their founding. They would then be making a contribution to their students and to China in meeting a present urgent need.

[47] Carnegie Foundation, *Games and Sports in British Schools and Universities*, Chap. IV, p. 70; Chap. V, p. 133.

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Recommendation for Training Courses in the Christian Institutions

It is recommended, therefore, that the Christian institutions put forth a strong effort to establish departments for teacher training immediately. For the present such departments should be provided at Lingnan, St. John's or University of Shanghai, and Yenching. At least one department should be started for men as soon as possible.

CHAPTER V

PHYSICAL EDUCATION EQUIPMENT IN THE CHRISTIAN INSTITUTIONS

IN THIS chapter the physical education equipment in the Christian institutions is described. For purposes of this study it includes: gymnasium, track, swimming pool, playing fields, and library. It also gives a brief statement of the equipment in American institutions and recommendations for the Christian institutions.

It is said that physical education in America has moved outdoors.[1] In China it has always been there. Few purely Chinese institutions have gymnasiums. The schools considered in this study have gymnasiums, but most of them were constructed after the World War while many American physical directors were in China. It was mainly through their efforts that these gymnasiums were built. Activities, however, are still mainly conducted outdoors. Even in North China during winter months, a scheduled basketball game is played on the open court when a modern gymnasium with a fine maple wood floor is just a few yards away. Table XLII shows the ground and building facilities for physical education of the Christian institutions.

Gymnasium

All three schools (Fukien, Lingnan, and Cheeloo) have structures which serve as gymnasiums. Hangchow and Nanking have the pavilion type of structure. They have no need for heating facilities as they are located in the South, but they do not have provision for offices or lockers. The advantage of these structures is that they are inexpensive to build and can be kept up at a low sxpense.

The three oldest gymnasiums are at St. John's, Soochow, and Shanghai. The one at Soochow is in a dilapidated condition. The others are small in area and are lacking in necessary apparatus and equipment. Both schools report unsatisfactory and inadequate shower and locker facilities. At Shanghai the writer observed the new women's hall which was completed in the spring of 1932. The second floor of this building is used as a gymnasium. Although it is not large, it is sufficiently well equipped to serve the small enrollment of women.

[1] Hughes, W. L., *Administration of Health and Physical Education in Colleges*, p. 322.

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West China and Hua Chung have gymnasiums which are in better condition. Owing to lack of funds, the schools are waiting to improve their shower and locker facilities and to purchase some necessary equipment. Ginling uses the top floor of its largest building as a gymnasium. The floor area is large and air and lighting conditions are good. The locker room is cramped and there are no showers, but the dormitories are very near to this building. It seems that under the present conditions, the gymnasium facilities are sufficient for the students enrolled.

Two gymnasiums in the modern sense have been constructed at Yenching. These expensive buildings have been designed to meet the student needs. In each gymnasium, a large main floor, offices, examination rooms, auxiliary rooms, locker rooms, shower rooms, toilet rooms, laundry, and kitchen are arranged according to the most recent specifications and contain all necessary equipment. This equipment affords admirable indoor facilities for carrying out the program of modern physical education.[2]

Track

Track and field events are popular in all the Christian institutions. Because of this fact, each school has made provision for these activities. All the schools except Fukien and Ginling have 400-meter circular tracks. Each school has a straight-away of 120 meters or more in length. At Lingnan, St. John's, and Yenching there is a straight-away of 240 meters. The space within the circular track is used for field events during the track season, and as the main football field during the fall season.

The construction of the tracks is not up to date. In most cases no foundations have been laid. Consequently, good drainage is a problem. The track at St. John's is very good, but it needs remodeling. The track at Yenching has recently been constructed according to modern methods. It is serving well but needs constant care owing to the dry climate of the North.

Swimming Pool

Although students have clamored for pools for a long time, most of the Christian institutions have found difficulty in providing them owing to cost of construction and upkeep. Four schools report that they have pools (Soochow, St. John's, Lingnan, and Shanghai). The outdoor pool at Soochow is the newest and best. It is 90 x 60 feet and lined with tile. Its system for filling and refilling is quite suitable to the location. Lingnan

[2] Yenching University, Department of Physical Education, Bulletin of Information, 1931.

and Shanghai have small outdoor pools made of concrete. St. John's has a regular tiled pool in its gymnasium, but because of mechanical difficulties and the expense of heating the water, the pool is used only during the summer months. At Yenching, the plans for the pool in the women's gymnasium will be completed as soon as the political and financial conditions in North China are better. Its outdoor pool has been filled up.

Playing Field

Table XLII shows the outdoor facilities of the Christian institutions. The provision made in these schools indicates fairly well the sports that are most popular. Soccer football is the major sport of China. None of these schools, except those for women, is without a field for this game. Basketball is the most popular competitive intramural game. All these schools report that they have adequate facilities for this game. Tennis is the most popular individual game. Although all the schools reporting have several courts, they need still more to meet the wants of the students.

All the schools state that they need additional ground facilities. The report of facilities for Lingnan includes those of the middle school. The chief demand in all the schools is for larger or for several playing fields. The schools usually have only one or two large fields which must be used for track and field, football, baseball, field hockey, and group games. This means that only one or two large group games may be played at one time, thus limiting participation to a very few. West China reports that facilities are adequate for all the needs.

In North China skating is possible for about three months of the year. This healthful sport is encouraged at Yenching where there is a lake that is used for the purpose. A hockey rink is located on one side of the lake and the remaining surface is kept in good condition. Skating is the most popular winter sport of this school.

Library

The importance of a good physical education library is not recognized. In Table XLII a rating is given to the Christian institutions according to the number of physical education books they possess. Ginling, Soochow, St. John's, and Yenching may be classified as having fair libraries. The rest have very few books on physical education.

Equipment Standards and Policies of American Institutions

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TABLE XLII

PHYSICAL EDUCATION EQUIPMENT IN CHINESE INSTITUTIONS STUDIED

Institutions	Gymnasium	Swimming Pool	Skating Rink	Football Field	Baseball Field	Basketball Court	Volleyball Court	Tennis Court	Handball Court	Track	Boating	Books	Field Hockey Field	Ice Hockey Rink
Cheeloo University				1	1	4	2	12		1		Poor	1	
Fukien Christian University				1		2	1	4		1		Poor		
Ginling College	1				1	2	1	8		1	1	Fair	1	
Hangchow Christian College	1			1		2	2	4		1		Poor		
Hua Chung College†	1				1	2	2	4		1		Poor		
Hwa Nan College	1				2		5	3				Fair		
Lingnan University†		1		4	2	15	6	14		1	1	Fair		
Soochow University†	1	1		2		4	4	11		1		Fair		
St. John's University	2	1		2	1	4	2	15		1		Fair		
University of Nanking	1			1	3	1	3	11	1	2		Poor		
University of Shanghai	2	1		4	2	5	4	7	1	1		Poor		
West China Union University	1					6	6	6	2	1		Poor		
Yenching University	2	*1	1	3	2	6	6	32	4	1	1	Fair	1	1

* Lake. † Includes middle school facilities.

to outdoor activities, the rapid growth of enrollment, and the popularity of football, worked together to show the need of providing additional facilities.[3] There was rapid construction of stadiums, field houses, gymnasiums, swimming pools, and playing fields. At the present time it can be said that no colleges in any country have made so costly or so extensive buildings and equipment devoted to athletic activities as the American institutions.[4]

Stadiums and Field Houses

Stadiums multiplied in all parts of the country. The causes were the insistence of alumni, the crowds to be accommodated at intercollegiate contests, and the profits that the contests brought in. Some of the stadiums would seat as many spectators as 74,000 (Yale), 88,000 (Stanford), or, among the newer ones, even more (Rose Bowl). These structures are expensive and cost as high as $1,700,000 (Illinois).[5] Of course not all schools provide expensive constructions, but most of them provide for intercollegiate competitions before making provision for intramural sports. Then, too, the large gate receipts from the intercollegiate contests have offered a means of financing intramural sports.[6]

Field houses are structures resembling aviation hangars which are used for various athletic purposes. The following quotation describes these houses:[7]

> The field house at the University of Iowa with accommodations for many forms of athletics, including jumping pits, baseball cages, and football practice space, and for military drill, has become a kind of athletic centre in which all types of activity may find place. One wing contains a large gymnasium, the other a swimming pool. The Yale field house presents many similarities to the Iowa building. One great difficulty in constructing a field house lies in acquiring a suitable location. The Amherst field house stands at some distance from the campus proper. Parenthetically, the Brown University gymnasium is situated far from the campus. At Yale, buses transport men from the University to the house at a cost to the athletic association of about $25,000 a year. The University of Michigan has plans that will in a measure obviate this difficulty; smaller gymnasiums and swimming pools in the midst of the campus are expected to attract undergraduates during their leisure hours. Field houses are popular, and it is likely that coming years will see similar structures erected at many large universities.

[3] The Carnegie Foundation for the Advancement of Teaching, Bulletin No. 23, p. 92.
[4] *Ibid.*, p. 95.
[5] *Ibid.*, p. 92.
[6] *Ibid.*, p. 92.
[7] *Ibid.*, p. 93.

Swimming Pools

Popularity of swimming pools did not come until later. For a period before 1929 many of the larger institutions did not have pools, but now most of the new gymnasiums include them.[8] These newly constructed pools meet the latest building requirements and are put to use according to the best health standards.[9]

Gymnasiums

Not all American institutions have gymnasiums to suit their entire needs. New ones, however, are well equipped. Some of the provisions made in these gymnasiums are offices, swimming pool, main floor, track, lockers, showers, toilets, separate rooms for wrestling, boxing, fencing, and punching bags, courts for handball, squash, and tennis, bowling alleys, and indoor baseball, rifle, kitchen, etc.

Standards for size, shape, seating capacity, floors, walls, ceiling, lighting, ventilation, and other details in the construction of such buildings are outgrowths of experience. The list of standards which follows indicates the American idea of ideal gymnasium construction.[10]

> High-grade maple is still recommended for gymnasium floors. Glazed brick or terra cotta is preferable for gymnasium walls. Cork, tile, or concrete for locker rooms, and tile for shower and toilet rooms. Gymnasium walls should be free from obstructions.
>
> Wood, painted concrete, tile and acoustic plaster in some rooms have all proved satisfactory for ceilings.
>
> There is some question as to the desirability of skylights.
>
> Mechanically operated swinging and louvre type windows are recommended.
>
> Steel lockers of single type, size 13x15x72 inches, are recommended for dressing purposes; size 12x15x60 inches is also convenient.
>
> Double type lockers should be at least 12 x 12 x 33 inches.
>
> Combination locks with emergency master key control are recommended.
>
> From 16 to 25 square feet of floor space per shower is a desirable standard.
>
> There should be one shower for every three to five persons using the showers at the time of maximum load.
>
> It is desirable to have the showers controlled by a thermostatic mixer so that water beyond a certain temperature cannot pass to the shower.

[8] The Carnegie Foundation, *op. cit.*, p. 93. [9] Williams, J. F. and Brownell, C. L., *The Administration of Health and Physical Education*, p. 367. Hughes, *op. cit.*, pp. 150, 306.
[10] Williams and Brownell, *op. cit.*, p. 336. Hughes, *op. cit.*, p. 303.

> A self-cleaning type of shower head which supplies a stream of varying size and force is preferable.
>
> Boxing and wrestling rooms, specially equipped for those sports, should be provided for men students.
>
> Every department should provide a dance studio and one or more rooms for individual corrective physical education.
>
> There should be at least one four-wall handball court and one squash racquet court for every 100 students enrolled in the institution.
>
> Bowling alleys are highly desirable as a part of the college physical education facilities.
>
> Volleyball, indoor baseball, shuffleboard and other indoor courts should be provided.

Playing Fields and Track

The practice of having activities as much as possible outdoors and of enlisting the masses of students has made demands for more play space. A great amount of time, money, and thought has been given to the construction and care of athletic fields.[11] In most American institutions the provisions for the gridiron, diamond, and track usually come first. In many schools additional provisions are made for such activities as archery, clock golf, field hockey, soccer, handball courts, paddle tennis, tennis, soft ball, speedball, volleyball, skating, and lacrosse. Certain guiding principles are used in the planning of these outdoor facilities. Some of them are as follows:[12]

> Plan from ten to twenty years in advance.
>
> Choose level land, if possible, because all standard games and sports, with the exception of golf, require level playing fields.
>
> Provide play space for all students, men and women, athletes and non-athletes. Athletics for all is becoming the rule in every progressive institution.
>
> Provide play fields which are attractive, and well kept.
>
> Arrange fields for the most economical use of space. Avoid overlappings. Use fences, walls, benches, and posts judiciously. The plan should be flexible enough to provide for seasonal games.

American standards for outdoor facilities are not uniform. Those that are given indicate, however, the trend of what the institutions are attempting to do for their students. Some of these standards are as follows:[13]

> Every college regardless of size should provide at least ten acres of outdoor play space.
>
> Colleges and universities should attempt to provide one acre of play space for every fifty to seventy-five students enrolled.

[11] Williams, J. F. and Hughes, W. L., *Athletics in Education*, p. 240.
[12] Hughes, *op. cit.*, p. 323. [13] *Ibid.*, p. 324.

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The institution should provide at least one tennis court for every fifty to seventy-five students enrolled.

There should be a golf course, publicly, privately, or institutionally owned, available for student use at minimum cost, at every college and university.

Every institution should provide at least one quarter mile cinder track with suitable runways and pits for field events.

Every institution should provide, in addition to varsity facilities, a minimum of four or five separate play fields suitable for touch football, speedball, soccer, and field hockey in the fall, and baseball, playground ball, soccer, and lacrosse in the spring.

Every institution should provide separate outdoor play fields for men and women.

All outdoor play facilities should be located within convenient walking distance of the campus.

Library

Library facilities of American institutions as a group are good. Publications, magazines, periodicals, and source books in the field of physical education are usually available in most of the college libraries. The exchange courtesy of lending books between libraries makes it possible for a student to have use of a large range of literature on almost any subject. This applies to physical education.

Equipment Recommendations for the Christian Institutions

Physical education should be developed within terms of simplicity and economy. For a long time to come, the extreme poverty of the mass of people will require that physical education activities entail little or no expense. This means that there should not be any encouragement of elaborate programs or use of expensive equipment. Emphasis should be put on effective organization, on activities requiring little expense, and on the quality of spirit in participation. Fortunately, ground facilities usually can be provided. Lack of funds is the main handicap.

Equipment of the Christian schools is far better than in most of the government schools, and is in some cases better than the economic conditions can justify. For instance, the gymnasiums at St. John's, Hua Chung, and Yenching are far too expensive for the average school to think of building or supporting. The pavilion type of gymnasium, such as those in Nanking and Hangshow, serves very well the needs of the students. Yet it is inexpensive to construct and to maintain. The Christian schools, also, have tended in the past to use expensive imported athletic goods and equipment. They have used imported apparatus, footballs, basketballs,

baseballs, and tennis rackets, the cost of which has been very high. In the matter of uniforms for intercollegiate teams, these schools have used imported goods which are far too expensive for average schools to use or for individuals to buy if they have to pay for them personally.

Encouragement of economy should be a part of the Christian schools' forward movement. This applies to construction of gymnasium, the purchase of sport equipment, and maintenance of ground and building facilities. These schools should use Chinese-made equipment exclusively. Native goods are very reasonable in price and their quality is improving continually. Such economy on the part of these schools would have a salutary influence on other schools and, more important still, it would teach students the proper attitude toward expenditures.

In view of the situation in the Christian institutions discussed in previous chapters, the following recommendations are made:

1. All facilities should be provided with the idea of activities for all and not for the few.
2. Activities as much as possible should be outdoors.
3. Physical education should be developed with simplicity and economy.
4. Elaborate and costly gymnasiums should not be encouraged. Instead the pavilion type of structures is recommended; it should provide in addition to space for required work and the more important games, plain but substantial rooms for offices, lockers, and showers.
5. Bowling alleys, golf courses, special dance studios, four-wall handball courts, and squash courts should not be considered at this time.
6. Playing fields should be planned with the future in mind.
7. The land should be level and located as to have good natural drainage.
8. Each institution should provide a 400-meter cinder track with a straight-away of 250 meters. There should be also suitable runways and pits for field events.
9. Every institution should provide several fields suitable for soccer, baseball, cageball, field hockey, basketball, archery, volleyball, and mass games.
10. There should be at least ten tennis courts in each of the institutions, except the two women's colleges where there should be at least four. This game should be particularly encouraged in China.
11. Swimming pools should not be constructed until sufficient funds are available to build good ones (not elaborate) and to provide for their upkeep and management.
12. All equipment should be maintained in good condition.

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13. Every institution should give attention to increasing the number of physical education publications and books in the library, particularly the schools which give or intend to give a minor or major in physical education.

CHAPTER VI

PHYSICAL EDUCATION FOR WOMEN IN THE CHRISTIAN INSTITUTIONS

THIS chapter describes briefly physical education for women in the Christian institutions. It gives a general description of physical education for women in American institutions, and concludes with recommendations for physical education for women in the Christian institutions.

College education for women did not begin in China until the establishment of Yenching Women's College in 1905. In 1914 Hwa Nan College was opened at Foochow, and in 1915 Ginling College at Nanking.[1] At present all other Christian schools of college grade are coeducational except St. John's. Table XLIII gives the enrollment of women students in Christian colleges and universities from 1925 to 1935.

Physical education for women will be considered in this chapter, first, as it exists in coeducational schools, and, second, as it is in the two women's colleges.

Coeducational Schools

No actual provision is made for physical education for women at Fukien, Hangchow, Cheeloo, and Nanking. This is due to the small number of women enrolled in the schools. They are allowed to use the men's equipment if they wish.

In the case of Hua Chung and West China both schools have about the same number of women students enrolled, with one woman teacher on the physical education staff. There are no organized plans for intercollegiate or intramural schedules. The students are encouraged by the teachers to participate in games, and arrangements are made according to the response. At Lingnan the case is unique. There is no staff member, no budget, and no special equipment, but the girls themselves organize for the purpose of play and practice. The program is not extensive, but the initiative comes entirely from the students.

Shanghai, Soochow, and Yenching have larger enrollments, and more attention has been given to the women students. At Shanghai and Soochow there is a woman member of the staff who directs and plans all the activities of the students. Their program, however, is limited to required

[1] China Christian Educational Association, Bulletin No. 20, p. 212.

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TABLE XLIII

WOMEN STUDENT ENROLLMENT IN CHINESE INSTITUTIONS STUDIED

INSTITUTIONS	1920-21	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33	1933-34	1934-35
Cheeloo University					33	53	52		20	34	26	50	91	117	119
Fukien Christian University											1	1	19	26	36
Ginling College	55	70	81	96	133	137	152		132	166	164	191	174	212	213
Hangchow Christian College										14	23	27	56	52	80
Hua Chung College										12	13	13	30	47	33
Hwa Nan College	14	21	32	63	66	80	80		100		97	84			
Lingnan University	23				32	29	*29		34	48	47	50	85	92	102
Soochow University					3	6	3		29	64	73	59	75	92	112
St. John's University															
University of Nanking									14	12	8	37	62	80	82
University of Shanghai	9				52	68	67		100	113	149	173	‡206	‡193	‡192
West China Union University					8		18		†56		15	21	70	92	107
Yenching University	14				87	100	92		164	187	219	224	223	251	249

* 1925-26 figures. † Including Pre-collegiate. ‡ Excluding Irontown School of Commerce.

work, an informal intramural program, and infrequent intercollegiate contests. Shanghai completed in June, 1932, a Women's Hall which has gymnasium facilities sufficient for the needs of the girls of this school.

Yenching's program for women is on a par with that for the men. There are two members on the staff, who are usually aided by additional persons from the general faculty. Three years of physical education are required. There is a separate modern gymnasium fully equipped for women. Ground facilities are adequate for the present enrollment.

Physical education for women is organized as a separate division in the Department of Physical Education in the College of Arts and Letters. The department budget provides for salaries and current expenses. A woman physician assists in the health program of the students, prescribing schedules for them according to their physical condition and need. The staff provides a definite scheduled intramural program, participation in which is necessary before students may represent the university in any of the intercollegiate competitions. Intercollegiate contests for women have thus far been limited to basketball, playgroundball, volleyball, tennis, and track and field events. The general program stresses intramural activities rather than outside competitions.

Colleges for Women

There are two colleges that admit women only. As to Hwa Nan, there is little material available for making a report on physical education. The Christian Educational Association bulletins give hardly any data. They show that in one year, 1926-27, $2,400 was given as the budget for the salary of an instructor for physical education. Little has been said of its present program. Interviews with students who have attended Hwa Nan disclose the lack of any definite program of physical education there at present and the desirability of more equipment and facilities.

Ginling College has a definite program of physical education.* The women students are required to include physical education in their schedule each semester during the four years. Classes are well managed from the point of view of organization and activities. Ginling has an adequate staff to undertake the program for its present enrollment.

The intramural program is reported to be successful. This may be due to the fact that this school does not participate in intercollegiate competitions, but it is more probably due to the small enrollment and the adequate staff which is able to handle the program well. Some of the schedules of

* The organization, budget, staff members, and equipment have all been mentioned in the previous paragraphs.

intramural activities are carried out during the periods for required work. The program closes at the end of the year with a "Field Day," which has been reported to be most successful. While the report of the program is favorable, it is felt that spontaneous enthusiasm for the activities is lacking. This particular condition is due, it is believed, to the girls' lack of background in physical education and their unfamiliarity with such activities. It is not due to any defects in management.

Ginling at present is the only Christian college that provides for teacher training in physical education. In 1925 the Y. W. C. A. of China closed its Normal School of Hygiene and Physical Education in Shanghai and turned over to Ginling this professional project. Support from the Y. W. C. A. for this work continued until 1930, after which time Ginling had to bear the entire financial responsibility.

In the training course, two types of work are offered. There is a two-year professional course open to students who are not able to spend four years. Its program, however, is arranged in such a manner that should any of them wish to continue their study later they may receive the degree of B. A. after two more years. The regular major in physical education requires four years and leads to the degree of B. A. This course is open to all students of the college. Courses offered are quite extensive. They include theory, organization, methods of teaching, tests and measurements, and many practical courses. Opportunity for practice teaching is also given.

General Description of Physical Education for Women in American Institutions

Physical education for women in American institutions is not a result of sudden growth, although recently the progress has been quite marked. As early as the eighteenth century it was introduced for the purpose of improving the physical condition of girls and women.[2] Between that period and the present time its development has passed through several stages. At first it was used merely for the purpose of correcting defects; later it was accepted as a preventive measure; and now it has become a part of general education.[3]

As an accepted educational requirement, provisions for physical education have been greatly improved and extended.[4] For purposes of this

[2] Ainsworth, Dorothy S., *The History of Physical Education in Colleges for Women*, p. 2.
[3] *Ibid.*, p. 22.
[4] *Ibid.* Wayman, A. G., *Education Through Physical Education.*

study, the description in previous chapters of physical education, both in the Christian institutions and in the American institutions, together with the recommendations, concerns in general both men and women. Physical education in principle is the same for both men and women; only its application and the nature of its program need differ.

It is only within recent years that college women have attempted to organize their athletics. Some authorities assert that standards have been lacking and that some unfavorable practices have existed.[5] At present there are standards which help to guide athletics for women. The Women's Division of the National Amateur Athletic Federation of America states that its aims are to:[6]

1. Promote such programs of athletic activities for all girls and women as are suited to all ages and capacities.
2. Promote competition that stresses enjoyment of sport and the development of good sportsmanship and character rather than those types that emphasize the making and breaking of records and the winning of championships for the enjoyment of spectators or for the athletic reputation or commercial advantage of institutions and organizations.
3. Promote interest in awards for athletic accomplishment that have little or no intrinsic value.
4. Promote educational publicity that places the emphasis upon sport and its values rather than upon the competitors.
5. Promote the use of suitable costumes for athletic activities.
6. Promote the provision of sanitary and adequate environment and facilities for athletic activities.
7. Promote the apportionment of adequate time allotment for a physical education program such as shall meet the needs of the various age groups for growth, development and the maintenance of physical fitness.
8. Promote the training and employment of women administrators, leaders and officials who are qualified to assume full responsibility for the physical education and recreation of girls and women.
9. Protect the health of girls and women through the promotion of medical examinations and medical "follow-up" as a basis for participation in athletic competition, and of a system of supervision that shall assure a reasonable and sane attitude toward participation in activities at time of temporary physical unfitness.
10. Protect athletic activities for girls and women from the dangers attendant upon competition that involves travel, and from their commercialization by interest in gate receipts.
11. Promote the general adoption of approved rules for the conduct of athletics and games for girls and women.

[5] Hughes, W. L., *Administration of Health and Physical Education in Colleges*, p. 225.
[6] *Ibid.*, p. 225.

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12. Promote the study of the existing rules of all sports to the end that they may be changed to meet the specific needs of girls and women.

At present the tendency is to oppose intercollegiate contests for women.[7] There are, however, several colleges which have them.[8] In their stead many schools have play-day programs. Teams are made up of girls from different institutions in basketball, baseball, tennis, hockey, volleyball, swimming, archery, and soccer. In some places, dancing, track and field events, riding, golf, lacrosse, fencing, etc., are included. The entire problem of women's intercollegiate contests needs more study; to eliminate them entirely for one play day a year may not be making the most of the physical education program.[9]

Intramural competitions for women in most of the American institutions assume a prominent place in the physical education program.[10] The greater part of time, equipment, and staff is given over to mass participation. These competitions in most cases are sponsored by the Women's Athletic Association which performs for them the same function as the director and intramural council serve for the men.[11] Nearly all forms of sports are included in the program, among them are basketball, swimming, hockey, track and field events, rifle, archery, golf, tennis, lacrosse, fencing, volleyball, dancing, and rowing.

Recommendations for Women Physical Education in the Christian Institutions

Higher education is coeducational in China. Lack of opportunity for normal social relations is a criticism in all the schools.[12] In this matter also the Christian schools have a fine opportunity to make important contributions toward setting standards. They have been very cautious in the care of their women students. Since students of both sexes will mingle freely in life after graduation, it would be well to offer them proper opportunities for mingling while in school. It has been pointed out how a well planned physical education program would afford wholesome opportunities for experience in social relationships. Yet, in the coeducational schools only one school has definite plans for mixed activities. The result in this instance has been very satisfactory.

[7] The Carnegie Foundation for the Advancement of Teaching, Bulletin No. 24, p. ii, No. 9.
[8] Hughes, *op. cit.*, p. 227.
[9] *Ibid.*, p. 227.
[10] *Ibid.*, p. 257.
[11] *Ibid.*, p. 257.
[12] Barnard College, Columbia University, Syllabus for Physical Education, 1935, p. 31.

Although of recent development, physical education for women as an essential part of education is as much accepted as physical education for men. That a well rounded program with competent supervision and with adequate equipment should be provided in these institutions is no longer questioned. The discussion in previous chapters pertaining to organization, staff, program, and recommendations concerns in general physical education for both men and women.

One of the important problems in the Christian schools is the competition of women in athletics. They are participating, on a basis comparable to that of the men, in track and field events and in games in all local, sectional, national, and Far Eastern competitions. More attention is given to these extramural contests than to an intramural program for the students as a whole. That there has been an excessive number of these contests, not always so wholesome as might be desired, is generally recognized. The fact is that women participation in contests, although something new, has come to stay. The problem is not to stop it but to study it. There is need for setting standards that would serve as guides for all these contests.

It seems to the writer that the Christian institutions should not prohibit extramural athletics for their women students. They should firmly control and carefully manage this phase of the physical education program; and they should sympathetically cooperate with outside institutions to better conditions and initiate higher standards. The chief objective is to provide a sound program giving the required work an important place and emphasizing intramural participation for all the students. Outside contests will be but a small part of the general program and their undue importance will be minimized. Recommendations made in previous chapters should in general be followed in considering physical education for women in the Christian institutions. The following points also deserve attention:

1. Every girl should be required for at least the first two years of college to follow a program of physical education two hours a week in keeping with her health examination.
2. Preponderant emphasis should be put upon intramural sports, enlisting if possible every student in some appropriate activity.
3. Physical education should provide opportunities for mixing of men and women under natural and wholesome conditions.
4. Intercollegiate athletics should not be prohibited but should be carefully directed and controlled.
5. A sports' day program should be undertaken to promote interest in games for the masses and to promote friendly relations between schools.

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CHAPTER VII

SUMMARY

Need and Purpose of the Study

PHYSICAL education is finding an important place in the education of China. Its growth at first was slow but during the last three decades great progress has been made.

At present there are numerous organizations which promote athletic sports. Among them the most important one is the Chinese National Amateur Athletic Federation (CNAAF). This body is officially recognized by the government and is to serve ultimately as the controlling organization for all forms of amateur sports. Its chief function at present is to represent China in international games and to be responsible for teams to be sent to the Far Eastern Games. There are also five branch federations which encourage sports in various parts of the country. The Far Eastern Games are held once in four years. Representatives are selected from successful contestants of local, sectional, and national meets.

For the promotion of interest in athletics, the Christian educational forces deserve credit. Games and sports were introduced by mission schools which took the initiative in encouraging wholesome sports. The Y. M. C. A. gave definite impetus to games by its leadership in organizing meets during 1909-26. At present the Christian forces have a unique opportunity to make further contributions in the field of physical education.

The widespread interest in sports has resulted in increasing the number of contests in all forms of activities in all parts of the country. All kinds of problems have arisen and need solution. Since the entire field of physical education is capable of improvement, a study of any of its problems would be a contribution to the field in general. Any study, therefore, of physical education in the Christian institutions should be of value not only to their students but also indirectly to the field in general. The purpose of this study is to describe physical education in the Christian institutions; to examine standards and policies pertaining to physical education in American institutions; and to present recommendations in this field for the Christian institutions. For specific purposes of this study physical education includes: organization, staff, budget, medical examina-

tion, required classes, training courses, intercollegiate athletics, intramural sports, awards, and equipment—all of these for both men and women.

This study does not include health education. Only a brief statement is made regarding it in paragraphs pertaining to medical examination and health care of athletes. Neither does it include military training, which has not been given a great deal of attention in these institutions.

Methods of Procedure

Data for this study have been drawn from many sources. All the Christian institutions replied to the questionnaires sent them. The writer was able also to visit eight of the thirteen schools in person. Some of the students and faculty members from all these schools were interviewed when they visited Peiping. Publications of these schools were read. The attendance, also, at three North China Meets, one National Meet, and the National Physical Education Convention gave the writer opportunities to see and discuss problems with leaders in the field of physical education. In addition books and articles pertaining to physical education, particularly in China, were searched for data.

Chapter II gives a brief statement of the status of the Protestant Christian colleges and universities in China. It studies the purpose and present function of these institutions, describes physical education during their earlier history, and notes their relationship to government education.

Recommendations for Physical Education in the Christian Institutions

Chapters III to VI inclusive describe physical education for both men and women with reference to administration, program, and equipment. Standards and policies of American institutions on these points are considered.

A summary of the recommendations from the preceding chapters is as follows:

Organization

1. Physical education in the Christian institutions should be organized as an academic department on a par with the other departments.
2. Physical education should be in harmony with the general purposes of education.
3. Physical education should include within its scope all physical education activities of the school.
4. The physical education department should have full control of all its activities, including intercollegiate athletics.

Staff

1. Each institution should have on its physical education staff at least one person qualified by academic and professional training.

2. Regular staff members should have academic ranking when their qualifications warrant it.

3. The number on the staff should be sufficient to manage efficiently a defined program. At least one person is necessary for every 200 students enrolled.

Budget

1. Physical education in the Christian institutions should be operated on the budget plan, the funds to be provided by the institutions.

2. No special fees either for required physical education or for athletics should be assessed.

3. No admission should be charged to athletic contests.

4. Accounts should be kept like all other departments in the office of the treasurer of the school.

5. In all connections with student managers, the sale of tickets and expenditures of athletic teams should be made in detail with proper receipts to the director of physical education or direct to the treasurer's office.

Medical Examination

1. There should be a Health Division in each school adequately staffed to give thorough examination of every student at least once a year.

2. All students should be classified on the basis of the health examination according to their ability to carry a normal academic load and a normal physical education load.

3. A complete up-to-date record covering data pertaining to the student's physical welfare should be kept throughout his college life.

Required Classes

1. Health examinations should be done before registration in the required classes.

2. Students should be classified mainly into two groups: those who should be in restricted classes and those who need not be.

3. When possible, the number in a class should not exceed 25 to 30.

4. There should be at least two classes a week.

5. One of the requirements for class work should be a shower at the end of the class period.

6. Absences should be treated in the same manner as they are in other departments.

7. Credit should be given for courses in physical education as they are in other departments.

8. Grades should be given and should affect the academic standing of the student.

Intercollegiate Athletics

1. All physical education activities, including intercollegiate athletics, should be in the department of physical education under the director of physical education.

2. Control of all athletics should be in the department of physical education, which is directly responsible to the general faculty of the school.

3. Coaches should be appointed to the staff the same as other faculty members are, preferably on the recommendation of the director of physical education, and when having requisite academic training should be given faculty rating.

4. The democratic method of coaching permitting captain, manager, and player to help in the plan of the team should continue to be encouraged. The final control of the team, however, remains with the coach.

5. There should be eligibility regulations for participation in extramural athletics and the determination of them should be made by the registrar with the assistance of the medical officer and director of physical education.

6. Schedules should not be excessive. They should not interfere with academic work nor put physical strain on the players. They should be made on the basis of educational value and not be influenced by monetary reasons or by popular appeal.

7. Health examination should be required of all participants in the competitions. Their health conditions should be carefully watched during the entire period of contests.

8. No person should be a member of any team unless he attends practices regularly at least twice a week or the equivalent in the intramural program.

9. Scouting should continue to be considered unsportsmanlike and its practice prohibited.

10. Recruiting and subsidizing of athletes should not be permitted.

11. All students, including athletes, should be treated alike whether in matters of scholarship aid or of employment.

12. A system of award should be planned. Awards should be given as symbols of achievement and not as prizes the merit of which is in the monetary value.

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Intramural Sports

1. The Christian institutions should put preponderant emphasis on intramural athletics as a part of their physical education program, organized and controlled by the department.

2. Physical education should have values for individual development.

3. Physical education should teach proper attitude toward play.

4. Physical education should provide opportunities for lessons in social values.

5. Physical education should inculcate national spirit, group solidarity, and cooperation.

6. Each institution should have a competent director of physical education who is responsible for the plans and management of the sports.

7. There should be an intramural executive committee made up of representatives of the units. This committee should assist the director in determining policies and rules regarding eligibility, protest, program, units of competition, etc.

8. The department should provide competent officials for all the games (training them if necessary).

9. Units for competition should be small in size, permanent in nature, and as equal as possible in playing strength.

10. Special facilities and equipment should be provided by the department.

11. Participants should be encouraged to wear playing clothes (regular physical education suits if they wish).

12. Activities should be the kind that are easily learned, easily equipped, inexpensive, and interesting to the students. They should be suited to mass participation, teams, and individuals.

13. Schedules should be made well in advance. They should be in keeping with the required program and should not seriously interfere with academic activities.

14. A scoring plan on a point system for the year should be made to foster interest and to prevent overemphasis on a few sports.

15. Records of all intramural sports should be kept by the department.

16. Rules should all be strictly kept. All protests should be discouraged. The spirit of sportsmanship and cooperation should permeate the entire organization and atmosphere of the program.

Training Courses

1. It is recommended that the Christian institutions put forth a strong effort to start departments for teacher training immediately.

2. For the present such departments should be provided at Lingnan, St. John's or University of Shanghai, and Yenching. At least one department should be started for men as soon as possible.

Equipment

1. All facilities should be provided with the idea of activities for all and not for the few.

2. Facilities should be outdoors as much as possible.

3. Physical education should be developed with simplicity and economy.

4. Elaborate and costly gymnasiums should not be encouraged. Instead, the pavilion type of structures is recommended. They should provide in addition to space for required work and the more important games, plain but substantial rooms for offices, lockers, and showers.

5. Bowling alleys, golf courses, special dance studios, four-wall handball courts, and squash courts should not be considered at this time.

6. Playing fields should be planned with the future in mind.

7. The land should be level and located so as to have good natural drainage.

8. Each institution should provide a 400-meter cinder track with a straight-away of 250 meters. There should also be suitable runways and pits for field events.

9. Every institution should provide several fields for soccer, baseball, cageball, field hockey, archery, basketball, volleyball, and mass games.

10. There should be at least ten tennis courts in each of the institutions, except the two women's colleges where there should be at least four.

11. Swimming pools should not be constructed until sufficient funds are available to build good ones (not elaborate) and to provide for their upkeep and management.

12. All facilities should be kept in good condition.

13. Each institution, particularly the schools which give or intend to give a minor or major in physical education, should give attention to increasing the number of physical education publications and books in the library.

For Women

1. Every girl should be required for at least the first two years of college to follow a program of physical education two hours a week in keeping with her health examination.

2. Preponderant emphasis should be put upon intramural sports, enlisting if possible every student in some appropriate activity.

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3. Physical education should provide opportunities for mixing of men and women under normal and wholesome conditions.

4. Intercollegiate athletics should not be prohibited but should be carefully directed and controlled.

5. A sports' day program should be started to promote interest in games for the masses and to promote friendly relations between different schools.

Opportunity of Christian Institutions for Service

Changes in China during the past few decades have been so frequent and so unpredictable that no reliable prophecy can be made for the future. What has occurred in the past and is happening in the present are the only guides for considering future purposes and plans. The Christion institutions have secured an enviable place in China. They have been accepted as a part of China's educational program both by the people and by the government (only St. John's is not registered). They have been highly praised for their quality of work and spirit. Their graduates have been holding important positions in all walks of life. It is said from a Chinese source that although only one twenty-fifth of one per cent of China's population attends these schools, 25 per cent of the nation's constructive leadership is coming from these Christian institutions.

China needs these institutions. In her educational system they are a stabilizing factor. The tendency of their thought toward a strong social and ethical emphasis supplies a real need at a time when old sanctions in the social order are broken and when new moral standards must be established. Their curriculum is being studied and changes are being made in order to suit the prevailing economic, social, and political needs of the present time. Never before have these schools had the opportunity of making their contributions at such a critical period in the life of the nation.

Physical education is one of the outstanding needs of China. In this field the Christian schools can make one of their most valuable contributions to China. In a consideration of physical education in the Christian schools, one fact is the most important of all. If the immediate object of these schools is to bring needed influences, ideals, and life purposes to the youth of China, there would seem to be no better way of accomplishing this end on a large and practical scale than by shaping the character and training of the students who are to have a large sphere of influence in the affairs of national reconstruction. By such means influence on each student may be multiplied manyfold. It is most lamentable, therefore,

that more has not been done by these schools in physical education in the midst of such an appalling situation. But the golden opportunity is still here. The challenge to the Christian schools to lead the way was never so strong and urgent as now.

Suggested Problems

This study has brought to light many subjects in the field of physical education that should be given more attention. Only some of the important ones are mentioned here. Further research should be made in Chinese boxing to determine its place in the present physical education program; the dance with its ancient tradition needs to be brought up to date in relation to the modern dance (as interpreted by the West); physical tests and measurements for Chinese students would help to make better programs; military training in relation to physical education presents a unique problem to China; and specifications for the construction of gymnasiums and ground facilities suitable to China would help solve the financial problems.

Finally, the writer is aware that this study is limited in scope. No problems have been solved, but many subjects have been discussed that deserve further attention. It is hoped, however, that the survey of the physical education in the Christian institutions has brought to light important needs and that the recommendations may prove useful for planning future programs.

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WHAT IS JAPAN DOING IN CHINA?

暴日慘毀東三省之寫眞

BY

The Faculty of Yenching University
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抗日叢刊發刊緣起

抗日叢刊爲燕京大學教職員抗日會出版物之一部分。敝會同人發刊抗日叢刊之意旨，蓋不在於供一年半載宣傳之用，而在於喚起國人，使大衆對於日本帝國主義侵略我國之背景，政策與行動，有深澈之明瞭與覺悟。古語有之，知己知彼，百戰百勝。日人處心積慮以謀我國也久矣；其計劃既周且密，其行動亦着着占勝算。其國內發刊之所謂支那研究之書籍，年不啻千百册；其報章雜誌對于我國國情亦往往瞭若指掌，有勝於我國之謀國者。而我國朝野人士對於日本之國情，則似皆渺無所知。九月十八日瀋陽事變之猝未及防，此未始非其一因。然亡羊補牢，猶未爲晚。敝會同人於致力他種抗日工作外，頗思於斯，稍盡綿力，故有本叢刊之編纂。本叢刊擬隨編隨印，不限册數，於盡量批露日人此次侵佔滿洲之暴行外，尤着重於數十年來，日人謀我之政策與其着着進行之情況。淺見所及，並擬略陳抗日救國之方略，以就教於國人。嗚呼，國危矣，寇深矣；國人其毋忘匹夫之責；同心協力，以赴國難！苟正義有在，公理不泯，最後之勝利，蓋在我國無疑矣。再者，本叢刊之編纂者不限於本會會員，明達之士如賜大作，無任歡迎。至欲翻印本叢刊之一部，或全部者亦爲仝人之所深願焉。

WHAT IS JAPAN DOING IN CHINA?

Taking advantage of the unusual opportunity when the Chinese people were suffering from the unprecedented calamity of floods along the wide areas of Yang-tze Valley, and of a time when the Chinese Government was busily engaged in suppressing the "red" armies in Central China, Japan occupied two of the Three Eastern Provinces upon an excuse of her own invention. She accused China of destroying a section of the South Manchurian Railroad and that, she seems to think, justified her in occupying thousands of miles of China's territory, and in destroying Chinese property amounting to hundreds of millions of dollars. Furthermore, after she agreed on September 30 at a meeting of the council of the League of Nations to withdraw her troops in fourteen days, and after a vote of thirteen to one by the same body at the later meeting of Oct. 24 demanding that she must restore the status quo before Nov. 16, she apparently still thinks that it is justifiable for her to extend her military operations to Heilungkiang, the northern-most of the Three Eastern Provinces and to force the civil and military officers out, in order to assume control, and that it is justifiable for her to create a state of terror in the Port City of Tientsin, by using freely her rifles and machine guns to support an attack on the citizens of the Chinese city. In such military madness are any acts too extreme for her? From what she has done and is doing, she apparently thinks it is defensible to smash the Covenant of the League into pieces and to tear up the Kellogg Pact and the Nine Power Treaty as worthless papers, so long as her

aggressive aims can be attained. All these extreme measures were caused, so the Japanese say, by the destruction of a part of one of the tracks of the South Manchurian Railroad by the Chinese. Even if the charge were true (which we do not admit) what a mass of weighty acts to balance the cost of a few feet of railway!

As remarked in an editorial of a well-known paper, the Chinese must be a very stupid people to provoke the fierce wrath of Japan at an hour when their own attention was concentrated on the relief of the flood-sufferers and in fighting against the "red" rebels. And yet more stupid, as the editorial goes on to say, in that they destroyed only one track, leaving a parallel track intact so that their Japanese friends could still run their trains through! How absurd is the charge of Chinese responsibility! To make the Chinese seem more sinful, the Japanese spokesmen have been busy telling the world that China has tried to provoke them on one occasion after another and thus all their patience was exhausted, and anyhow the Chinese "ying ch'eng" which means "should be punished." As to what all these occasions were, they have failed to point out. In this connection it would not be well for them to refer to the murder of Marshal Chang Tso-lin in 1928 at Huang Ku Tun Station where a well-timed bomb was exploded presumably by Japanese; nor to the occupation of Shantung in the same year where thousands of Chinese were killed, injured or rendered homeless; nor to the ruthless and carefully planned massacre of Chinese residents in Korean cities in August of this year. In three or four years' time the Japanese have staged all these ugly acts on Chinese territory, yet they pervert facts and say that China has provoked them and that to such extremes it was

justifiable for them to invade and occupy by acts of war the Three Eastern Provinces.

Now the case is before the Council of the League of Nations for the third time. China, for the sake of world peace, has expressed her willingness to accept the decision of the League so long as it does not violate the word and spirit of the League Covenant, the Kellogg Pact, and the Nine Power Treaty, which are the guardians of the tranquillity of mankind. On the other hand, China for obvious reasons will not accept any terms imposed upon her under military coercion before the evacuation of the Japanese troops, or on the basis of a compromise which will impair the integrity of international agreements.

We, the teachers of a University, do not believe in false propaganda, but we wish to present to the world facts for the consideration, we hope, of the leaders of public opinion. We believe that public opinion is the strongest instrument by which the peace of the World can be maintained. Therefore, we have prepared a pamphlet of a number of photographs and notes setting forth what has happened in Manchuria since September 18. They represent a few of the many incidents that have happened and are still happening in China's Three Eastern Provinces, under the Japanese army of invasion.

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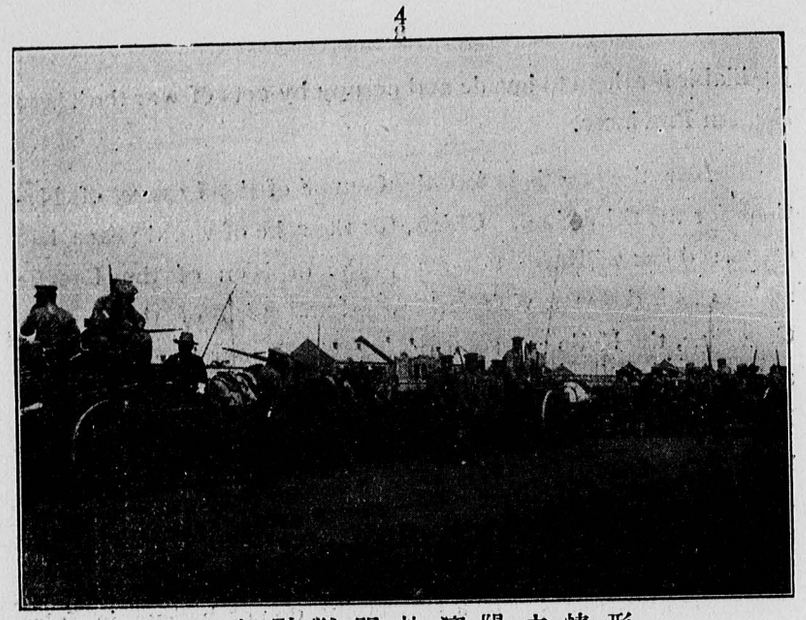
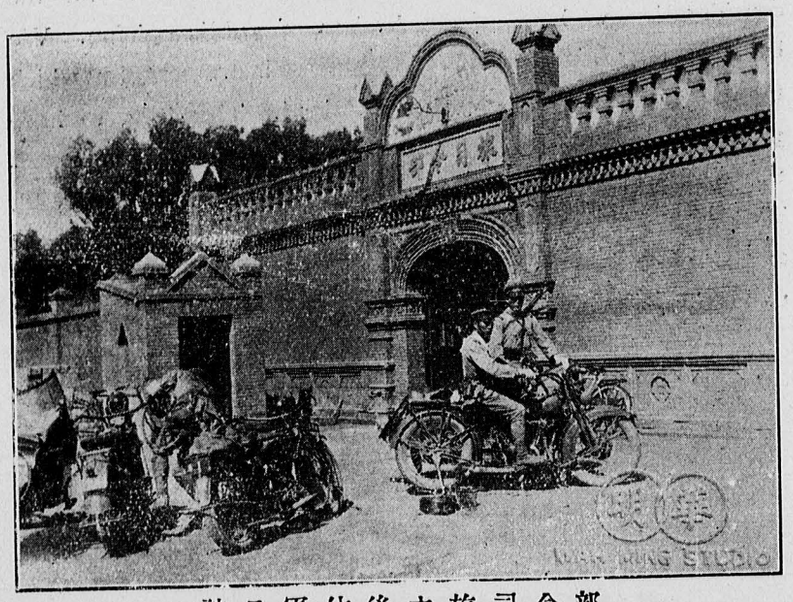
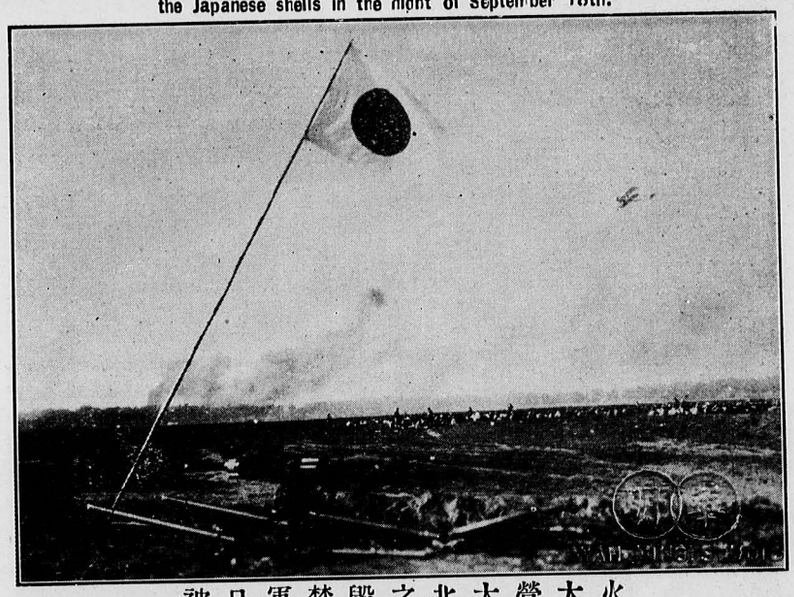


日本軍隊開赴瀋陽之情形
A Scene of Japanese troops moving towards Mukden.



被日軍佔後之旅司令部
One of the Chinese Military Head-Quarters which have been occupied by Japanese Soldiers.

北大營之一隅，九月十八日夜日軍施以猛烈之攻擊後，墻上密佈彈痕
A corner of the Chinese military barracks at Peitaying, near Mukden, which were destroyed by the Japanese shells in the night of September 18th.



被日軍焚毀之北大營大火
The smoke at the back-ground shows the fire at the Chinese barracks at Peitaying near Mukden set by the Japanese soldiers. A Japanese airo-plane flies over it.

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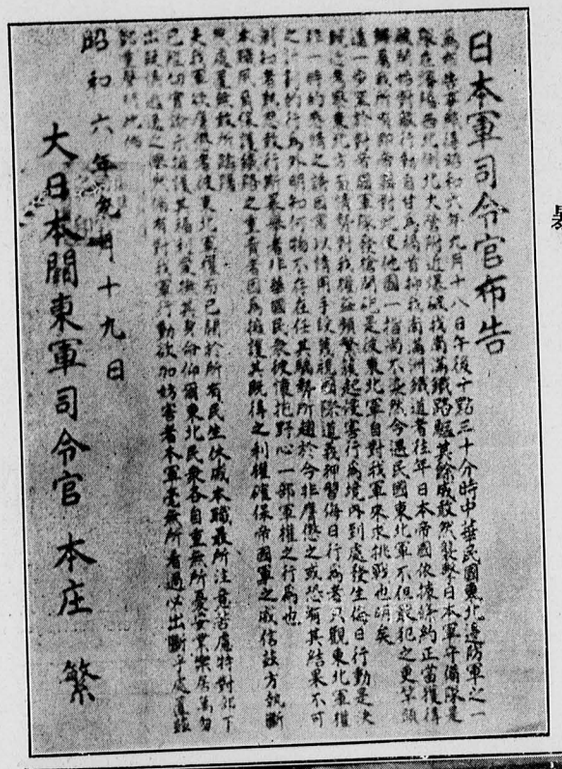
暴日在瀋陽之佈告

Japanese Mandate on Chinese Territory.



日本軍司令官布告

昭和六年九月十九日

大日本關東軍司令官　本庄　繁

日軍佔瀋陽時本莊率軍前進之情形

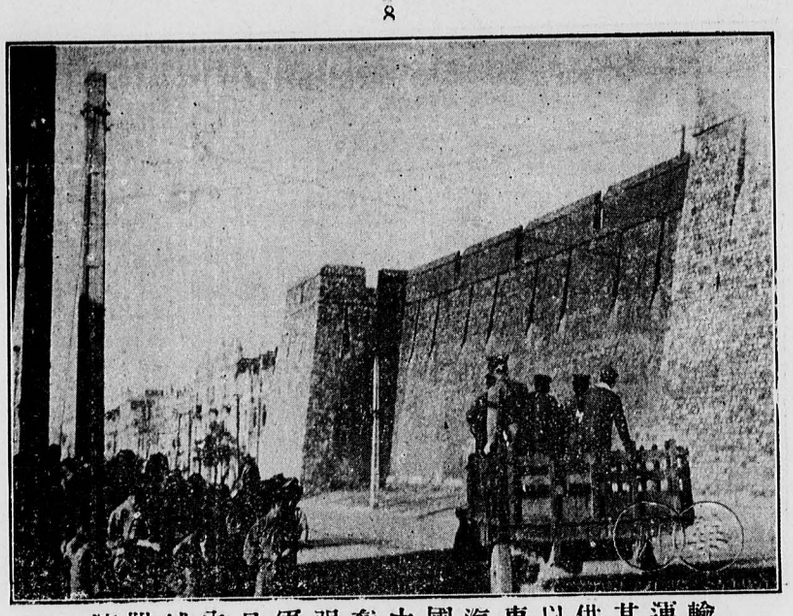
The Japanese General Honjo and his guards marching along the streets of Mukden, after that city had been taken.

日軍佔瀋陽之隊軍及唐克車

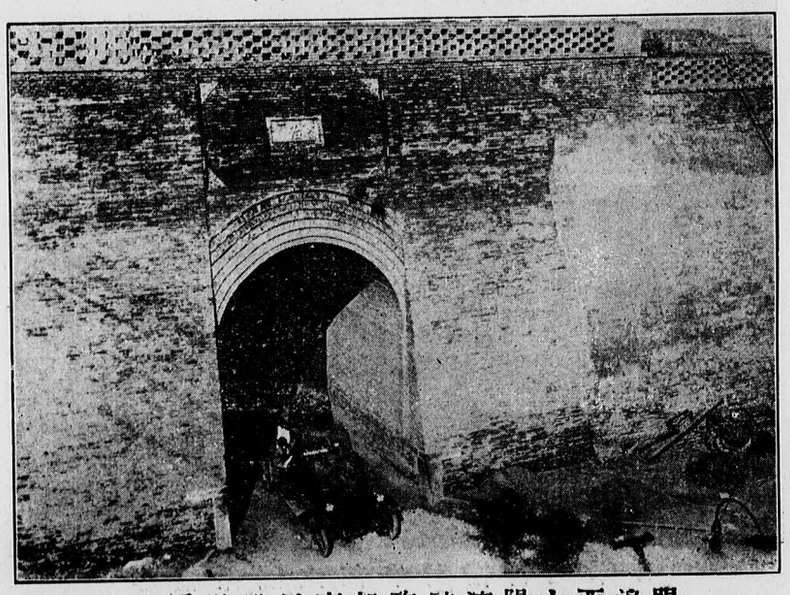
Japanese soldiers and one of their tanks in one of the streets in Mukden.

日軍之警備司令部之訓話情形

Japanese plain-clothes soldiers receiving instructions from their superior for further disturbance in Mukden.

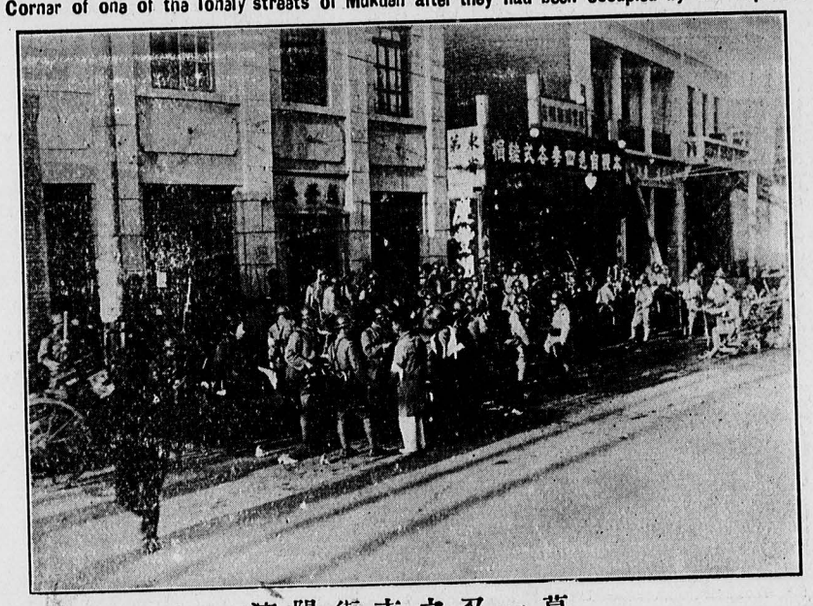


瀋陽城內日軍强奪中國汽車以供其運輸
One of the Chinese trucks seized by the Japanese soldiers for transportation purposes in the city of Mukden.



日軍以鐵甲車架砲駐瀋陽大西邊門
One of the Japanese trucks coming out of one of the gates of Mukden.

被日軍所佔之瀋陽街市及其悽涼景況
A Cornar of one of the lonaly streats or Mukden after they had been occupied by the Japanese.



瀋陽街市之又一幕
Another street scene of Mukden in which one can see another group of Japan's soldiers and their weapon.

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北大營內部被日人焚毀後之情形
A scene at the Chinese military barracks at Mukden which were captured and destroyed by the Japanese troops.

洮南暴日檢查行人
A Japanese soldier is searching a Chinese passenger at the gate of the Chinese city of Tiao-Nan.

日軍人把守瀋陽城門之凶惡狀態
Japanese Sentries on their job at one of the gates of Mukden.

被日彈擊斃李豐年遺屍
Corpse of Li Feng Nien, who was killed by a Japanese bomb thrown on one of the trains of the Peking-Mukden line.

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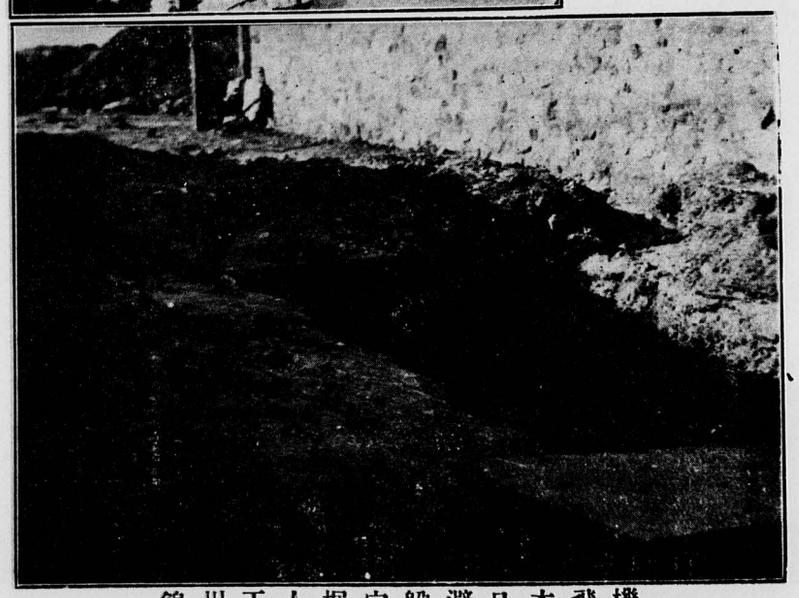
被日軍所繳之東北軍之軍械

The occupation of Chinese camps by Japanese soldiers and arms taken by them. For the sake of peace, the Chinese soldiers were ordered not to resist.



錦州工人掘穴躲避日本飛機

Caves dug by the Chinese labourers for protection from bombs dropped by the Japanese airo-planes.

日軍佔瀋陽時先將瀋至津及北平之電報線割斷且佔無線電台

The Japanese cut the telephone lines between Mukden and Peiping, so that no true messages could be received by the outer world.

被日軍折毀之京奉路線（在一九二八年張作霖被炸於是處）

One of the rails of the Peking-Mukden line torn up by the Japanese. This is the very place where Marshal Chang Tso Lin was bombed to death by order of Tanaka as is supposed by many.

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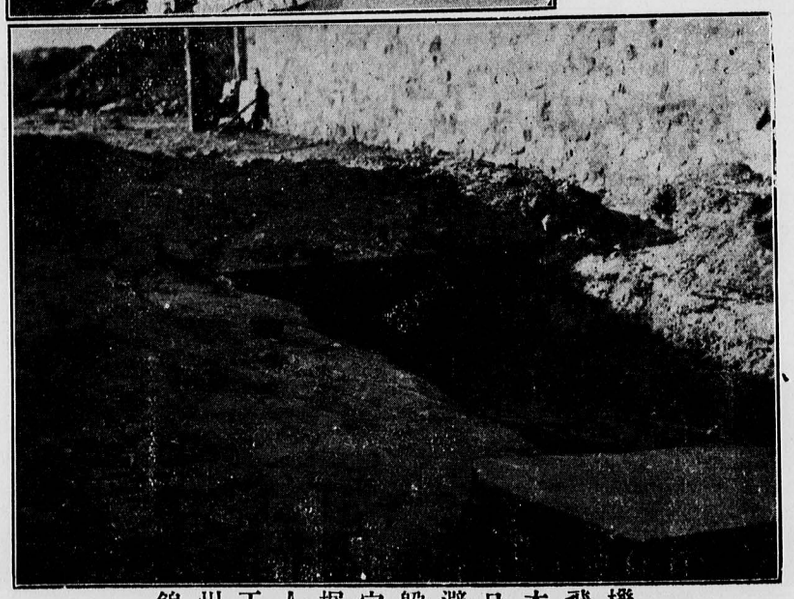

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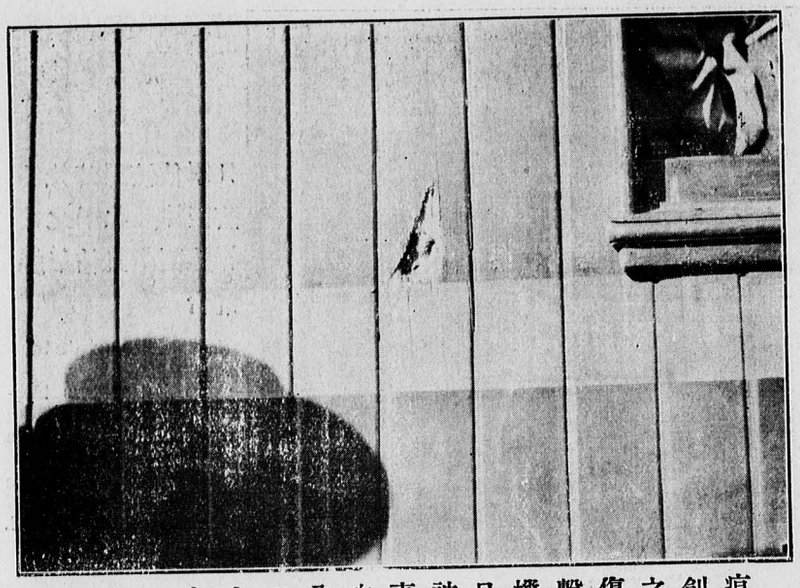
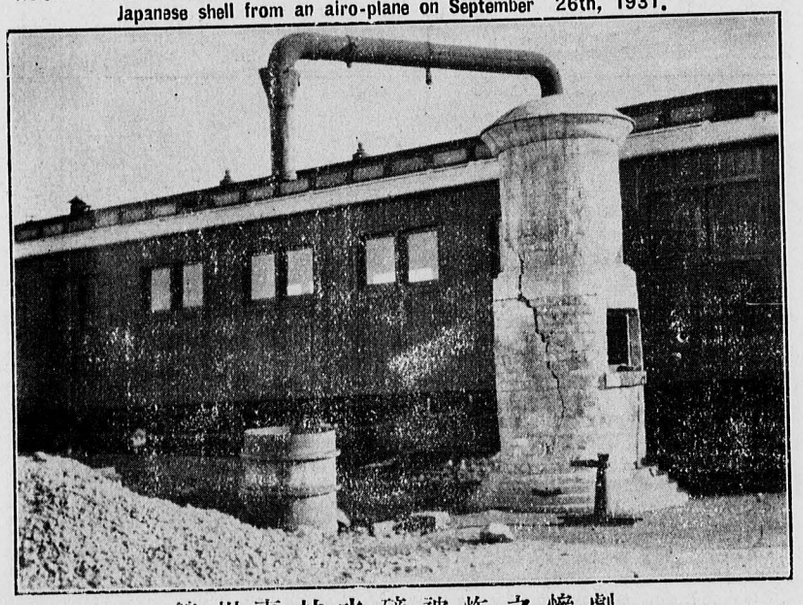
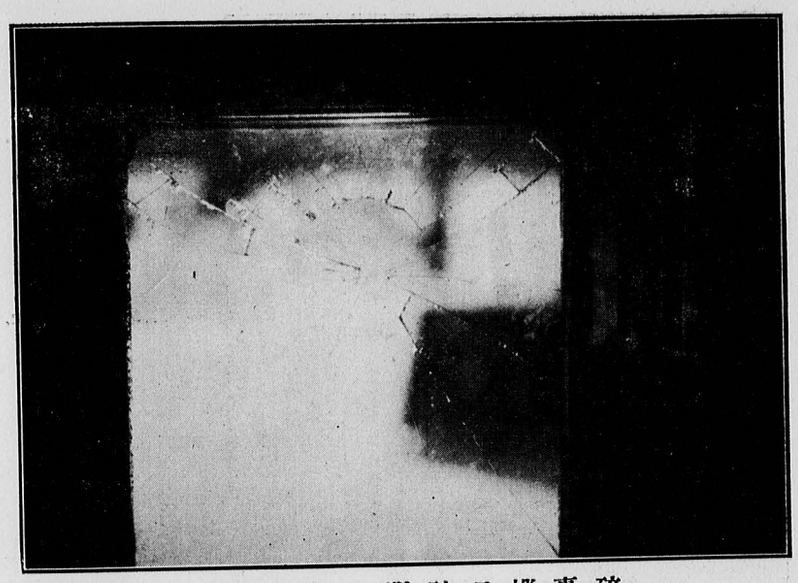


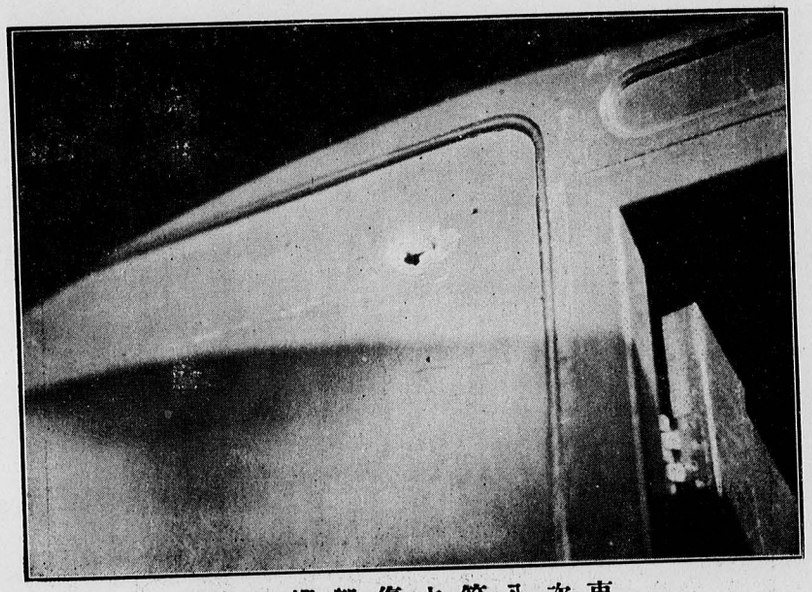
九月二十六日八次車被日機擊傷之創痕
Hole in one of the cars of the 8th train of Peking-Mukden line. It was made by a Japanese shell from an airo-plane on September 26th, 1931.



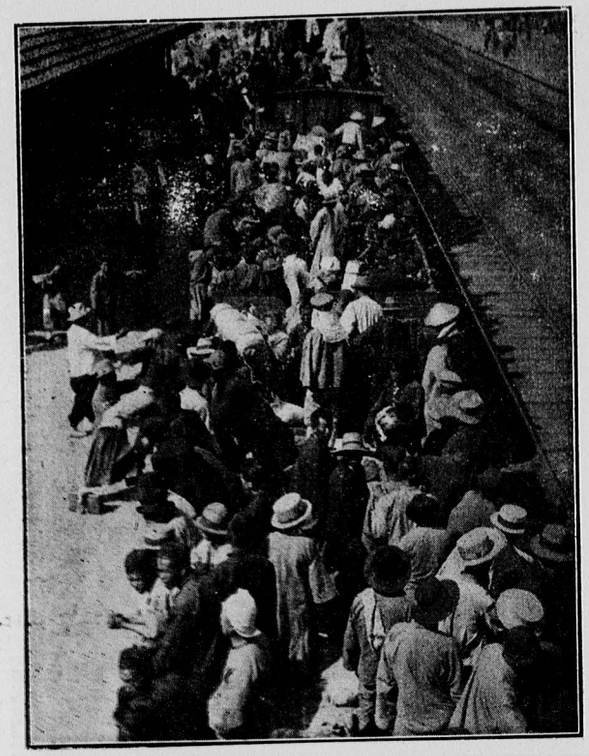
錦州車站水磅被炸之慘劇
The water tank of the Chin Chou station which was cracked by a bomb dropped by a Japanese airo-plane.



102 次車二門被日機轟碎
A door of the 102 train in which the glass was shattered by a bomb from a Japanese airo-plane.

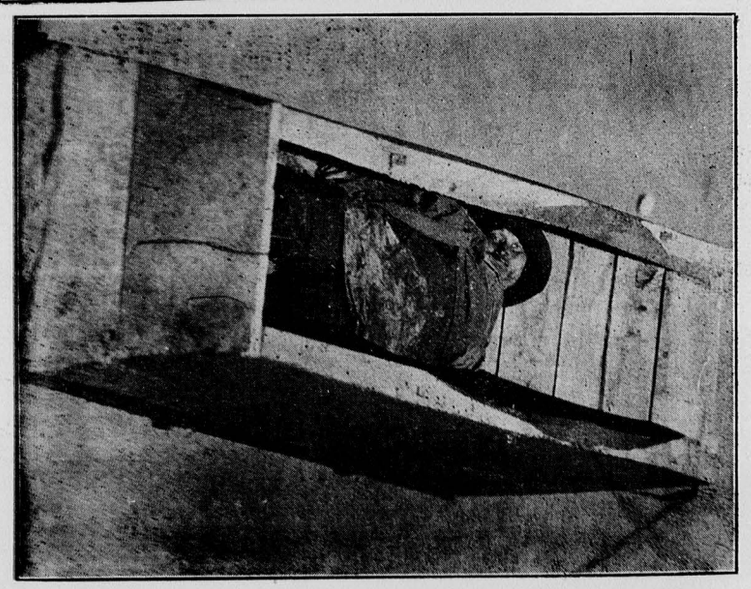


被日機毀傷之第八次車
A car of another train which was pierced through by a Japanese shell while it was full of passengers.



逃出遼寧難民擁擠情形

Refugees from Mukden.



北寧路列車被日機炸後之被難同胞

One of the Chinese passengers of the Peking-Mukden line killed by a bomb dropped from a Japanese airo-plane.

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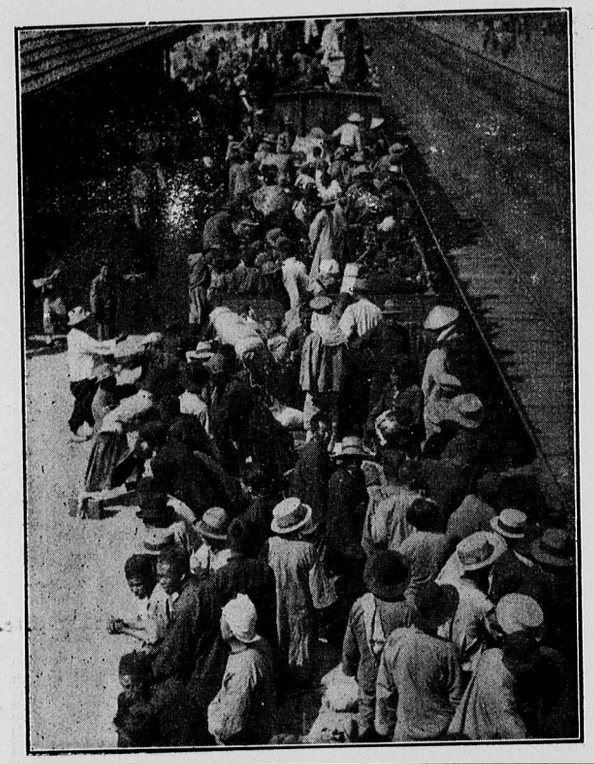

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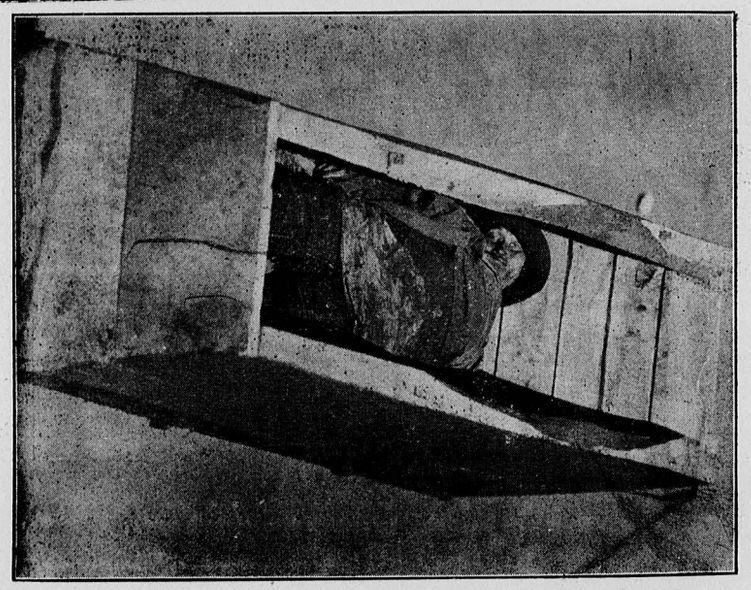

北寧路列車被日機炸後之被難同胞

One of the Chinese passengers of the Peking-Mukden line killed by a bomb dropped, from a Japanese airo-plane.

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READINGS IN HUMAN BEHAVIOR

Volume I

心理學導言

Prepared by Instructors in Psychology 1-2

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Sailer

CHAPTER I

The Nervous System

神經系統

Structure of the Nervous System. A man sees a large stone in his path as he is walking along. He lifts his foot to step over it. His *eye* saw the stone. His *foot* made the move. How did the eye tell the foot what to do? A boy feels an insect on his leg. He looks down, and quickly moves his hand to crush it. How are his leg, his head and his hand connected so that they can send messages to each other?

The blood flows to all of them, but this cannot carry commands with sufficient speed. We must look instead at *the nervous system* that runs through the body and centers in the brain (腦部) and spinal cord (脊髓). It is composed of billions of microscopic neurones (神經原), which are very thin fibers that carry messages and that are connected together in endlessly complicated ways. There are three kinds: 1. The sensory neurones (感覺神經), that bring in messages to the central system from the skin, the eye, ear, internal organs etc. 2. The motor neurones (運動神經), that take messages out from the central system and cause the muscles to act. 3. The central neurones (中樞神經), that lie in the cord and brain and connect the other two kinds of neurones together. Many neurones, perhaps hundreds of thousands, lying together make up a *nerve*. Woodworth remarks that the nervous system is something like a city telephone system. Current passes along a nerve as it does along a telephone wire, though more slowly. A message from one telephone to another must pass through a central office, just as the nerve current (神經流或神經衝動) must pass through a nerve center in the brain or cord. One difference lies in the fact that the nerve current can travel in

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one direction only, from sensory neurone to motor neurone. The brain lies in the skull of the head, and the cord runs from the brain down through a tube in the middle of the backbone.

Now how does this system work? A simple neurone is composed of (a) a cell body (細胞體) that nourishes it, (b) a receiving part called the dendrite (神經枝), very short except in sensory neurones, and with many branches on the end, and (c) a discharging end called the axone (神經軸), sometimes as much as several feet long, and also branching out slightly at the end. If the finger is pinched, then, the message is received by the dendrite of a sensory neurone and sent on by the axone to the dendrite of a motor neurone, which passes the message on through its axone to a muscle, causing it to contract and draw the hand away. No thinking has been necessary; the connection has been made in the spinal cord This very simple kind of reaction that has always been performed in much the same way and without thought is called a *reflex* (反射運動). It has here been explained too simply. A great many neurones will be involved in even such an act as this, and some of them will carry messages to the brain that will give rise to feelings of pain there, and may cause the carrying out of the action to be changed in some ways. But ordinarily the carrying out of the act is immediate—there is no waiting for the message to reach the brain.

The place where the current passes from the axone of one neurone to the dendrite of another is called the *synapse*. (神經交接點). Synapses do not usually allow the current only one path. Axones and dendrites generally have many branches that lead to different neurones, instead of just the one in the neurones described above. With the help of billions of central neurones they may be connected up in countless different ways. Which way the current will take will depend then on the synapses, that is, on which connections allow the current to pass through easily and which will offer resistance. An example may make this clearer. You wish to walk to a

distant point in the city after a heavy rain. Some of the streets are drier than others, and you will try to take the driest path. Perhaps this will mean that you will start off on one street and then cross to another, and perhaps later to still another. On one day one way may be easier, and the day after another way. Just so the nerve current always takes the easiest path. Sometimes this will be along some neurones and sometimes along others. But there is one difference to notice. The streets may be muddy all along their length, but in the nervous system the current has trouble in passing only at the cross-roads or synapses

The Three Reaction Levels (反應的三重階級). 1. The above very simple kind of reflex, where the connection is made in the *spinal cord*, is called a first level reaction 2. The *brain stem* (腦幹) consists of the thickening of the cord as it passes into the brain, and several other bodies connected closely with it and the main part of the brain above, by many bundles of nerves. Each of these bodies has certain functions, and together they care for the reflexes of the head and for the second level reactions. These are more complicated than the simplest reflexes, and involve many muscles working together. A loud shout suddenly surprise a man. He gives a jump, and muscles all over his body become tense; he turns his head instantly towards the sound. *One* message comes in, through the sensory neurones of the ear, but the whole body together gives a coordinated response without his having to think. He may even act thus in his sleep, as when he squirms or turns over when being tickled. Were a certain one of these bodies in his brain injured, for instance, a man would stagger as he walked as though drunken. 3. Reactions that are connected in the *cerebral hemispheres*,(大腦的兩半球) or the main part of the brain, are called third level reactions. These probably include all activities requiring thought and all that have been learned, such as speaking, writing, and playing a game. The cerebral hemispheres are two large wrinkled masses of neurones lying

in the upper part of the skull. They are covered with a thin gray coating called the cortex (樹皮部), composed of the cell bodies and dendrites of billions of neurones. Through the center run big white bundles of axones that make connections between these neurones. In certain parts of the cortex are the "sensory areas" where the fibers come in bringing messages indirectly from the various sense organs, and in other parts are the "motor areas", from which the orders go out indirectly to the various muscles. In still other parts are the connecting and coordinating centers. "To count the neurones in the body, assuming a rate of two per second for eight hours a day, every day in the year, would require at least a thousand years." (Gates). It is hard to conceive how the very complicated thought processes that we carry on can be connected with neurones, but when we see how immensely complicated the brain is it becomes easier to understand.

Notice that the brain itself is not necessary for all our actions. If our heads could be cut off and we still live, reflexes in the lower parts of the body could still go on, and limbs would move when stimulated. The cerebral hemispheres of a frog can be taken out for example and the frog can still live and perform almost all of its usual acts. The connections are made in the spinal cord and brain stem. But it cannot learn anything new, for learning goes on at the third level. It is like a machine. The brain is necessary for thinking and learning.

The three levels of the nervous system have been compared with the three grades of men in a Chinese shop. The 夥計 (sensory and motor neurones running to and from the spinal cord, and the connectors in the cord) can perform only the simplest duties by themselves. When they need to work together they are directed by the 掌櫃 (brain stem connectors) while important decisions must be referred up to the 董事 (cortical connectors).

The Autonomic System. In addition to the main nervous system of which we have been speaking above, and partly connected with it, is the *autonomic nervous system* (自動的神

經系統). This controls the internal bodily processes that are necessary for life, and that go on without thought from us. It gives to the stomach muscles used in digestion, for instance, the nerve stimuli needed to keep them working. The *glands* (液腺), such as those in the skin that produce sweat and those in the mouth that give saliva, are also controlled by the autonomic system. We shall consider it further when we study the emotions.

S-R Bonds. Why then do we perform an act? It is because stimuli have been received by sensory neurones, and the messages have been passed on through the central or connecting neurones to the motor neurones which control the muscles and glands which make the response. The nerve current chooses the paths at the synapses where the resistance is least. These easiest paths from stimuli to responses are called *bonds*. A bond is simply a connection in the nervous system, and the term "S-R bond" is commonly used, S standing for Situation (情境) or Stimulus (刺激) and R for Response (反應). A dog is asleep and there is a noise. That is the situation, S. He awakes. That is the response, R. You see a friend, S. And therefore you smile, R.

A situation contains many stimuli. It is the *combination* of these stimuli that determines the response, not any one of them. Is the sight of food enough to cause the response of eating? No, there must also be stimuli from the stomach to give appetite; if these report that too much has been eaten already, or that the body is sick, the sight of food may cause disgust. Thoughts may also act as stimuli. A friend asks me to go for a walk. That is one stimulus. The hought that I should study interferes with the response of consenting, and I give an opposite response instead.

Notice that some stimuli seem to prepare the way for others. I hear my name spoken in a crowd and I eagerly look and listen for further stimuli. All the stimuli that are acting upon a person at any one time give him or her a *set* (心嚮) that helps determine the response to the next stimulus. Hunger

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is a set. Sleep is a set. Interest in a conversation is a set. A purpose to prepare tomorrow's History assignment is a set.

Sensation (感覺). There are many million situations, that is, combinations of simple stimuli, to which we might respond. Can we analyze these situations and see how many kinds of stimuli compose them? The response that they cause in our consciousness is called Sensation. Each kind of sensation in our mind seems to be caused by the exciting of a special kind of sensory neurone coming, from a sense organ, or by a combination of them. That is, each kind of sense organ (感覺官) seems to give its own special kind of sensation. For instance, in the skin there are many touch or pressure spots, perhaps 500,000 on the entire body. If these neurones were all destroyed there could be no feeling of touch. A light pressure stimulates those nearest the surface of the skin—heavy pressure also causes those deeper in to send their current, and the sensation is more intense. *How many other kinds of sense organs do you think exist in the skin?* The eye is the most complicated of all the sense organs, and there are several theories to explain how we can see color and brightness as well as form. But they all depend on endless combinations of a few simple kinds of sensations received from different kinds of neurones. Likewise with the ear. *What other sense organs can you name?* Include those inside the body as well as those on the surface.

None of the sense organs is fitted to receive all of the stimuli of its own kind. The eye can see no light waves that vibrate more slowly than 450 billion times per second, or faster than 790 billion times per second. Different kinds of animals differ in their ability to hear different tones of sound. A rat can probably not hear a low tone. We ourselves cannot hear very high tones that may give sensations to certain insects, and people differ somewhat among themselves in this regard.

Perception (知覺) But sensations alone, even when combined in many ways, do not determine our responses. Two men see a third at a distance. The sensations received are indistinct and are the same for both men. But one recognizes

a friend and calls out to him. He has *perceived* him as a friend; the other man has perceived him merely as a man.

Perception means organization. Sensation alone can give no knowledge of the world about us. A mere awareness of redness or sourness does not make us any wiser or better able to deal with our environment. It is true that we build our experiences upon sensations, but this is quite different from saying that the latter are our experiences. The single-celled amoeba can certainly be stimulated and can therefore be thought to have sensations, but it can hardly be said to have experiences like ours. We do not have *simple* sensations. They exist for us only when so combined and organized that *meaning* can be derived from them. This combining and organizing activity of ours is called perception.

Perception involves recall. In it we make use of past experience. The new-born infant can hardly be said to perceive anything because he or she has no experience to begin with. Therefore all perceptions are *learned* responses. As different individuals are brought up in different ways, so the same object or situation may have different meanings for each individual. Sensation then is the immediate result in the brain of the nerve current from the sensory neurones. Perception comes from many combinations of these sensations with former memories, through action of the neurones in the *association areas* of the cortex.

It is a significant fact that a single object can usually provide stimuli for several sense organs. While seeing an apple we may also smell it. While smelling it we may also taste and touch it. Thus, each stimulus may finally call out through associations all of the responses that the other stimuli would naturally provoke. This is what we mean by saying that all perceptions are learned responses. A baby finally learns to avoid bodily contact with fire and with a falling object to smile at the sight of his mother and to cry at the

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approach of a barking dog, although none of these stimuli would originally call forth such characteristic responses. The formation of such habits as these constitutes the baby's acquaintance with or perception of objects. In his behavior toward any object such as a chair, a pin, a stick or a piece of candy, some of the body's responses tend to become dominant and are attached to many other minor stimuli from the object. Things finally come to "look" heavy, hot, smooth, wet or soft; and to "sound" large, thin, distant or in rapid motion.

Observation and Experiment. How have Psychologists learned the facts? The facts regarding the nervous system have been obtained only by years of hard work by many scientists in different countries. To trace the paths of the different nerves through the central system is tremendously difficult because of their fineness and complexity. One method is based on the fact that different connecting paths in the brain develop coverings at different ages. The coverings, or sheathes, may be stained to appear different from the neurones without sheathes. Flechsig therefore used the brains of many persons who had died at different ages when very young or still unborn, and was able to trace the different tracts as they appeared one by one on being stained.

Another most useful method of study widely used in Psychology is the use of animals. Their brains are simpler than those of men, but very much like them in their general structure and development. Also, animals will live after operations that would kill human beings. By cutting their nervous system at different points it can be seen what actions can still be made. A frog without hemispheres but with its brain stem left can of course perform many acts impossible for a frog left with only a spinal cord. And cuts can be made between different parts of the brain stem. Franz showed that the front part of the cerebral hemispheres, the frontal lobes, are used in forming associations. He taught apes and cats to make certain responses. Then he removed part of the frontal lobes and found that these new associations

were lost, but that old and well-learned acts could still be performed. This alone was not sufficient proof. Perhaps these new responses were lost through the shock of the operation, not because a special part of the brain had been removed. Franz then removed other parts of the brain in animals and found other that the shock did not cause the new responses to be lost. (Pillsbury)

Medical doctors have also contributed very much to our knowledge. They have reported many cases where the power to speak, or write, or see, or move certain muscles, accompanied injury to different small sections of the brain. Sometimes the skull is opened during an operation, and different parts of the brain can then be stimulated directly by an electric current. It is then carefully noticed which muscles of the body move. Dr. Cushing opened a man's skull over a large area while the man was unconscious, then permitted him to regain consciousness and tell his sensations when different parts of his cortex were stimulated.

The different sense organs have been discovered and listed through careful observation. Those on the skin and tongue have been found by very carefully going over a surface with the proper stimulus and counting the spots where the response is obtained. But on this and on all other points we have very much still to learn, and only years of patient work can lead to progress in our knowledge.

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1. Explain or describe: nervous system, neurone (3 kinds and 3 parts), reflex, synapse, three levels, autonomic nervous system, gland, S-R bond, set, sensation, sense organ, perception.
2. Name *all* the kinds of stimuli that are affecting your respective sense organs at this moment.
3. Is a response always made by either muscles or glands or both?
4. How many kinds of taste can be received through the organs on the tongue? See if you can secure any information on this by testing yourself. Can all parts of the tongue taste equally well?
5. List the ways in which the illustrations of the telephone system and of the Chinese shop do not hold true for the nervous system.

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6. Do you think that the third sentence at the beginning of the chapter is correctly stated?
7. A man whose right leg has been cut off complains of pain in his right foot. Why is this?
8. Do we always experience sensation when our sensory neurones discharge current?
9. Hold out your arm at the side. What is happening in your motor neurones?
10. Whether light waves come from far or near, they all reach the eye at the same points. Explain carefully any ways in which you think we can tell how far distant an object is that we see. Just what sense organs are helping us, and how?
11. Is the whole of a person's environment part of the situation to which he is responding at any moment?
12. When you are surprised at a sudden shout, are you receiving a pure sensation with no perception?
13. Explain the difference between neurone and nerve; situation and stimulus; set, interest and purpose; observation and experiment.
14. Which of the following forms of announcement at assembly is better, and why?

    a. "Students interested in the forming of a new literary society are asked to meet tomorrow afternoon in Room A4 at 4.30 o'clock."

    b. "In Room A4 at 4.30 o'clock tomorrow afternoon there will a meeting of students interested in the forming of a new literary society."

CHAPTER 2

Instinctive Tendencies

本性（本能）的傾向

Why do some synapses in our nervous system offer less resistance to the nerve current than others do? Why do we have just these bonds and not different ones? Why are not all paths alike?

The simplest answer seems to be that certain paths become easier as a result of our experience, that is, that we form certain bonds by learning. We learn by practice, or by imitating other people, or by being told what to do. It is certainly true that learning means changing our bonds. But is this a sufficient answer?

A baby cries as soon as it is born, and sucks anything put into its mouth. This is because of its bonds. Paths leading to the response of crying are more open than those which lead to those of saying "Good morning" for instance. It has not practiced crying—it has heard no one else cry—it has not been told to cry, and would not understand the words if they were spoken. Crying is an *instinctive* act. *What other instinctive acts can you name that the baby performs when first born?*

There are other instinctive acts that are not performed immediately after birth. The catching of mice by cats, the building of nests by birds, and sex responses of both animals and human beings do not need to be taught. This does not mean that learning will not modify and improve these responses. But there must be some *native* tendency that leads to each of these sets of actions. There can of course be no sharp dividing line between instinctive acts and habits, for all habits must finally be based on instinct. *Do you think that talking is instinctive? Is walking?*

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Classes of Instinctive Activities. For convenience we often divide instinctive tendencies or acts into three classes, though these classes cannot be separated exactly from each other.

A. Reflexes and coordinated groups of reflexes. These are generally either very simple reactions that protect parts of the body, as coughing or drawing away from pain, or are controlled by the autonomic system and enable the body to carry on its normal processes, digestion, sweating, etc. A baby does not have to learn to breathe or to swallow.

B. When we are speaking of kinds or groups of reactions that are more complex and more easily modified than reflexes we use the term "instincts." Notice that an "instinct" is only one kind of instinctive tendency. We may speak of the instinct of food-getting with feelings of hunger usually going with it. Or the instinct of fighting, with the feeling of anger. These instincts show themselves in many ways, but some kind of response connected with them will appear without learning. *Think over your own daily life. What other instincts cause you to act?*

C. A third class of instinctive reactions are *capacities* (本能 (才力)). A capacity is an ability to learn to do a general class of things well. A monkey has no capacity for Psychology—it could never learn to understand it. Some people have far greater musical capacity than others—they can learn to sing and play instruments much better and much more easily than other people. Probably listening to music gives them special pleasure, though this may go along with inability to produce it. Other people like machines, and are constantly buying them, playing with them, and repairing them. Some students do better work in Physics and poorer work in Languages than other students, often because their capacities are different. With the *same* amount of practice, results are widely different. Capacities differ from instincts in that they are more indefinite and still more modifiable.

An Example. Notice that an instinct cannot operate without some sort of stimulus. If we could shut off all stimuli

we should never feel instinctive desires. But this is not possible with such instincts as sleep and hunger. *Why?* At the same time we can become accustomed to gratifying certain instincts so that they show themselves far more often than if controlled. They develop many habits in their service that are easily aroused. James quotes an account of a man in Boston whose instinctive tendency to collect governed his life.

"He gathered old newspapers, wrapping-paper, incapacitated umbrellas, canes, pieces of common wire, cast-off clothing, empty barrels, pieces of iron, old bones, battered tin-ware, fractured pots, and bushels of such miscellany as is to be found only at the city 'dump,' The empty barrels were filled, shelves were filled, every hole and corner was filled, and in order to make more storage-room, 'the hermit' covered his store-room with a network of ropes, and hung the ropes as full as they could hold of his curious collections. There was nothing one could think of that wasn't in that room. As a wood-sawyer, the old man had never thrown away a sawblade or a wood-buck. The bucks were rheumatic and couldn't stand up, and the saw-blades were worn down to almost nothing in the middle. Some had been actually worn in two, but the ends were carefully saved and stored away. As a coal-heaver, the old man had never cast off a worn-out basket, and there were dozens of the remains of the old things, patched up with canvas and rope-yarns, in the store-room. There were at least two dozen old bats, fur, cloth, silk, and straw," etc.

Such a man could probably give reasons for saving all of these things, but the real reason lay in his insntictive tendency to hoard, which he had not controlled.

The Meaning of Instincts. Look over the list of reflexes and instincts that you have made. *Are there any that you would prefer not to have?*

Why are these instinctive tendencies implanted in us? If they do not come from learning they must have been inherited from our parents and our ancestors. Remember that hundreds of thousands of years ago our ancestors probably lived much like animals, in caves, and fought with wild beasts and with each other to obtain food. It was while the race was developing that the instincts grew up. Men without them

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perished, and could not pass them on to their children. Can you show any instances in which our instincts are better suited to savages than to us today? Are there any instincts that savages would need in order to live and to pass them on to descendants, that we have not got? *Have we any instincts that would be useless or harmful to savages?*

But how were these traits passed on us? Are acquired bonds likewise inherited? If a father spends most of his time studying Mathematics and forming bonds between figures, will his son inherit those bonds? The answer is No. Acquired bonds are not passed on to children—it is only the native ones of the parents that have themselves been received by inheritance. The father probably studied Mathematics because he had a capacity for it, and his son may inherit this same capacity from the ancestors of himself and his father. But the learned bonds themselves could not have been passed on. The reason for this is plain. Children develop from certain *germ cells* in the bodies of their parents. These cells do not float loose in the parents' blood or organs. Even before their bodies were formed these cells had been separated off in one part, where they could not be influenced by reactions learned in the nervous system. It is as though the parents had been given a sealed letter by their ancestors that they must not open. This letter contained the instincts that the children should have, instincts that had come down with little change for thousands of years, carried always in the germ cells of their forefathers and not in the nervous systems. It is probable that the instincts of the race have changed little for at least twenty-five or fifty thousand years.

Instincts of Animals and of Men. A comparison of the instincts of animals and of men will help make plain the nature of instinctive activity, for it is in animals that we can most clearly see instinct working without being too greatly modified by habit. The tailor-bee cuts out pieces of rose-leaf, bends them and carries them to a hole in a tree or in the earth. She then makes a cup-shaped bag of the leaves by covering their

seams with other pieces, and fills the bag with honey and lays an egg in it. She has not learned to do this, and we cannot believe that she plans it out. The feeling of the eggs within her body and the sight of the leaves and of a hole make a situation that causes her instinctively to respond in this complicated way. A young squirrel that had never seen other squirrels bury nuts was placed on a blanket and given some nuts. After eating a few it took one in its mouth and went through exactly the same motions of digging a hole and burying the nut that other squirrels use, though the result was to leave the nut uncovered on the blanket. Here the proper situation was not complete, and the activity was entirely useless, but the instinctive response was nevertheless made.

A new born chick can take care of itself quite well. It can run around and peck for its own food. The instincts that a dog must have in order to live, also develop while it is still very young. Think on the other hand of the instincts of human beings. A baby is helpless for several years. It can cry to ask for help from others, and it can suck and swallow when food is put into its mouth. But its instincts seem far less useful than those of animals. *In what way would you describe the difference between the instincts of men and of animals? Would it be better if a baby could care for itself when first born? What instincts has a baby that no animal has in the same degree?*

Sublimation (變形). It has been seen that instincts can use very many different kinds of habits for satisfaction. It is possible therefore to use certain instincts that were developed to meet the needs of savages, in ways that are more useful today. Instincts of rivalry can be used to encourage excellance in studies, or healthful exercise through sports. This use of instincts in better ways is called sublimation. Some psychologists believe that sublimation of the sex instinct has led to very much of the art and man-made beauty of the world. Regarding to just what extent sublimation is possible very little is known. But it is certain that a very great part of modern civilization depends on it. *In what ways have instinc-*

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tive tendencies of curiosity and of collecting been often sublimated?

Observation and Experiment? How have psychologists learned the facts? The fact that instincts always express themselves in habits, often of very different kinds, has made even the most careful observation unable to determine for certain in many cases what responses are instinctive and which are acquired by experience. Hundreds of babies have been watched very closely to see what responses they made without learning. For instance, Watson tells of one baby observed in an attempt to determine whether crawling is instinctive.

Tests were begun upon L at 87 days of age. The method in general was as follows: A single cotton blanket was stretched tightly to a table top. A small piece of wood was then pushed up against the feet. In a minute or two she had pushed this away as far as the toes would reach. This position was then marked. A piece of candy was put in front of her face. On the 87th day, "climbing" movements with the legs were fairly well coordinated. The right leg would struggle forward and then the left; then one or both would be kicked out. The hand and arm movement showed no coordination. No advance was shown up to the 115th day. Definite progress was noted on that day in the use of the arms. There was some slight use of the elbows. The fore part of the body was considerably raised. From the 87th day on, the head was well raised for the first two or three minutes. It would gradually sink down. On the 115th day, she made a forward progress of two inches in nine minutes. Circus motions were present, and the body would be rocked from side to side. The rocking movement seemed to net the gain rather than the progressive movements of the legs and arms. On this date for the first time, she grasped the blanket ahead of her and apparently pulled herself slightly forward. Even on the 220th day crawling was not much further advanced, although he had been tested every week from the 87th day. At that time the experiment had to be discontinued.

Even this long period of experiment with careful observation threw little light on the question.

Naturalists tell us that many animals perform acts, such as nest building of birds, that they have never seen their parents or other animals perform these surely must be instinctive. And many other acts can be studied in animals far more easily than in babies. *Why is this so?* Spalding

kept some little chicks shut up alone so that they could not learn, and kept hoods on others—he then watched their behavior. His experiments on birds are well-known. He writes:

Birds do not *learn* to fly. Two years ago I shut up five unfledged swallows in a small box. In this confinement, where they could not even extend their wings, they were kept until after they were fully fledged... On going to set the prisoners free, one was found dead. The remaining four were allowed to escape one at a time. Two of these were perceptibly wavering and unsteady in their flight. One of them, after a flight of some ninety yards, disappeared among trees... The other two never flew against anything, nor was there, in their avoiding objects any appreciable difference between them and the old birds... I have this summer verified these observations. Of two swallows I had similarly confined, one, on being set free, flew a yard or two close to the ground, rose in the direction of a beech-tree, which it gracefully avoided; it was seen for a considerable time sweeping round the beeches and performing magnificent evolutions in the air high above them. The other, which was observed to beat the air with its wings more than usual, was soon lost to sight behind some trees. Titmice, tomtits, and wrens, I have made the subjects of similar observations, and with similar results.

The question as to whether acquired bonds may be inherited has received a great deal of attention from scientists, and formerly led to strong disagreement. Experiments have been made on animals that breed rapidly, noticing whether bonds formed in many generations of ancestors appear in offspring without learning. This has not been found to be true. But more important have been the studies through the microscope of the germ cells themselves, by the biologists. When it can be seen that these cells separate off very early from other cells in the body and live an independent life, it is very hard to conceive how bonds could be transferred to them.

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1. Discuss the following statements:
   a. Instincts may be called the habits of the race.
   b. All reactions can be divided into two classes—instinctive acts and habits.
   c. Men do best what they practice most. Their capacities do not greatly differ.

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d. Animals have many more instincts, and more useful instincts, than men.

e. Since our instincts are those of savages, great progress in civilization is not possible. Our fighting instinct will make it impossible for us ever to get rid of war.

f. The greater the capacity a man has in one thing, the greater is his liking for doing that thing.

g. No instinct can operate without some external stimulus.

2. Try to classify instinctive tendencies into two or three great classes according to their *use*.

3. What is the difference between capacity and ability?

4. Are there neural connections between *any* S and *any* R? That is, could a bond be formed connecting any S with any R?

5. Is there an instinctive tendency to gamble?

6. Is it correct to say that some students have a special capacity for Psychology?

7. If babies had no instincts, how would they act?

8. Which instincts of men to you think have been of most importance in the progress of the race ?

9. If when men were savages, those with the best instincts lived while others died, why is this not true today? Are the instincts of the race still being improved by "natural selection?"

10. Is thinking instinctive?

CHAPTER 3

Learning And Habit

學習和習慣

The Laws of Learning (學習律). We have seen that the human baby is born practically helpless. Only a few of its instinctive acts are performed well enough to be of service immediately. It must *learn*, and the whole of its life will be spent in learning, that is, in changing the resistence at the synapses. But how is this done? What are the laws governing these changes? First may be stated the two great laws of learning. Only gradually can they be understood.

1. *The Law of Use* (應用律). *When bonds are exercised they tend to become stronger.* That is, the more often that current flows across a synapse, the less the resistence at that synapse becomes. Two minor laws are included in the law of use, but may be stated separately. The law of disuse says that *when bonds are not exercised they tend to become weaker.* The law of intensity says that *the more intense is the stimulus, the more the bond is strengthened.*

It is easy to believe that repeated making of a certain response would cause it to be made more easily. When there is a field of tall grass with a path running across it, the more the path is used the better it becomes, and the more easily the field can be crossed. When the path is not used the grass grows up again and makes crossing more difficult. The harder the grass is tramped down each time, the better the path becomes. In these respects the brain substance at the synapse may be compared to the field of grass, and the path with the neural connection formed.

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2. *The Law of Effect* (効果律). *When a satisfying state of affairs follows or accompanies the exercise of a bond, that bond is strengthened. When an annoying state of affairs follows or accompanies the exercise of a bond, that bond is weakened.* Stated more simply, this means merely that we tend to repeat actions that bring us pleasure, or satisfaction (愉快), and that we tend not to repeat actions that bring displeasure, or annoyance (不愉快). No adequate explanation can be given of what happens in the synapses to bring about this result.

But notice two important kinds of result bringing satisfaction or annoyance. First come those actions that allow *instinctive* wants to be gratified, or that lead to instinctive annoyance. Actions leading to obtaining food, or praise from other people, or escape from danger, for instance, are generally satisfying, while actions that bring physical pain, scorn from others, or that lead us into the discomfort of being unable to satisfy our desire for sleep, for instance, are generally annoying. Bonds the exercise of which brings satisfaction are sometimes called "ready" (準備) bonds. Those that are exercised with annoyance are called "unready" (不準備).

The second great cause of satisfaction or annoyance, which cannot however be sharply divided from the first, depends upon *purpose*. A man is playing tennis "doubles". He tries to send the ball as close to the side-line as possible to keep it out of his opponents' reach. When he places a ball in the "alley" he is pleased, and with practice he becomes more expert at doing this. Then two people leave and he plays "singles". If now he sends a ball into the alley, instead of being pleased he is greatly annoyed, and learns to play within the inner line. An onlooker who did not understand the rules would not see why the same response would at one time be satisfying and at another time annoying. The reason was of course the change in purpose, or set, and such a change will cause many bonds to change from ready to unready or from unready to ready.

The Processes of Learning. Now how do these two great laws of learning operate when learning actually goes on? When

bonds are once formed they can of course be strengthened by simple exercise. Improvement comes by practice. But how are bonds *changed*, so that *new* responses are made to certain stimuli? The number of types or methods of learning used is also two.

1. *Learning by Trial and Error.* (嘗試式的學習). When an animal or person feels a need or wishes to do something that cannot be met or done by the use of bonds already formed, there is first of all a tendency to *multiple response* (多版應). This means that *many* responses are made to the situation many ways are tried Some of these are more successful than others, that is, lead to more satisfaction, and by the law of effect these good responses are strengthened. They are gradually in this way selected out from the bad responses, and are often combined into a total successful act that contains many new bonds that have been formed. Some examples will make this more clear.

In some famous experiments Thorndike placed a hungry cat inside a wooden box, and left food outside where it could be seen through the bars of the box. There was only one way to get out, and that was by turning a piece of wood that held the door. The cat did not stop to observe, or to reason, but at once began scratching and clawing desperately all around, and finally by chance hit the piece of wood and opened the door. The first time, this took a long while to accomplish, but each time that it was repeated, less time was needed, and finally the cat would turn the piece of wood at once and get the food. It had learned to escape from the box.

In another experiment Yerkes placed a turtle so that it had to pass through a maze in order to find its nest. At first it wandered around until by accident it found the right way after many minutes. But as the experiment was repeated, here also the time needed became less and less. The wrong turns were gradually eliminated and finally the turtle had learned to go through the maze to its nest by the shortest path.

If the Law of Use alone had been working, all of the responses made would have been strengthened equally. But since some of them were more successful than others, leading to the securing of food or to finding the nest, their *effect* was good, and

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they were formed more strongly than those responses which did not lead to success. Another example will show how bad responses that lead to annoyance are quickly eliminated.

Rats were placed so that they could run down any of three passages that looked and smelled alike. One of them led directly to food. The second led to food after a longer journey. In the third they would receive an unpleasant electric shock. It was found that they very quickly learned to avoid the third passage, that is, the bond leading to that response was broken. Much more slowly they learned to take the first path rather than the second.

When a person learns to swim, or a child learns to dress itself, the process is the same. And even when a student learns what kind of answer will bring him or her a high mark from a particular instructor, the method he is using is likely to be largely one of trial and error.

Learning by Associative Shifting. This kind of learning involves merely the connecting of a certain stimulus with a certain response formerly made to a different stimulus. How does a child learn that a certain written character has a certain sound and a certain meaning? How does a student learn that the Battle of Waterloo was fought in 1815? How do we come to to be able to recognize a friend? Why do we connect a certain smell from the kitchen with a certain kind of food? Certainly such bonds as are needed here are not often formed by trial and error. That would waste an enormous amount of time, if it would be possible at all. The principle of Associative Shifting (聯移) seems to be that *if two stimuli are reacted to at the same time, thereafter one of them alone will tend to call forth the responses that formerly followed from both of them.* A new *association* is formed. Sometimes it is necessary for the stimuli to be given together only once; in other cases they must be repeated many times before the new bonds are formed.

Consider a very simple case of such learning, that would apply to animals, babies or adults equally well. If the foot is pricked with a pin a reflex will draw it back at once without thought. If a bright light is suddenly shined in the face, the eyes will blink. Now suppose these two stimuli are given *together*, several times, so that both responses are made. Then if the light is shown alone after that, not only will the eyes blink, but the foot will be drawn back. Or if the pin stimulus is given, not only will the foot be drawn back, but also the eyes will blink.

Another case would apply only to human beings of some intelligence. The teacher writes "7 X 7" on the black-board. The sight of this is one stimulus. Then he writes "49" below or beside it. That is a second stimulus. After these two stimuli have come together several times, the child learns that "7 X 7 = 49," that is, the stimulus "7 X 7" calls out the response "thought of 49", and the stimulus "49" calls out the thought "7 X 7". After a response has once been made, it may be strengthened by exercise, so that the bond "S = 7 X 7; R = thought of 49" may become much stronger than the bond "S = 49: R = thought of 7 X 7."

Except for the solving of problems, and learning to perform new acts with our muscles, learning goes on typically by means of associative shiftings. What happens in the neurones can only be imagined. Perhaps when two bonds are conducting at one time so that two sets of neurones are excited, current tends to flow between them so that connections are made which gradually lower the resistence at the synapses.

The most remarkable fact with regard to associative shifting seem to be the great ease with which connections are so often made. When we visit a certain spot, we may remember former occasions when we were there, even though long ago, and perhaps may also remember just what we were talking about when we stood at a particular point, and what clothes we wore. A peculiar smell may not be met with for years, but may at once recall the place where we last smelled it, and a tune may become associated with a certain person or time. Many other associations are of course lost, or "forgotten", but when the original stimulus is intense and especially where there is either emotion or *meaning* involved, the association is very likely to be retained.

Imitation (模倣.) Are these two methods that have been explained the only ways by which we learn? What shall we say of imitation? When a child watches someone else do a certain

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thing, and then does that same thing itself, is not this a third form of learning? While certain psychologists would hold that it is such a third form, the reason why others disagree with them can be discovered by careful thinking. When is imitation possible and when is it not? Can a boy learn to ride a bicycle by imitation? Does a foreigner learn to write Chinese characters properly by imitation? Notice carefully the two following cases, and see if you can explain why imitation is possible in the second case and not in the first:

1. A Frenchman tries to teach me to pronounce a French word. He tells me to imitate him, but the sound I make is very incorrect. Only after repeated trial and correction can I improve.

2. An instructor writes a sentence on the board in Chinese or English. A student looks at it hastily and then writes it down correctly in his notebook. He has copied the sentence, that is, imitated the action of the instructor.

Can you now define imitation, and explain it in terms of trial and error and associative shifting?

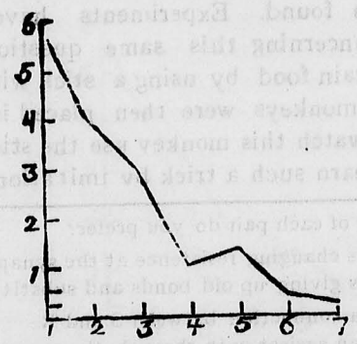
Habit. A habit is a way of acting that we have learned. It is a bond or set of bonds. It is the habits we have formed in the past that mainly determine how we respond to present situations. It is the habits we are forming now that will determine how we shall respond in the future. In a new situation we respond by *analogy* (類化), that is, as we have learned to do in a like situation. A man has an easy chance to steal a large sum of money. He has never had such a chance before, but if we know all his habits we will know what he will do. Two men do the same kind of work, seem to have about equal capacity and are equally faithful. But one accomplishes twice as much as the other. He never wastes time—he moves from one task to another without disorder — he decides unimportant matters quickly. He has many good habits that the other man lacks, traced in his nervous sytem.

Habits that are used without change and without special thought make up a very large part of our lives. These are called *automatic* (不戒化的習慣) habits. Even a very large part

of our thoughts are those we have had before, and we make the same remarks again and again in different combinations. *Is it a good thing to have a great many automatic habits?*

The formation of habits is of course the task of education, its only task. Consider carefully the laws and methods of learning, and *write down as many rules as you can now give for the efficient formation of habits.* Try to suggest rules that would cover any of the following kinds of habits: 1. Habits of proper exercise, and of careful eating. 2. Habits of speaking clearly. 3. Skill in drawing well. 4. The habit of being cheerful. 5 The habit of learning. *Could any of these same rules be used for breaking habits, such as those of laziness?*

Observation and Experiment How have psychologists learned the facts? It is of course far easier to experiment on learning than on instinct. We can watch people and animals learn every day, and can study the causes that makes for rapid learning and those that hinder it. Any change that takes place, if its quantity can in any way be measured, may be pictured by the drawing of a *curve.*



Above is the kind of curve that might show the result of such experiments as those of Thorndike. The vertical line on the left shows the amount of time needed for each escape from the box. The horizontal line shows the trials. As the time becomes less for each trial the line falls from left to right. If

the box could be escaped from more easily, the line would fall more rapidly. If the cat were less hungry, it would probably fall more slowly. If one curve were drawn to show how rats learn to find food when the wrong passage contains an electric shock, and another curve were drawn to show the same learning, where there is no electric shock, *how would these two curves differ*?

There are many other forms of the learning curve, (學程曲線) but in each case the object is to show the course of learning by the shape of the line. A curve is also used to show speed of forgetting. Ebbinghaus found that with certain material 55.8% was forgotten at the end of an hour, and 75% after six days. This means that the curve would fall rapidly at first, and more slowly as time went on.

Whether imitation is a separate method of learning has been a subject for very careful observation and experiment. Many psychologists have watched babies closely to see whether they ever made entirely new responses without learning them by trial and error. They do not agree entirely in their conclusions but very few cases at most of this kind of imitation seem to have been found. Experiments have been conducted with animals concerning this same question. One monkey was taught to obtain food by using a stick with a hook on the end of it. Other monkeys were then placed in the same cage where they could watch this monkey use the stick. But they did not seem able to learn such a trick by imitation.

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1. Which definition of each pair do you prefer?
   A. a. Learning is changing resistence at the synapses.
      b. Learning is giving up old bonds and substituting new ones.
   B. a. A bond is a connection between S and R.
      b. A bond is an easiest path through the synapses of the brain.
2. Why is the Law of Effect given this name?
3. Can you give a case where pain gives satisfaction? How do you explain it?
4. If there can be only *one easiest* path through the synapses from any one situation, how is it possible for us to respond in different ways when we give multiple response?

5. When one student receives G in a certain subject, he is annoyed. When his room-mate receives G in the same subject, he is pleased. Why is there this difference in response to the same stimulus?
6. Make a brief list of the conditions that make trial and error learning efficient.
7. In learning to throw a ball straight, it usually seems better to concentrate attention on where yon want to throw the ball, rather than on the movements of your arm muscles. How do you explain this? Should your arm movemeut ever receive attention?
8. The desire to know the time of day may be connected with the response of asking the question in both Chinese and English. When associative shiftings connect several responses with the same stimulus, what decides which bond is used at a certain time?
9. If I cannot imitate the Frenchman correctly when he speaks a French word, is there any use of having a native of France to teach me French?
10. How do you think the curve for forgetting how to ride a bicycle would differ from the curve for forgetting a vocabulary of words in a foreign language? Why would this difference occur?
11. How do you think the first monkey was taught to obtain food by using the stick?

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CHAPTER 4

Memory

記　憶

When the term memory is used it usually includes only those thoughts that can be consciously called to mind(觀念的聯結). "I have that name in my mind, but I can't seem to remember it" is a statement sometimes heard. But in Psychology the term memory is often used to include any effects that have been left in the synapses of our neurones(神經交接點所有的遺跡). Every response that we make causes a change in our bonds, or in their strength. Just as each person who walks across a field leaves some trace in the grass or in the dirt, so each current that passes over our neurones leaves the synapses a little different than they were before. The traces are preserved in our "memory". We cannot think which shoe we put on first in the morning, but our hands and feet "remember" and probably always act in about the same way. A man who has not skated for years could not *tell* just how to skate, but when he is standing on the ice with his skates on, his muscles remember what to do and he goes along just as he did years before. The proper situation was presented; the bonds had been well formed, and the old response was made. Thoughts that we have had long ago influence our thinking now, even though they seem to have been completely forgotten. It is probable that nothing that we do or think is ever wholly lost from our brains. In a famous case an ignorant servant girl when in a fever was heard to utter many sentences in Greek, Latin and Hebrew, which of course she did not understand. It was finally discovered that when nine years old she had worked in the house of a minister who used to read aloud from his books in these languages. She probably paid no

attention at the time, but her neurones unconsciously responded and retained these impressions.

But such impressions as these are of course extremely faint, and generally quite useless to the person possessing them. In this chapter we shall consider memory in its more popular sense, to include only those thoughts that we can call to mind. How can we best remember dates, names, definitions, poems, facts of all sorts? Remembering the principle of S-R bonds and the laws of learning, what principles or suggestions can be discovered that will aid in effective memorizing?

1. **Repetition** (複習.) This is of course based directly on the Law of Use. When more repetitions are given than are needed for the bonds to be formed, we speak of *over-learning*(過度的學習). *Is over-learning always a waste of time?* What effect would it have on the curve of forgetting?

2. **Distribution of Practice** (練習的支配). Is an hour spent at one time on memorizing certain material twice as good as half an hour? That is, can the material be learned twice as well, or less than twice as well, or more than twice as well? If you have a week's time to learn an oration, and wish to devote only five hours to it, how had the time best be divided? All on one day; an hour a day; half an hour twice a day? On such a question as this it is quite possible to obtain evidence by experiment. While no exact proportions of time can be given as most effective, so long as practice periods are not too very short, it seems best to divide up the time. Periods should probably grow shorter in time as practice proceeds, and should be further apart. *Can you draw a diagram showing how this should be done?* Just as a muscle must be allowed to recover between periods of vigorous exercise, so bonds seem to form more strongly when intervals of rest are allowed to come between times of practice. But the reason is not the same, for muscles produce fatigue poisons, and this does not seem to be true of nerves, except perhaps in inconsiderable amounts. But

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one reason for an interval of rest between learning periods lies in *interference*. Remember that mistakes are being made along with right responses. Bad bonds are being formed as well as good ones, where the law of effect is not working with effectiveness. The interval gives an opportunity for the bad bonds to die out.

3. **Learning by Whole or by Parts (全體或部分的學習法).** Experiments seem to show that if one is learning any selection of prose or poetry it is generally better to read through the whole from beginning to end and to repeat the reading in the same way until the whole composition is learned, rather than to learn each part separately and then join the parts together. Only an actual trial will convince most people of the truth of this. Notice that by the part method certain bonds are being formed which must later be broken. And by the method of the whole each part is connected with its proper relation to all of the other parts each time that a repetition is made. *Can you suggest any advantage of learning by parts, and any method that might combine the advantages of the two methods?*

4. **Rhythm (拍節).** The use of rhythm where possible aid learning. Poetry is generally more easily learned and better retained than prose. Instead of learning that Columbus discovered America in 1492, such a verse as

> In fourteen hundred and ninety-two
> Columbus sailed the ocean blue

seems to be more easily retained, and many foreigners remember the order and meanings of the Chinese radicals by means of some verses that have been composed. The dangers of such learning can be seen from the student who recited

> In forteen hundred and ninety-three
> Columbus sailed the deep blue sea.

The more accent is given the easier earning lseems to be. *Can you explain this principle of rhythm in terms of the bonds formed?*

5. **Meaning(意思).** It seems to be much easier to connect certain words together than others. Which of these two lists could you learn most quickly and remember longest?

A. Morning, wash, breakfast, classes, study, difficult, examination, semester, year, month.

B. Pen, beauty, probably, of, thing, water, study, best, are, night.

Why is this so, in terms of bonds? *What would be the best way to learn the second list?*

6. **Organization of Material (材料的組織).** When material is arranged under headings and sub-headings it can usually be remembered more easily. For the relations are then more clearly seen between the various parts—that is, some of the past bonds that have been used in arranging similar material in logical relationships are again being used. Important things are given an important place, etc. And after the main points have been learned, minor ones are collected around each one of them.

7. **Clearness of Material (印像的明顯).** The clearer the first impression is, the stronger is the bond and the better the retention. If you are given a telephone number or a friend's name to remember and you hear it in a hurried or indistinct manner, the chances are that it will not remain at all in your memory. Why this is so will be understood better after later chapters, but it can be seen that a stimulus is "clear" when it is separated from other stimuli, and calis out therefore those associations with which it alone is connected.

8. **Active practice in recall (自動的追憶練習).** One way to memorize is to read the material again. Another way is to read it once or twice and then to try to recall to mind a little of it without looking at the written words—read it again —recall as much more as possible—and so on until it is learned. Which of these two methods is superior? Study the following table which shows the result of an experiment conducted by Gates:

Material studied:	16 Non-sense syllables		170 words with connected meaning.	
Method	% remembered: immediately:	after 4 hrs.:	% remembered: immediately:	after 4 hrs.
All time devoted to reading	35	15	35	16
1/5 of time recitation	50	26	37	19
2/5 of time recitation	54	28	41	25
3/5 of time recitation	57	37	42	26
4/5 of time recitation	74	48	42	26

Why do you think these results were obtained? *Write down in each case just what bonds were being formed, that is, from just what stimulus to what response.*

Each of these eight principles is based on the laws of learning, that is, the laws of *forming bonds.* Above all it is necessary to form just the right bonds, and not to form unnecessary ones that will interfere. Often when lists of dates or words for vocabulary are learned they are always studied in the same order. The whole list can then be repeated, but any one date, or the meaning of one word, cannot accurately be given, because its position in the column and nearness to other words or dates have been depended upon.

Recall and Recognition(追憶和認識). Notice that these two are different, and use different bonds. When you wish to recall a name, for instance, you must find some stimulus in your mind that is connected with it, and that will bring it to memory. When you merely recognize a name as one you have heard before, you have the stimulus given, and need only respond by any of the associations that have been formed with it. These are likely to call up others, until the recognition is complete. There are many words that we read that we never use ourselves, and do not need to recall. If we practice recognition of them it is sufficient. If we wish to use them, on the other hand, this must be practised separately if progress is to be rapid.

Can Memory be Improved? When we ask this question it is important to distinguish two possible uses of the term "memory." If it means a *capacity*, of course it cannot be improved, for a capacity is always inherited. It would depend on the structure and nature of the neurones. The synapses of some people seem to take and hold impressions more easily than do those of others. While memory as used in this sense might perhaps be far stronger along some lines than others, as Music and Mathematics, for instance, this would be far less true than of memory if we define it as *general ability* to remember. "General" here would hardly mean more than "average", for ability is bound to differ along different lines according to interests and past experience. Memory depends mainly on past bonds with which new ones may be connected. Each professor remembers a very large number of facts connected with his own subject, and can add to them with ease, yet he finds it difficult to remember in other subjects, or to keep in mind the simplest errands for his wife. A postman or shop-keeper of very little intelligence or education can often remember a multitude of names or prices that would make the professor marvel. It seems true to say that any normal person can acquire the ability to remember easily in practically any field, if he or she is willing to work hard enough to develop the necessary interest and to find form the necessary bonds.

Observation and Experiment. How have psychologists learned the facts? Most of the suggestions for efficient memorizing might be developed from common experience or observation. There is always a danger in this, however. Many people are ready to say that their experience with learning by whole and by parts shows the latter to be more effeetive. With some this may be true, but it is more likely that they have really had no experinece on which such a conclusion may properly be based. Possibly they have tried learning by the whole, and naturally found that the first few

repetitions gave no apparent result. They became discouraged and felt they had proved the method worthless. Or they tried it with lack of confidence, expecting not to remember. This is sure to affect the result. Or if they honestly gave it a trial, it may be that in part learning they used active practice in recall, while because the selection was long they read and reread when learning by whole. They did not realize that they had not made a fair experiment, in which "other things were equal" "Other things being equal"(他事均等) is a phrase that means that an experiment is made in which conditions are entirely alike or equal except for the one difference in method which is being tested. Only such an experiment can give an accurate result When such experiments were actually made, the results are shown by Gates as follows:

LEARNING OF POETRY (From Pyle and Snyder)

Number of lines	Part method Time to learn	Whole method Time to learn	% of time saved by whole method
20	16' 12"	14' 17"	12
30	27' 23"	23' 53"	13
40	38' 44"	35' 16"	9
50	48' 31"	43' 35"	12
60	81' 10"	63' 38"	22
120	168' 55"	139' 35"	17
240	431' 20"	348' 00"	19

RECALL OF POETRY (From Larguier Des Bancels)

	Learned by part method	Learned by whole method
Number of words recalled after one week	26.6	40.6
After two years	6.4	16.6
Per cent recalled after two years	24	40

A large amount of experimental work has been done on the question of the improvement of memory. The method has been to test the ability of certain people to memorize certain material, then to train them for a period in memorizing other kinds of material, and then to test them again

on material like that used at first, to discover whether their ability has increased or not. The results have been very confusing. James made the first well-known experiment along this line upon himself, finding that after two weeks practice on memorizing he actually memorized more slowly than before. But he took the second tests when tired, quite destroying the value of the experiment. He quotes other experiments, however, to show that memory does not improve in this way. Ebert and Meumann conducted another and much more extensive experiment, but the improvement that they found may have been largely or entirely due to practice received during the tests, rather than to the period of training with another kind of material. They should have given only the tests, without the training, to other persons—then they could have tested the effect of the period of training, other things being equal between the two groups of persons. Dearborn found that ten people all improved much more in the ability trained than they did in other sorts of memorizing, even those quite closely similar.

The evidence is far from perfect. Only small groups of people have been used in most of the experiments and it is very difficult to be sure that other things were equal. But experiment on the whole seems to agree with what we should expect from an analysis of bonds. Certain bonds may be used in more than one kind of memorizing, such as habits of paying close attention, and use of the principles suggested early in the chapter. But memory is not like an ax that may be sharpened in one way, and then used to cut many kinds of material equally well.

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1. Do we ever forget anything?
2. When learning by simple repetition, it may happen that after five repetitions none of the material can be recalled. Does this mean that no progress has been made? How could this be determined and measured?

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3. Give *two* reasons why line (a) can be learned more easily than line (b), though both contain the same syllables:
   a. It is important to keep in good physical health.
   b. Por good calkeepit si imhealthphy is to in tant.
4. A foreigner learns to read Chinese characters in sentences. Why does he find it difficult to recognize them when alone? Explain in terms of bonds.
5. Why may a foreigner find that he can recognize two thousand characters while he can write only two hundred? Will much reading help him to write more?
6. Which of the principles of memorizing have been made best use of in Chinese education of the past? Which have been followed least?
7. Are any of the bonds formed the same, in memorizing Psychological terms and in memorizing dates?
8. Explain the *four* different uses of the term "memory" given in this chapter.
9. What is over-learning? What is the difference between recognition and recall?
10. When two groups of people are used to test which is better of two methods of learning, what are some of the "other things" that must be equal if the experiment is to be of value?

CHAPTER 5.

Thinking---In Terms of S-R Bonds

思想一從刺激和反應的聯結方面看來

The existence of a Science depends on the existence of exact laws that do not change. In Physics and Chemistry the same experiment under the same conditions always brings the same result. In Biology there are certain laws of growth that are always true no matter in how many different forms they show themselves. We have attempted to discover the laws governing the formation of bonds, and to a certain extent we have succeeded. When we wish to *remember*, that is, to cause certain bonds to repeat their action, we have certain rules to guide us.

But how about thinking, judging, imagining, deciding? Can these be explained by fixed laws? Here each situation seems to be *different* from the last. We must think *new* thoughts. How can *old* bonds be used?

A New Situation. Consider this account of what happened when a class of Scotch pupils was given this senseless problem that was a new situation for them: "If 7 and 2 make 10, what will 12 and 6 make?" Notice carefully the use of trial and error, the use of old associations, and the working of the law of effect.

A look of dismay passed over the seventy faces as this apparently meaningless question was read. Everybody knew that 7 and 2 didn't make 10, so that was nonsense. But even if it had been sense, what was the use of it? For everybody knew that 12 and 6 make 18— nobody needed the help of 7 and 2 to find that out. Nobody knew exactly how to treat this strange problem.

Fat John Thomson, from the foot of the class, raised his hand, and when asked what he wanted, said:

"Please, sir, what rule is it?"

Mr. Leckie smiled as he answered:

"You must find out for yourself, John; what rule do you think it is, now?"

But John had nothing to say to such foolishness. "What's the use of giving a problem and not telling the rule?--that's what John thought. But as it was a terrible sin in seventh grade to have nothing on your slate, John put down various figures and dots, and then divided and multiplied them about.

He first multiplied 7 by 2 and got 14. Then, dividing by 10, he got 1 2/5. But he didn't like the look of this. He hated fractions. Besides, he knew from bitter experience that whenever he had fractions in his answer he was wrong.

So he multiplied 14 by 10 this time, and got 140, which certainly looked much better, and caused less trouble.

He thought that 12 ought to come out of 140; they both looked nice, easy, good-natured numbers. But when he found that the answer was 11 and 8 over, he knew that he had not yet found the right way; for remainders are just as bad in answers as fractions. At least, that was John's experience.

Accordingly, he rubbed out this false trial of division, and again tried multiplication. When he had multiplied 140 by 12, he found the answer 1680, which seemed to him a fine, big, sensible sort of answer.

Then he began to wonder whether division was going to work this time As he proceeded to divide by 6, his eyes gleamed with triumph

"Six into 48, 8 and nothing over, -2-8-0 and no remainder. I've got it!"

Here poor John fell back in his seat, folded his arms, and waited patiently till his less fortunate fellows had finished.

James, the brightest boy in the class, knew from the "if" at the beginning of the question that it must be proportion. That was all plain enough, so he started, following his rule:

"If 7 gives 10, what will 2 give?—less."

Then he put down

7:2::10:

"Then if 12 gives 10, what will 6 give? again less." So he put down this time.

12:6

Then he went on steadily to follow his rule: multiplied all the second and third terms together, and duly divided by the product of the first two terms. This gave the very unpromising answer 1 3/7.

He did not at all see how 12 and 6 could make 1 3/7. But that wasn't his business. Let the rule see to that. (Slightly adapted from Adams)

It can be seen that this kind of thinking depends on bonds just as much as memory does. And all the thinking that we do depends on bonds just as much. How this is so can be better understood after a study of *analysis*, *abstraction*, and *conception*.

Analysis (分析). A very large part of thinking consists in breaking up a total situation and reacting to different parts of it in different ways. The baby is told that a certain animal is a "dog" and then calls a horse, or a donkey, or a cat, or perhaps even a chicken, also a dog. It *perceives* only a moving animal. Later on perhaps any large animal will be a "horse" and any smaller animal will be a "dog". Great difference in size is reacted to differently, but only gradually will bonds be formed between the details. Ability to distinguish clearly between an axone and a dendrite, or between the meaning of the terms "ability" and "capacity" for instance, comes only with long training in thinking. Such ability comes only from familiarity with the subject-matter involved. Even an intelligent foreigner beginning the study of Chinese characters will see 聽 and a little later on will perceive 德 as the same character, though they would not be confused with 大. Only the general size and shape are responded to differently or only one element is responded to at all. Not all of responding to details is done by consciously picking them out. Here is a man who seems to be a good judge of character. He seems to be able to *feel* in some way after talking with a person whether that is sincere, or honest, or persevering. He cannot tell just how he does it. The rules that he himself thinks he uses may be found by careful observation to be incorrect. He is responding to certain small signs that cannot be defined, and yet that bear some relation to traits of character. A famous plant-grower named Burbank could tell by a glance at a young tree whether it would later develop into

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a large one of good quality—he was seldom wrong, and yet he himself did not know to just what elements he was responding.

Animals also may have the power of analysis in a high degree. Many are said to be able to know when to prepare for changes in the weather, undoubtedly by responding to small signs. A famous horse was said to perform calculations in arithmetic and to answer questions, pawing on the ground to express numbers. It was finally found that he was probably responding to unconscious changes in the expression or the attitude of his master when the correct number had been reached, changes that were too slight to be noticed by onlookers.

Abstraction (抽象). After the child has learned to respond to many differences, it gradually learns to notice *likenesses* that were not seen at first, in objects apparently very different. To do this it must "abstract" certain qualities from the objects or situations around it.

> A mother had attempted to teach her child the meaning of "square" by presenting the top of a box which was shown while the word "square" was repeated and explained. When the father was told of the lesson, he held up a paper, asking "What is this?" "A paper," was the response. "Yes, but what kinds of a paper?" "A white paper," etc. No effects of the lesson could be secured by the use of cards and other objects, but when directly asked "What is a square?" the child ran to the box, exclaiming proudly, "That is a square." (Gates)

The word "square" had been connected with the box by associative shifting, and probably the child would not have called a box of a very different shape also a square. But the quality square had not been separated off from boxes. There had probably been analysis, but there had been no abstraction. In order to obtain an idea of the abstract quality "square", the child must be shown many objects of different sizes and kinds, such as a note-book, a room, a field, a small seal, a drawing on a piece of paper, and city streets of that shape. Notice that giving an abstract idea means forming a bond that can be used in new situations, so long as they contain this one same quality.

Training in thinking means very largely learning to respond to situations that are different in many ways, as though they were the same. James tells about a friend who took his dog down to his small boat on the shore, but found the boat full of dirt and water. He needed his sponge to clean it out with; but the sponge had been left at the house some distance away. He made gestures of wiping out the boat, and said to his dog "Sponge, sponge, go get the sponge." The dog had never been trained to respond to this word, but he went back to the house and brought back the sponge in his mouth. James does not believe that this was a case of reasoning, but says that it would have been one if the dog had brought back some other article that could have been used instead, but which the dog had never seen used in the boat, such as a dipper or a mob. Foreigners find that when they speak Chinese they can usually be understood much better by educated and intelligent pegple than by others, even when they use very simple language. *Why do you think this is so?* The doctor must learn to recognize the same fundamental trouble needing attention, under many different forms. The lawyer and the judge must see the *principle* involved in each case and react to it rather than to accidental accompanients. The chemist thinks of soot from a railway train and a diamond as being different forms of the same element, carbon, although such a likeness could not possibly be seen if education had not led to abstraction of this quality.

Conception (概念). Abstraction of a particular quality leads immediately to conception of that quality, or of a class of objects having that quality in common. We develop a concept of the number 6, or of the relationship of oppositeness, or of pity, or of a chair. When a concept is clear it can be defined, for the making of a definition means that all the possible uses of that idea must be included, and no others. It has grown out of the abstraction of a certain quality or group of qualities, until it can stand alone represented by its own symbol in the mind, and can be applied to any new situation to determine

whether it fits. The development and use of concepts is the main part of thinking, and we are constantly making new ones. Each new Science or set of ideas has its own terms, but each of these represents a concept that has been added and which could not be accurately represented by any term formerly used, unless it were given a very special or "technical" sense.

Of course the memorizing of somebody else's definition does not mean in the least that the concept is clear to us ourselves. Memorizing may be purely a motor habit with no understanding connected with it. Unless examples can be thought out, and unless it can be determined with some certainty whether new cases given rightly belong under this concept, the concept is not clear. Only so far as the study of a definition aids in these two things is it of help in thinking.

Imagination. Imagination is the combining of ideas in the mind without regard to whether the result agrees with actual facts. Different qualities that have been abstracted from certain objects or situations are applied to new objects or situations, and new concepts are developed. It can at once be seen that imagination may be of the greatest aid to thinking in developing multiple response. All *discovery* in thinking must depend on the finding of new combinations of ideas, that are of value. This is creative thinking. At the same time much time may be wasted by useless imagining, that does not distinguish which bonds are likely to prove more valuable than others.

Observation and Experiment. How have psychologists learned the facts? There has been much observation of animals, to determine whether they ever use concepts or not. It seems probable that they do not. They use analysis, that is, notice differences, but they do not abstract general qualities.

An interesting experiment which was accompanied by careful observation is that made by Ruger on the solving of puzzles. He had a number of people attempt to solve puzzles that required manipulation with their hands, and questioned them as to their ideas and feeling as they worked.

Some of them merely fumbled with the puzzles with their hands, with no particular method in mind. Finally the solution would come by chance and attention would then be directed toward a certain element in the puzzle, leading to a saving of time on the second trial. This was pure learning by trial and error, much as animals might have done.

Others tried to analyze the puzzle part by part before even beginning to work with their hands. They noticed likenesses and differences between different parts of the puzzle, and used concepts that had been obtained from experience with other puzzles. It was found that this alone did not lead to the best effeciency, if it did not go along with a certain amount of manipulation of the puzzle itself. Those who succeeded best usually gave a certain amount of blind multiple response with their hands, keeping a sharp lookout to be ready to abstract out elements that would be likely to lead to success. Abstraction is easiest when it is based on experience.

Sometimes one element in the puzzle, after being for a long time confused in the total situation, would suddenly be analyzed out and would lead to success Sometimes workers would fail to succeed for a long time because they constantly changed their methods—sometimes the opposite mistake would be made. One man persisted so firmly in a wrong idea that even after a change was suggested he worked over an hour trying to make his particular way succeed. It was generally found that confidence coming from success in solving certain puzzles was of aid in solving others.

Trial and error and abstraction seemed to go hand in hand in the efficient solution of puzzles. Another well-known experiment shows the importance of concepts in thinking, and also suggests the way to develop them.

Judd and Scholckow report the testing of boys about twelve years old in hitting with a small dart a target placed under water. They explained carefully to one group of boys the principle of refraction of Physics, that is, why distances and directions look different under water when viewed at an angle. Another group was given no explanation. "These two groups began to practise with the target under twelve inches of water. It is a striking fact that in the first series of trials the boys who knew the theory of refraction and those who did not, gave about the same results. That is, theory seemed to be of no value in the first tests. All the boys had to learn how to use the dart, and theory proved to be no sub titute for practice. At this point the conditions were changed. Th twelve inches of water were reduced to four. The differences between th two groups of boys now came out very strikingly. The boys without theory

were very much confused. The practise gained with twelve inches of water did not help them with four inches. Their errors were large and persistent. On the other hand, the boys who had the theory, fitted themselves to four inches very rapidly."

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1. Try to imagine an absolutely new kind of animal, in no way like any you have ever heard of. What bonds are you using?
2. Why do Chinese sometimes complain that all foreigners look alike, and foreigners complain that all Chinese look alike?
3. If you wish to teach the meaning of "noun", which set of examples would you give to a child:

   A. The *bird* sings. A *dog* runs rapidly. Her *dress* is brown.

   B. The *horse* is large. Where is my *pencil*? Please get the *umbrella*. (Gates.) Why? Would you use a definition?
4. Should the first chapter of these readings have given a careful definition of Psychology? Have you a clear concept of the science of Psychology now? Give suggestions for the use of definitions.
5. If the professor of Chinese insists that all papers should be very neat, are students likely to improve their papers for other courses also?
6. Can a good Chemist usually reason well in Economics? Why?
7. Is a scholar who reasons in his study likely to think more or less accurately about practical affairs than a man of equal capacity who is daily dealing with them?
8. Is a strong "set', an aid or a hindrance in reasoning?
9. How do you explain the results obtained by Judd and Scholckow?
10. From a study of this chapter and the questions above, draw up as complete a list as you can of the *conditions of good thinking*, For example, the possession of accurate concepts would be one item on the list.

CHAPTER 6.

Emotion

緒情

Up to this point we have discussed responses of two very different kinds, actions of muscles and glands, and conscious sensations and thoughts or feelings of pleasure and annoyance. Where can emotion be placed? Let us suppose a man in the woods seeing a bear fast approaching him. At first he stands motionless and breathless. Then his heart beats rapidly and violently, breathing is hurried, his mouth becomes dry, digestion is suspended, sweat may appear on the body surface, the eye pupils are dilated and muscular tension of the whole body is increased. Along with this, the man now exhibits an unusual amount of bodily strength and endurance. He rushes through the woods, bounds over the obstacles in the way, and finally gets back home to find himself exhausted all over. Such a state of affairs is commonly described as the emotion of fear. Notice that there are at least four different kinds of responses that the man has made:

1. Perception of the bear, from sensations received through the eye.
2. The feeling of fear.
3. The running movements of escape.
4. The responses *inside* the body, in the glands and other internal organs.

Study these four kinds carefully. *Are they all necessary for a case of emotion to occur. Which of them could be omitted while the man still suffered the emotion of fear?*

The Neural Basis of Emotion. In our study of the nervous system it was noticed that besides the main system

there is also the autonomic nervous system. It is so-called because its nerves directly control our internal bodily activities, and they enjoy a fairly large degree of independence. We can not cause sweat to flow in the direct way in which we can move an arm. In this autonomic system, axones do not run direct from the spinal cord and brain stem to the muscles and glands, but first to nerve centers lying distant from the cord a little way. These groups of cell bodies are called ganglia, (神經節) and here messages can be split, and one axone can pass its current on to several other neurones at once. The automatic system may be divided into three groups of nerves.

1. The cranial (頭部的) division, which is connected with the lower part of the brain stem and upper part of the cord.
2. The sympathetic (胸和腰部的) system, which is connected all along with the middle part of the cord.
3. The sacral (尾部的) division, which is connected with the lower part of the cord.

As the cranial and sacral nerves, while controlling different organs, have the same function of opposing the action of the sympathetic system, it may be more clear to think of them as forming one cranio-sacral system. The cranial division, for instance, retards the heart activity and favors digestion by causing the gastric juice to flow and the stomach to make its churning movements. while the sacral system causes the bladder, rectum and sex organs to function normally. But the action of the sympathetic division brings about striking changes of an opposite kind. Scientists have observed the stomach movements of a cat that had just been given food. A dog is let into the room and barks fiercely at the cat. Immediately the observed stomach and intestinal movements cease. Secretion of both the gastric juice and saliva is diminished, the latter causing the dry mouth common in anger and fear. The heart beats more rapidly. The lungs are stimulated, and breathing becomes deeper and more rapid. All these marked changes are brought about

by the action of the sympathetic system upon the smooth muscles of the stomach, intestines, heart, lungs and the various glands.

But the excitement of the sympathetic system has yet another important effect It increases the amount of secretion of the adrenal glends, two small bodies near the kidneys. Besides its influence over the heart, lungs and many other organs, this secretion called adrenin, has a strong effect on the "striped" muscles of the body, making them more sensitive to nerve impulses. The striped muscles are those controlled by the main nervous system, most of which we can move voluntarily and independently of each other. The smooth muscles are slower in their action, and control internal bodily processes, such as digestion. Adrenin also causes the liver to pour into the blood abundant sugar for use during muscular work, and also to secret a substance that promotes clotting of the blood.

Emotion and Consciouness. When we *feel* afraid or angry, or happy, why do we have these feelings? With what nerve currents are they connected? It is generally believed now that a large part of our conscious response is determined by the sensations that come to the mind from the internal organs of the body. When the cranial system is working, quiet and pleasant sensations are coming up from the digestive organs. When the sympathetic system is stimulated, the sensations are stronger and cause a feeling of excitement (激動). But this cannot entirely determine the emotional feeling. For the internal changes due to anger and to fear are at least very largely the same. The difference must lie either in the kind of stimulus, or in the nature of desire to act, or *impulse* (衝動). According to the James-Lange theory of emotional feeling, the feeling is determined by the nature of outward action. James stated this in very extreme form in the words "We feel sorry because we cry, angry because we strike, afraid because we tremble." While this theory is not nearly so foolish as it sounds at first, the facts should not be stated in quite this way. It is not the outward acts that might be suppressed that are of the greatest

importance in causing the emotion. But it may be true that it is the impulse, or the tightening of our muscles that we cannot help making, even though we are barely conscious of it, that causes the feeling of that special emotion to arise in consciousness. The mere act of whistling when frightened, or smiling when angry, would not then change the emotion, as James tends to hold·

The Meaning of Emotion. What is the meaning of all the changes that go on in the body during emotion? To answer the question as to why these responses have arisen in the race, we must go back to conditions of life at the time when they arose. Our savage ancestors were probably living in forests and in caves, and fighting with beasts and with each other. *Do you see any use in the strongest emotions, of anger and fear for instance*? There is a theory of emotion called the "emergency theory" (危急説). The name suggests what it is, that emotions *prepare the body* to meet special emergencies. Go back to the bodily changes that are caused by the sympathetic system. Notice how many of them either *supply strength* to the body, by stimulating the heart and lungs and adrenal glands, for instance, or *stop* bodily processes that are not of *immediate* importance, such as digestion, in order that all energy may be concentrated on meeting the great need. It is little wonder that when chased by an angry animal, a boy once jumped a fence so high that even when he was grown to be a man he could never again do so, even after much training in athletics. After working all day, an English woman got up from bed and ran seven miles very rapidly to where an explosion had taken place, with the strength given by anxiety for her husband and son. Many mighty deeds in battle used to be done under the stimulus of anger.

The emergency theory of course applies only to the strong emotions connected with the sympathetic system, and much less well to some of these, perhaps, than to those we have mentioned. The emotion of love connected with the

cranial system, needs no explanation, nor do the mild and pleasant emotions of satisfaction and comfort arising from the working of the cranial system.

The Use of Emotion Today. The emergencies for which anger and fear arose were those of savage life. Such emergencies seldom arise today. Many people go through their entire lives without being really in danger from wild animals. Disputes are settled by law, not by fighting. It is true that we can learn to connect our emotions with new stimuli, so that we come to fear disease germs and not dark places, and swift moving automobiles on the street rather than at being accidently pushed in the street. But there seems to be no need of the sudden bodily strength that comes with emotion to meet such emergencies as these.

To determine the value of emotion we must inquire further, and see its relation to thinking and to the formation of habits. Its influence on the former, thinking, would at first sight seem to be almost wholly bad. We all know that when people are excited they will at times say and do the most foolish thirgs, and intellectual tasks are always likely to be done less efficiently when emotion is strong. The emergencies of savage life called for bodily rather than mental power for the moment. A crowd stirred to anger by a speaker may perform acts that its members would never have believed they could ever be so foolish as to perform—it seems to the onlooker to become much like a crowd of savages themselves.

At the same time we must recognize that thinking is not always correct because it is calm and perhaps logical. A strong stimulus may be needed that will break through and lift it to a higher level altogether, and this stimulus may sometimes be supplied by emotion. With regard to habit formation the same thing is true. With consciousness intense and neurones all through the body involved, a man may in a moment form bonds of permanent strength under the influence of emotion. Strongly emotional experiences are usually remembered with great vividness. Habits of thought and action formed at this

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time may influence the whole of later life. The great danger lies perhaps in performing some foolish act under stress of excitement, or accepting some prejudiced belief, and then clinging to it and defending it forever after.

Can emotions be strengthened by use and weakened by disuse as can habits? It is difficult to say. Certainly anger can come to control the life of a man who continually gives way to it, and the habit of worry that wastes such a large part of our lives should never be yielded to. On the other hand, it may perhaps be true that emotions that are denied expression may show themselves in undersirable ways and prevent the development of an all round personality. We know very little about this yet. The safest thing to do seems to be to give this part of our personality a chance for some expression that can do no harm and that may lead to good. This is to sublimate. If we must hate, let us hate our own wrong-doing and that of others, and not hate the man who does better than we. If we must fear, let us fear placing ourselves and others in unnecessary and useless danger of any kind. James has suggested that the fighting instinct, so closely connected with the emofion of anger, could be directed into hard physical work in industry for the welfare of the country, rather than into war. Probably it is more effectively turned into the channel of healthfully exciting athletic sport.

Observation and Experiment. Much interesting work has been done upon the internal bodily changes during emotion. One means of observing an animal's stomach movements is through a deep ulcer. A man once lived for years with a hole in his stomach. Tubes are often swallowed through which movements are recorded in various ways. Blood is analyzed by the chemist for the presence of adrenin, and the latter has been injected under varying conditions to determine its effect. The flow of saliva and of digestive juices are exactly measured. The clotting of blood can of course be studied after it has been taken from the body.

The removal of various parts of the nervous system of animals has given interesting results. Sherrington has shown that even after the intestinal nerves and spinal cord had been cut, dogs showed with their voice and features all the marks of anger, joy or fear. A difference between the outward expression of anger from that of other emotions is shown by the fact that a dog without cerebral hemispheres will act as though enraged when properly stimulated, though he will show no sign of joy, affection, fear or sexual feeling. It would seem as though the coordinations of anger were perhaps more simple than those of the other emotions.

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1. Is emotion instinctive?
2. If the sympathetic and the cranio-sacral systems were stimulated together, what would happen? Why?
3. Place the four kinds of responses making up an emotional reaction in the order in which they occur
4. Why do you think it is that many people fear harmless snakes?
5. Can the same stimulus call forth two different emotions?
6. Does not the existence of emotions of sorrow, that may cause ill-health show that emotions did not develop because they were useful?
7. Is there such a thing as the habit of being melancholy?
8. Do you think it is a sign of strength or of weakness to have strong emotions frequently?
9. Are some emotions always pleasant, and others always unpleasant?
10. Can a man be very angry at his own laziness and yet continue to be lazy?
11. Is religious conversion by means of emotion a good or a bad thing?

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CHAPTER 7

Attention and Interest

注意和興趣

It is a significant fact that we do not respond to all stimuli at once that are present in any given situation. In going to the library, for instance, you do not pick up all books that come into your sight. Rather, you approach some particular shelf and pick out some particular books to read. While reading, you do not seem to comprehend the conversation going on around you. You are *attending* to your book. Sometimes you may be so *absorbed* in your reading that you even forget your dinner or miss your class. Then we say that you are greatly *interested* in the subject. In all these examples, two things apparently require explanation. First, why should we attend to some particular books rather than others; and second, why are some books but vaguely attended to and others with such deep absorbtion? It is not enough to say that we have the *will* to so act. Some definite neural mechanisms must be responsible for so directing and concentrating the nervous energy required in such attentive activity.

Forms of Attention. There are three different kinds of attention. The names are confusing, and should be clearly fixed in mind. *Involuntary* (無意的) attention is the attention we cannot help but give, as to sudden noises or strange sights. *Voluntary* (有意的) attention is that which we give with an effort as when we listen carefully to a difficult lecture or study an uninteresting lesson. It may be thought of as *willed* attention. *Nonvoluntary* (自然的) attention is based on *interest*, and is the kind we use by far the greater part of the time. Con-

versations with friends are rarely carried on by any but non-voluntary attention.

One example will illustrate these three kinds. A student sits down to study, and tries hard to master a history lesson. After a few minutes he becomes deeply absorbed in working out the answer to a question asked at the end of the chapter, when a friend comes into the room. He is noticed only when he speaks. *State at just what point each kind of attention was being given.*

Involuntary attention is typically instinctive, and we can imagine that it developed as a means of protection to the race. A sudden sound, a moving object, especially those especially loud and swift, so often meant serious danger that for a man to be without this kind of necessity for immediate attention would soon mean death. Later on many different kinds of stimuli may come to excite involuntary attention. The coal miner notices a faint smell of poisonous gas no matter what he is attending to at the time. The cry of her baby that others do not hear at all will at once call to itself the attention of its mother. The sound of our own name spoken even when confused in much other talking will force us to attend immediately.

Such cases as these show that the forms of attention cannot be sharply divided from each other, for nonvoluntary attention is not fundamentally different from this. The latter term is used when *interest* is more long continued, and when a feeling of pleasure accompanies the attention given. Such interest may be based quite directly on instinct, as when musical capacity leads a person to pay attention to music with very little training or none of a formal kind at all. Notice that the interest that leads to attention may be of three kinds. First, we are instinctively interested in the new and the strange. The first time an aeroplane is seen it receives close attention -later on it becomes familiar and is ignored. New subjects are often taken up with enthusiasm by students, soon to be dropped when they become „satle". Such interest is often called the instinct of curiosity.

Second, we are interested for exactly the opposite reason, not because things are new, but because they are old, because we have formed many bonds in connection with them because they have *meaning*. A man who knows much about birds is far more likely to be interested in them than the man who knows little. A new book on psychology will be of far greater interest to the student who has made some progress in that science than to the beginner. Each new fact is seized and connected up in many ways with previous facts learned. Where bonds are many, attention is easy to give.

When voluntary attention is given, on the other hand, interest is not centered in the thing itself to which attention is given. Attention is paid for a certain purpose. Lessons are studied for fear of low marks, when trying to find a certain house we pay close attention to street names and house numbers, the banker pays close attention to signatures and to the money he handles. When the purpose has been gained, or when attention to that particular thing can no longer help us, naturally attention is no longer given. There is no interest in the thing for its own sake.

Using the Different Kinds of Attention. Attention of each kind is necessary. Involuntary attention frequently leads to *distraction* (分心) and we sometimes wish that we were never forced to attend to anything. In modern life it is certainly less important than it was to savages. But even now a sudden shout may warn of dangers from an automobile, or of fire. Involuntary attention should be controlled but not entirely destroyed.

The ideal and by far the most useful form of attention is that which is nonvoluntary, based on interest that comes from knowledge. The worker who brings world progress is the man who *loves* his work, who like Edison the inventor can work in his laboratory or study for many hours at a time without thought of meals or of fatigue. Or the man whose knowledge through reading is so broad that he can pick up book on almost any

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vital subject and become absorbed in it at once because it has meaning for him. Curiosity is a useful trait and voluntary attention must be used in thousands of situations. But both of them should be thought of as stepping-stones to a permanent and intelligent interest that will make attention a pleasure rather than an effort.

We often hear it said that the man of strong character is the man with an iron will, and tend to think of him as constantly doing disagreeable things because it is his duty, and using voluntary attention on every occasion. When we examine the meaning of "will" psychologically, it seems to reduce to a question of set. Now the set that causes us to act rightly may come from the presence of ideas in our mind which work against and overcome our habits and immediate desires, or it may come because our habits and desires are of the right sort. In one case we have a feeling of effort and strain, and in the other we feel pleasure and interest in doing what is right. In both cases our acts are the same. It seems far better to act well naturally, with the use of nonvoluntary attention, than to have to fight ourselves and use voluntary attention. If the latter is used effectively at first the former will be easy later. The highest test of character is whether *pleasure* can be found in doing what is right.

It follows of course that interest may be bad as well as good nonvoluntary attention may be paid to useless or harmful activities as well as to those that are good. *List two or three main ways in which these should be sublimated or destroyed.*

Can we Attend to Twe Things at Once? *What is your own answer to this question?* If you are not certain, how could you experiment to determine the truth? Julius Caesar is said to have dictated to several copyists at once. Many people can add figures while reciting a poem. Do these facts answer the question?

Whatever your answer has been, it is necessary to decide

what is meant by "two things." When I read the letter I am attending to both the letters at once. When you recognize a friend, you may see many parts of his face and body together, and your response is to the *total person*, not to any one part. It has even been discovered by careful measurement that it is easier to recognize a whole word, if short, than a single letter. Most people can take in a phrase "at a glance." It is not correct to call each part of a total a separate thing. There are simple situations and there are complex situations to which we respond, and to which we can give attention. How is this separate from attending to two *separate* things? What is it that makes things separate rather than parts of one whole?

When a beginner plays the piano, he or she is likely to give attention to one finger alone, or at most to one hand. To be forced to use both hands at once causes distraction, and many mistakes are made. But later on, attention is all on the proper emphasis and speed, and the two hands work together and are attended to as one. The leader of an orchestra attends to the total sound at once. If any one instrument plays wrongly he then directs attention to that one instrument alone. But he reacts to a very complex situation just as easily as to a more simple one.

A Notable Experiment. The importance of these facts regarding attention can be better understood in connection with the study of an experiment by Bryan and Harter on improvement in sending and receiving telegraph messages. In reporting their results they make much use of "learning curves", which have already been mentioned in Chapter 3. These curves are most commonly drawn so that the height of the line shows the amount of progress, in this case being the speed, and the dis, tance to the right shows the amount of time spent in practice- in this case being in terms of weeks. The steeper the curve is, therefore, the faster is the improvement. The flatter the curve, the slower the improvement.

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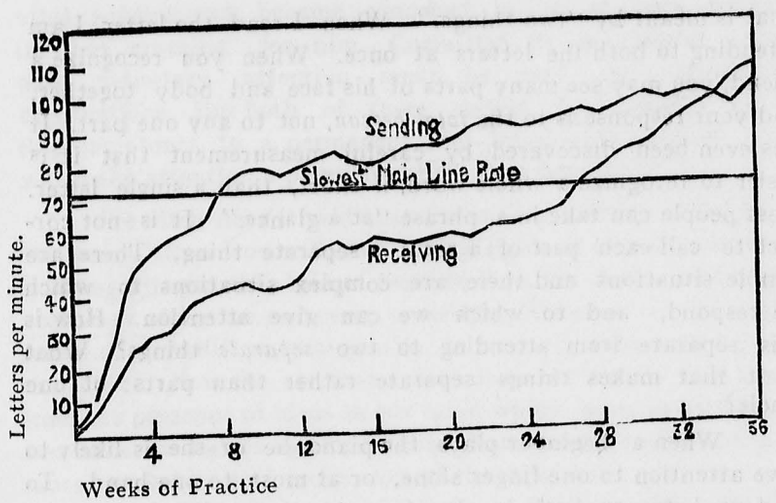

The figure shows the results achieved in the case of one of the subjects that they tested. There are several features that need to be explained:

1. The speed of sending is for a long time greater than the speed of receiving.
2. The speed of receiving finally becomes greater than the speed of sending.
3. The curve of sending rises rapidly until a little greater than that needed to do actual telegraphic work. At this point the improvement goes on only very slowly. This however is not true for all operators. The sending curve often continues to rise steadily even if more slowly until the *Physiological limit* (生理的限度) is reached. This is the point beyond which no amount of practice can make the nervous system respond more efficiently.
4. The receiving curve rises steadily at first, but before being high enough to make actual telegraphic work possible, there is a "plateau" or flat place in the curve, showing little or no improvement for many weeks. Almost all operators show such a plateau.
5. After a certain time there is another rapid rise, and in time the receiving curve may even rise above that for sending. "Moreover the history of expert telegraphers shows that after some years the receiving curve may ascend rapidly a third time."

The experimenters also report that years of daily practice in receiving at ordinary rates will not bring a man to his own maximum ability to receive. The proof of this fact is that men whose receiving curve has been upon a level for years frequently rise to a far higher rate when forced to do so in order to secure and hold a position requiring the higher skill. That daily practice in receiving will not assure improvemvnt is further seen in the fact that in many cases inferior operators after being tolerated for years are finally dropped because they do not get far enough above the dead

Careful thinking is necessary to explain these results. The first point is probably partly connected with the fact that the movements made in sending a letter by telegraph are simpler than the series of clicks that must be heard in receiving. But "one conclu sion seems to stand out from all these facts more clea rly than anything else, namely, hat in learning to interpret the telegraphic language, *it is intense effort which educates*. This seems to be true throughout the whole length of the curve. Every step in advance seems to cost as much as the former. Indeed, each new step seems to cost more than the for mer....As a rule, ordinary operators will not make the painful effort necessary to become experts." Here at least is a case where continued voluntary attention is essential to progress.

But further explanation is necessary. After their first experiments, Bryan and Harter went on to test three things separately;

a. rate of receiving disconnected letters.
b. rate of receiving disconnected words.
c. rate of receiving sentences.

The results showed that all three curves started off to rise rapidly together, with (b) a little faster than (a) and (c) a little faster than (b). Curve (a) soon reached its limit and became flat, Curve (b) rose for a longer time, but also reached a limit below the slowest commerical rate. Curve (c) on the other hand was about the same shape as the receving curve pictured in the figure, for it measured the same thing. There was rapid rise, a long plateau, and a further rapid rise.

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Be certain that you understand these results before trying to interpret them. *Draw these three curves.*

To determine upon an explanation for their results the experimenters asked a large number of telegraphers of every kind three questions:

A. To what is attention mainly directed at different stages of progress?

The answers agreed entirely, and were as follows: (a) At first one tries hard for each letter. (b) Later one attends to words. (c) The fair operator is not held so closely to words. He can take in several words at a mouthful, a phrase or even a short sentence. (d) The real expert has all the details of the language such automatic perfection that he gives them practically no attention at all. He can give his attention freely to the sense of the message, or, if the message is sent accurately and distinctly he can write it upon the typewriter while his mind is running upon things wholly apart. . .

B. How far can one "copy behind" in different stages of his progress?

It should be explained that receiving is practically always "copying behind." That is, one does not, or should not, guess from part of a group of clicks what the rest will be. Experts learn to wait. It is like counting the strokes of a clock just after it has done striking. The answers to the second question also agreed that (a) The beginner must take each etter as it comes. (b) Later he can wait for words. (c) A fair operator can copy behind several words in connected discourse. (d) The expert prefers to keep six to ten or twelve words behind the instrument. . . .

C. What happens when you have to receive a list of figures?

The universal experience of operators upon this point was expressed by one expert thus; "When I get a word indicating that a list of igures is to follow, I work terribly hard until I can catch up." He said he could wait for six figures if they were in groups of three separated by a comma, but if the figures were separated, he would want to be not more than three or four behind. In a word, he could hold in mind forty to sixty or more of the elementary groups of the telegraph code, if these made sense, but only three or four, if wholly disconnected, (Slightly adapted)

Look over again the paragraph on "Can we attend to two things at once?" The connection is now clear between the learning of telegraphing and the *size* of the units attended to. To

receive a whole sentence is very different from receiving each of the letters that make up the sentence. If the whole, or at least each phrase, can be attended to as *one* complex unit, of course speed will be very greatly increased. But of course this is far more difficult than to receive letters separately. For there are only 26 letters, while there are thousands of words and tens of thousands of phrases. It is little wonder that a long plateau should occur, while all these phrases were being worked into the neurones, until it might be possible to disregard separate letters and words almost entirely. Such learning is not the strengthening by exercise of a few simple bonds. It is the *substituting* of integrated units for the more simple units.

Few of us will wish to learn to send and receive telegraph messages. But the same principles apply to a tremendous amount of our learning. In what way would they apply to learning to play the piano, or to typewrite, or to speak and understand a foreign language, or to read? It is more difficult perhaps to see how they apply to such subjects as History, Economics or Psychology, but they do just as truly. Integration of many minor facts or ideas into complex wholes here means the formation of concepts. Not until the historian has built up from hard work on detail such concepts as those of "The French Revolution" or "Nationalism" can he think rapidly and clearly in his subject, even though concepts such as these are far less definite and unchanging than the phrases of the telegrapher.

In all of these subjects plateaus occur very often, either through loss of interest or because the real progress that is going on does not show itself. The first of these causes is often the result of the second. It is vitally important to realize that all progress does not show itself at once, that integration may go on unnoticed, developing higher units that will make for great progress later on. If discouragement is avoided, interest maintained, and intense effort kept up, rapid progress in the end is all but certain. One of the most fatal mistakes is to believe that the physiological limit has been reached when it is only a plateau.

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Observation and Experiment. How has attention been studied by psychologists? While many other experiments have been made on learning, it is of course impossible to measure interest and attention directly, so far as they are conscious. Ruger says that success in solving puzzles was found to depend on a high degree of attention, and that the latter depended to a large extent on physical condition. This seems to have been the result of observation during his experiments, rather than of exact measurement.

In connection with presenting the results of a large number of experiments on learning, Thorndike points out that even though there had been much practice before, it is very rare to find a function that cannot be improved by practice under experiment, and that very often this practice was very rapid.

"There are striking cases of individuals who have had enormously long practice as taken in the course of schools or trades, and who have kept at the same level of efficiency tor a long time, but who, nnder more favorable conditions, make notable advances. For example, Aschaffenburg had four experienced type-setters set type for an hour and a quarter, on eaeh of four successive days, in their own shop, with their own type." Their improvement was remarkable. The only explanation that seems reasonable for such facts is that the special interest and attention called out by the experiment brought about the improvement.

Exact experiments are possible to show what it means to attend to "one thing".

The experiments consist in exposing a number of objects for an interval of one-hundredth to one-fifth of a secoud —and noting the number of objects that can be correctly recognized in the period. It was shown that four or five impressions could be noticed at one time instead of one, and also that the number of objects which could be recognized was almost entirely independent of their size or complexity. Goldscheider and Muller found, for example, that it was as easy to perceive a comples group of dots arranged in some regular order, as it was to perceive a singlx dot.... It was found that if a monotonous series of clicks were given in such rapid succession that counting was impossible, eight single sounde

could be perceived in a single act of the attention: But if the sounds were rhythmically united unto groups, either by varying the intensity of the expernal impression or by subjectively accenting some of the tones, it was possible to receive forty impressions in a single act of consciousness.... The combination into rhythmical groups renders the group a unit of the same kind as the single object. (Abridged from Pillsbury.)

Other experiments have shown that a certain amount of distraction actually increases efficiency in tasks such as adding, or typewriting. *Why might this be true?*

Observation has shown that the receiving curve as found by Bryan and Harter shows the shape of the learning curve of certain college subjects. For instance "several teachers of chemistry have reported that progress of students during the first year's work in that subject is similar to that of the telegraphic student. There is the same period of rapid improvement in the first months, followed by a long period of slow progress. In the Indiana University chemical laboratory the latter period has long been recognized and named 'the period of depression.' "

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1. Point out the different kinds of attention illustrated in the following example: Three men are riding in an automobile when a sound is heard in the engine and the car stops. They get out to look for the trouble, and one of them is greatly interested in seeing the various parts under the hood and floor, which he has never done before. A second looks intently for the trouble, examining one part after another, and noticing details he was ignorant of before. The third not only locates the trouble quickly, but is much interested in comparing this type of engine with others he has worked with in the past.
2. How would you define attention? Is it a conscious response, or a muscular response, or both
3. Is being "absent-minded" a sign of dullness?
4. In what ways does a public speaker make use of the different kinds?
5. Which kinds of attention are possible to a dog? How would the list of stimuli to which it would respond with involuntary attention differ from such a list for a human being.
6. What is the relation between consciousness and attention? Does consciousness seem to have any use?

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7. In learning to play tennis, it is better not to concentrate too much attention on your hand and arm, but rather to attend to the ball and the place where you want it to go. Why is this so?
8. Make three lists in your notebook of cases in which you think each of the kinds of attention should be used.
9. Would the curve for learning to typewrite probably be more like the sending or the receiving curve for telegraphy? Why?
10. Why did Ruger find that attention seems to depend partly on physical condition?
11. Why is it necessary to continue to use voluntary attention in learning to telegraph, instead of changing over to nonvoluntary attention? To what extent must we continue to use voluntary attention in subjects such as Sociology and Biology?
12. Records in athletic sports are far better than they were thirty years ago. Is this because men and women's bodies are stronger nows than they were then?
13. Have you ever experienced a plateau in your own learning?

CHAPTER 8

Individual Differences

個人的差異

Differences in Traits. Everybody is familiar with the fact that no two individuals are exactly alike. First and most obvious is their difference in physical, or bodily, characteristics. Let us take height for instance. If we should measure and line up in order a group of a thousand adult men chosen at random, we would probably find a few to be extremely short, more to be a little taller, a great many of them bunched about the point of average height, and fewer and fewer at points higher and higher in the scale. What is true of height is also true of bodily weight, proportion, coloring, etc.

Individuals differ not merely in physical characteristics but also in mental traits, such as ability to add, spell, or sing, or ease of becoming angry. Take an unselected group of primary school children of the same age and from the same grade and ask them to work at a fairly simple problem of addition. You will find a few of them to be very quick and accurate, a great many of them slower and less accurate, and a few very slow and not accurate at all. If the problem given is more complex, we will find this same thing to be true of any unselected group of adults. Very few of them will be really fine in their general mathematical ability, very few will be exceedingly poor— most will be about average. The further from the average the fewer there are likely to be.

To return to height, we will now examine the following table which is based on an actual measurement of the height of

1171 sixteen-year-old girls, and gives number and percentage of the whole group that have reached each height:

Height in centimeters	*No. of cases*	*Per cent of cases*
136-139	2	0.2
140-143	12	1.0
144-147	54	4.6
148-151	159	13.6
152-155	280	23.6
156-159	310	26.5
160-163	218	18.6
164-167	102	8.7
168-171	31	2.6
172-175	2	0.2
176-179	1	0.1

(Cameron)

We may show these facts more plainly by drawing a diagram called a surface of frequency. A row of columns will be placed side by side, each column standing for the number of cases of a given height. The more cases there are at that height the higher the column will be. When we make a smooth line that follows the same shape we call it a *distribution curve.* A curve very close to the one obtained from the table above, the exact center of which is the highest point, and which falls away at just the same rate on both sides, is called a *normal distribution curve.* (常態的智方分配曲線) "From an inspection of such a curve, it appears, first, that the majority of persons possess the trait to an average degree. Second, that there are an equal number of persons above the average and below the average at each corresponding point. Third, that the number of persons becomes smaller and smaller as the amount of deviation from the average becomes greater and greater. And fourth, that there are no really separate groups with distinct gaps between them." (Cameron.) Both physical and mental traits, then, tend to be distributed according to the normal curve of distribution.

Why do we get this curious result with so many different kinds of traits? It is necessary to go to the Mathematics Department for the final explanation of the normal distribution curve. It is the necessary result of a large number of causes that act in different ways so as to balance each other. Certain factors would tend to make a man tall—certain factors would tend to make him short. When some of them are selected by chance to act together, he is *likely* to be about average. Just as if you should place fifty slips of red paper and fifty slips of blue paper in a hat and mix them well, and then draw twenty out without looking—you would then be likely to get both red and blue slips, and usually in about equal numbers. If you toss a copper into the air many times, it is very unlikely that it will always fall on one side. If you wish to illustrate the curve more carefully, take ten coins Toss them into the air a large number of times. Count each time how many fall on a certain side. This will be determined by a large number of tiny causes, their position before you throw them, the force with which they are thrown, the direction, the roughness of the ground, etc. Your result will be close to a normal distribution curve.

But why must a group chosen be "unselected"? Because this means that no one large cause will work on one side or the other, more important than all the other causes. If the primary children chosen were all those who had received either the lowest mark or the highest mark in arithmetic, or if our adults chosen for mathematical ability were all university students, would we obtain normal curves? No, for the first curve would probably be low in the middle, and in the second case, people who belonged on the lower part of the curve would not be able to enter the university—these large causes would *select* the groups and make the curve uneven. *Draw the shape you think these curves would take.*

The Causes of Differences. What are these many causes of differences between people? A list of them would cover many pages, but for the psychologist they divide into two large classes, those of heredity and those of environment. People differ by birth so that the same training given them will pro-

duce very different results. And people born with approximately the same traits may become through the influence of different training very far apart in many of their traits. Which of these two great sets of influences is more important? The great Chinese philosophers discussed this question long before Psychology as a science was born, and it will be discussed for many centuries to come. When causes work together so closely it is extremely difficult to state just the influence due to each. In a sense we can never say that either of two essentials is more important than the other. When rest and food are both necessary for life, their importance can hardly be compared. But a brief study of how heredity and environment operate will give some understanding as to how men differ.

Heredity (遺傳). Biologists believe that the inheritance of traits depends on the passing from parents to children of a large number of "determiners" that combine in different ways. An inherited trait that follows the normal distribution curve is probably based on many determiners which are present in different numbers and different combinations in different people. This is obviously not true of all traits. In sex for instance people are divided into two clearly defined classes; in color of eyes certain races are sharply divided between brown and blue. Such differences as these may de due to the presence or absence of one determiner only.

We saw in Chapter 2 that determiners are carried in the germ cells only. A boy or girl is not exactly like either parent because he or she receives determiners from *both* parents, and the particular combination received may make the child far different from father or mother. Often children will seem more their grandparents than like their parents in certain traits, because the latter did not have just the proper combination of determiners to make those traits appear. At the same time, it is a fact of common knowledge that children are far more likely to resemble their parents and brothers and sisters than people unrelated to them, and the existence of determiners explain

why. If you know nothing whatever about a person, but are acquainted with his family, you can probably guess his traits much more accurately than you could after a brief meeting with him.

Does difference in sex cause a difference in mental traits? So far as we know, the forty-eight tiny particles of the germ cell, called chromosomes, that carry the determiners, are alike in men and women except for one, which seems to be present in females and absent in males. On this one chromosome, then, depend those physical differences that distinguish the sexes, and perhaps some of the determiners that influence the instinctive tendencies to fight and to dominate, and those of loving and caring for children. While the *average* man may differ from the *average* woman in these regards, and possibly in others, surely these traits are not wholly determined by the sex chromosome. Many women like fighting and dominance more than most men, and many men care more for children than most women. As to differences in intelligence, or in tendency to emotion, or in sense of humor, etc , it seemsvery unlikely that there are significant differences between men and women. The sexes share equally in the determiners carried by the other 47 chromosomes.

Do different races carry different kinds of determiners? For certain physical traits they certainly do, such as color of skin and shape of features, and often size of body. It is possible that there are mental differences also, but these have never been proved and except perhaps in the case of certain savages found in Australia, and possibly some of the Negroes of Africa it is far easier to believe that the diferences between races and peoples that we note are due far more to environment than to heredity. In most cases it seems likely that mental traits depend on many determiners, while physical traits often depend on one or few, so that differences in the latter are more likely to be great then in the former.

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An obvious difference due to heredity is that caused by difference in *maturity*. The same child changes from year to year, not only because of what he learns, but because of the development of his nervous system *from within*. While his height keeps on increasing until he is perhaps from 15 to 20 years of ago, little affected by the environment, the general development ef the neurones on whicih learning depends seems to cease in most cases a little earlier, perhaps from 14 to 16 years of age. His *ability* may keep on increasing for the rest of his life, but his *capacity* to learn has reached its limit. Until that time development is rapid. Some educators have believed that it is not important for children to learn to read or to figure until perhaps ten years of age. If their bodies are strong they can then probably learn in a very short time all that other children have learned in the years before, and can then continue with them in school.

General Intelligence(普通智力). Up to this point we have been speaking of separate traits. But "people differ not only in specific traits, but in that complex of traits which is commonly called 'intelligence'. In the broadest terms, we mean by an individual's intelligence his competence and facility in dealing with his environment, physical, social and intellectual. This competence and facility, in so far as it is a native endowment, consists of a number of traits present in a more or less high degree. In a sense an individual possesses not a single intelligence, but many, as many as there are types of activity in which he engages. But one may classify intelligence under three heads, as does Thorndike: mechanical intelligence, involved in dealing with things; social intelligence, involved in dealing with other persons, and abstract intelligence, involved in dealing with the relations between ideas. Each of these types of intelligence involves the presence in a high degree of a group of different traits. Thus, in social intelligence, a high degree of sympathy, sensitivity to praise and blame, leadership and the like are more requisite than they are for intelligent behavior in the realm of mechanical

operations or of mathematical theory....What we rate as a person's intelligence is a kind of average struck between his various competences, an estimate of his general ability to control himself in the miscellaneous variety of situations of which his experience consists." (Edman.) General intelligence, then, when we use the term to include *inherited* traits only, depends on the nature and development of the neurones of the nervous system.

Correlation (相關). When the different traits are studied that go to make up such general intelligence, it is found that people who are high in some of them are *usually* high in others, or as we say, these traits show *positive correlation*. Correlation means a going together of traits. so that people who are high in some *are likely* to be high in others. This term correlation is constantly used today, and should be clearly understood. To express the relation between traits we use the *coefficient of correlation* (相關度), for which the statistical symbol is r. Suppose we take ten children and measure their ability in arithmetic and in reading, and mumber them in order in each trait.

	1		2		3		4	
Pupil	Rank in arith:	Rank in read:	Rank in arith:	Rank in read:	Rank in arith:	Rank in read:	Rank in arith:	Rank in read:
A	1	1	1	3	1	5	1	10
B	2	2	2	5	2	6	2	7
C	3	3	3	7	3	2	3	8
D	4	4	4	1	4	7	4	5
E	5	5	5	8	5	8	5	9
F	6	6	6	2	6	10	6	3
G	7	7	7	6	7	1	7	1
H	8	8	8	4	8	4	8	2
I	9	9	9	10	9	9	9	4
J	10	10	10	9	10	3	10	6
	r.=1.00		r.=0.51		r.=.000		r.=0.63 (Gates)	

If the best pupil in arithmetic is also best in reading, the second best in arithmetic is second best in reading, and so on, we will have perfect correlation, and r. will equal 1.00, as in Column 1. If *usually* but not always the better pupil in one subject is also better in the other, the ranks might be as in Column 2. A statistical formula here gives r. equal to 0.51. If the opposite is true, so that the better pupil in one subject is usually worse in the other, there will be *negative* correlation, as in Column 4. If there is *no relation* one way or the other 1. would be not far from 0.00 as in Column 3. The coefficient of correlation then may lie anywhere between plus one and minus one. In this case of arithmetic and reading, *which column do you think would show the actual facts most accurately*?

It is only in the past ten years that the facts regarding general intelligence have received wide attention. It was always known that some people are more stupid than others, and learn with greater difficulty. But it was not so fully understood that such differences are largely inherited, and cannot be removed by the best of education. The high correlation between intelligence traits was also not appreciated. This has made it possible for us to give "general intelligence tests." By testing the ability to perform several kinds of mental tasks we can measure in a rough way the general level of intelligence, and can predict about how difficult tasks the person will be able to perform along other lines. Some enthusiastic people have thought that we could test young children and decide just what sort of education each should have, so that much money might be saved by not trying to teach them subjects that their capacity is not great enough to grasp. Much has already been done along this line, both by guiding dull children into profitable work that they can do well, and by picking out especially bright children and giving them work hard enough to be of interest and to call out their real ability. Business firms are coming more and more to test applicants for positions, to learn whether they have the capacity to learn the tasks they are to perform. We are coming to see that

the average man or woman has not enough intelligence to understand throughly world and national politics, and that we must depend more and more upon experts.

On the other hand the dangers of this movement must be realized. We cannot yet distinguish accurately when stupidity is caused by heredity and when by bad environment. The latter can perhaps be corrected—the former cannot. Desirable traits do not always go together—where correlation is less than perfect there will be cases where tests will condemn as unintelligent some people who may have great capacity along certain lines. Sickness or nervousness may cause the result of the test itself to be far from a true measure of that particular trait. Only the tre nendous amount of scientific work that is being done along this line can give us hope that these evils can be largely corrected.

Environment (環境). The whole class of influences that come under this heading, and that cause difference between people, can only be briefly suggested. Native capacity is of course of no use unless it is developed. A box may be large, but unless something is put into it its capacity is worth nothing. Only through environment can capacity be developed and made useful. Its influence may be stated under three heads:

1. Environment must furnish food and healthful surroundings for the body. The nervous system is part of the body, and must be properly nourished. Even hereditary weaknesses may often be corrected by proper treatment. Deficiencies in some of the glands which pour out vital secretions into the body may cause terrible feeblemindedness that surely seems hereditary, but that can be completely corrected by the use of proper drugs.

2. Environment must furnish stimuli that will arouse the nervous system to respond. A musical genius will never become a great musician without some chance to practice. Probably many men have died unnoticed as soldiers who would have made great artists or mathematicians. If colleges are not provided for women, they cannot be expected to equal men in

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their intellectual achievements. Not only does environment give a chance for very exceptional talent to develop, but it gives a direction to the interests of people with ordinary traits. The child with good books in its home will not always develop a taste for worthwhile reading, but it is more likely to do so than is a child of equal heredity left without books or with those of a bad sort.

3. Environment rewards some kinds of responses and punishes others, forming bonds by the law of effect. A smile given the child when it acts rightly, and proper punishment when it does wrong will do much to establish in it good character. The *ideals* of a nation are tremendously important in deciding the actions of its people. Where military virtues are highly regarded there is likely to be much fighting. Where possession of wealth is considered to be success the nation is likely to be one of money-getters. The influence of a great book or the life of a great man may have tremendous influence in setting the standard for the live of others. Not only in the nation but in the group or the family has the ideal a powerful force. Is the spirit of the school one of selfishness or service? In the home, can the child obtain what it wishes by crying or by courtesy? What acts will cause a man to lose most face with his neighbors? These are the forces of environment that determine the actions of men in very large measure, and through their actions, their character.

Observation and Experiment. How have psychologists measured individual differences, and worked to determine their cause? Wherever possible of course the attempt is made to measure *objectively*, that is, in terms of time or amount that can be accurately stated. With many traits however this is impossible, and the measure must be *subjective*, depending on the judgment of people as to quality. Thompson, for instance, found that in the case of fifty university students, if the woman who stood *middle* among all the women were taken as a standard, the following percent of men would do as well or better in these traits:

Speed of reaction	68
Speed of tapping with finger for 20 seconds	81
Speed of sorting cards by color	14
Ability to notice and recognize faint tastes of sweet and salt	45
Ability to notice and recognise faint tastes of sour and bitter	22
Ability to notice differences in lifted weights	66
General information	50
Information about English literature	31
Information about physics	76

These are only a few samples of many traits measured objectively, and in very many cases little or no differences were found. Heymans and Wiersma on the other hand, used subjective measure, by securing estimates of men and women in a large number of traits, and Thorndike calculates from their results the following percentages, figured in the same way as by Thompson:

Industry	28
Independence	70
Zeal for money making	69
Patience	38
Humor	61
Talkativeness	40

In most of the other traits the differences were very slight. *Could any of these traits have been measured objectively?*

An interesting attempt was made by Voelker to measure honesty objectively, by placing groups of boys in situations where it was possible to act dishonestly and observing their behavior. Each boy would be sent to buy something and would be given too much change by the shop-keeper, for example, apparently by mistake. Such measurement as this is liable to much error, but it was probably better than subjective estimate would have been.

In the same way many tests have been made to discover differences between races and ages, and all kinds of groups which have been under different environmental influences. The *causes* of differences can only be determined positively when one cause alone is allowed to vary at a time, *other things being*

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equal. We can be certain that a difference is due to heredity only when it appears when the environment has been the same. This may be approximately true for brothers brought up in the same family, or of boys or girls in the same school and from the same kind of home. But the whole set of social customs differs so widely between the sexes and between races that it is very dangerous to conclude that heredity and not environment is the cause of difference. Are boys more athletic than girls because of heredity, or because they are expected to be so by custom, and receive approval for it? Do women seem more emotional among certain peoples because of their inborn, determiners, or because it has been considered a disgrace for men to show signs of strong emotion? These questions cannot yet be finally answered.

Another possible source of error is classing certain groups as "superior" because they happen to be stronger in certain traits tested. It may be true that the average Negro will not do so well on certain tests of abstract intelligence as the average man of another race. But he may be far superior in other ways, in musical capacity or in social qualities, for instance. Which race or sex is superior depends entirely on the point of view.

The study of heredity by biologists has been of the utmost importance in aiding our understanding. An Austrian monk named Mendel made probably the greatest contribution, formulating the laws of combination of the determiners. An understanding of Mendel's laws is essential to the serious student. Study through the microscope of the chromosomes has made the process far more plain. Beginning with Galton, the noted British scientist, studies have been made of the way in which certain families have produced far more than their share of great men—Galton himself was a cousin of Charles Darwin. Other studies have traced the large number of cases of feeble-mindedness, drunkenness, crime and vice occurring in families whose determiners were undoubtedly of poor quality. Difference in home influence

may explain part of these differences, but careful study of the facts makes it impossible to believe that the main cause was not hereditary.

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1. Explain: selected group, normal distribution curve, determiner, general intelligence, correlation, objective and subjective measurement.
2. Because of the importance of family relationship in heredity, some people fear very greatly the tendency of poor people to have many children, and rich people to have few children. They feel that the race is sure to become worse in quality. Many suggestions have been made, such as that of preventing certain classes of the population from having children. What do you think of such suggestions?
3. When colleges for women were first established, many people felt that they could never succeed because women were weaker than men both in body and mind. How do you think such ideas arose?
4. If children can learn in a short time when they are older how to read and write and figure, why are schools for young children considered so important?
5. Is an intelligence test really a test of ability or of capacity?
6. Arrange ten pupils in order to show perfect negative correlation between two traits, that is, r. =-1.00.
7. If a large proportion of people have not high enough general intelligence to understand the problems of modern govornment, should they be refused the privilege of voting? Is monarchy shown by psychology to be a better form of government than democracy?
8. Make as complete a list as you can of the traits that are mainly determined by heredity, and of those that are mainly determined by environment.
9. What help do you think psychology can give toward settling the probelm of choosing a life-work?
10. Could a psychologist obtain a fair idea of native race differences by compariug a hundred Chinese in the city of New York with a hundred white people, each group being chosen at random?
11. Do you think that the differences between sexes found by Thompson and by Heymans and Wiersma were mainly native or acquired?

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CHAPTER 9

The Psychology of the Reading Process

讀書時的心理作用

Modern civilization probably depends far more on the development of printing than on that of any other invention. Reading has become one of the most striking and important artificial activities of the human mind. Human knowledge is increasing by leaps and bounds—new Sciences are constantly springing up and each is being added to month by month. People of every nation are coming to realize more fully the value and beauty of the literature of other nations and races. The life of each people is being all the time more closely bound up with that of other peoples—morning newspapers bring reports from all over the world. When the few ruled the many, wide education was not so essential. Today we expect each of the members of a community or nation to share in its government and to care for its welfare. To be able to read rapidly and with undertanding is of the utmost importance for the educated man. Branches of knowledge are not separate. Sociology cannot be understood without some knowledge of Biology. Economics is coming to be more and more dependent on Psychology. We must know one thing well, but we must be acquainted in some measure with many things. And such acquaintance can come, unless too great a price in time is paid, only to the man who can *read efficiently*. Non-voluntary attention comes through interest; interest depends largely on number of bonds formed; bonds come through reading. Good thinking depends largely on multiple response; multiple response comes from bonds. Bonds come from reading.

Silent vs Oral Reading. When we speak of "reading" nowadays, we generally refer to that type which is done by oneself inaudibly. There is another kind of reading however which is sometimes referred to, called "oral" reading, where one reads aloud, often to other people. This type is not used so much in modern life, yet conservative schools continue to place a great deal of emphasis upon it. In the days before printing, when books were fewer and people less busy, oral reading was very useful, but now we find silent reading far more economical and valuable. Therefore modern schools are training students more carefully in effective methods of reading of this type. For Chinese college students who wish to read many English books, it is of the greatest importance to learn to read well silently. Ideally one should grow out of the slower habits of oral reading into the more rapid habits of silent reading.

In silent reading the meaning words,of phrases, and sentences should be attended to rather than the mere mechanical pronunciation of words, so that it will be possible to read more rapidly and comprehend more readily the wealth of material that the student mnst deal with. Reading should be regarded mostly as a tool which is to be used for the purpose of gaining information and ideas from books to aid one in the activities of life. Therefore no pains should be spared to make this tool efficient. The advice of Confucius may well be applied in this lconnection:

工欲善其事必先利其器

It is not uncommon to observe even among college students some who still read to themselves in a whisper or in suppressed tones with accompanying lip-movements. It is important that such habits be overcome if one is to be a rapid silent reader. In oral reading we have a necessarily slower process because the reading is limited by these muscular activities of articulating and pronouncing while silent reading should have no such limitation. In the first year of the Junior High School

the average student reads words nearly twice as fast as he can pronounce them. Smooth, fluent, oral reading, however, in the beginning of reading instruction is an important aid in the proper development of habits of silent reading in later years; but if too great emphasis in early years is placed on phonetics and oral reading without due attention to the training in the rapid recognition of words and phrases, the development of an efficient rate of silent reading will be greatly retarded.

Eye Movements. The process of reading is governed by the laws of physics and of muscular action as well as those of brain action. The eyes receive stimuli of reflected light waves from the printed page. These ether vibrations of varying frequency and amplitude from the black symbols on a page reach the retina of the eye. There, certain chemical processes are set up that give rise to nerve currents. These currents pass along the neurones to the visual sensory area in the back of the head. As we read, a succession of sensations occur, which immediately become perceptions by being connected with other centers in the brain.

During recent years many scientific investigations have been made of the eye movements that take place in reading. It has been found that in order to read a series of words placed horizontally on a page, the muscles of the eyes learn to make certain regular adjustments. If we sit directly before one who is reading and watch his eyes closely, or more conveniently perhaps hold a hand mirror on the adjoining page as he reads while we look over his shoulder, we will notice that his eyes move pretty regularly from one side of the page to the other. (In reading books in Chinese of course somewhat different movements are made by the eyes. Future experiments will no doubt demonstrate whether the vertical or horizontal arrangement of words is the more effective.) As we watch the person reading we will notice that the eyes do not move continuously from left to right along the line, but proceed by a succession of quick short movements to the end of the line, then return in one

quick, usually unbroken movement to the left across the page. The actual reading takes place only during these "eye-pauses" or so-called "acts of fixation." With such lightning-like velocity do the eyes move from one fixation to another that it is generally agreed that the eyes are practically blind during these movements. It is a fact that twelve thirteenths of the total reading time is taken up with fixations or pauses. What is seen and perceived during these pauses is what gives meaning to the material read. The number of the eye-pauses per line varies according to the maturity and efficiency of the reader. A good reader will make an average of something like four pauses per line, while a poor reader will make as many as fifteen. Oral reading of course requires many more pauses per line.

Why do these differences in eye-pauses occur? Why can one person "see more at a glance" than another? The number of words or letters that can be seen at once is the "span of perception." Why is this span greater with some people than with others, and greater with familiar than with unfamiliar material? It is not due to a difference in sensation. It is obvious that during a single eye-pause, that takes but one fifth of a second of time, only a few familiar letters or parts of letters in a line are actually seen, that is, sensed in the visual area of the brain. These few sensations are clues as it were which immediately call up old associates in the brain, and thus largely by a process of recall we are able to perceive mentally the meanings of words that are only half seen by the eye.

This can easily be tested by anyone for himself. Print in capitals a sentence of familiar words. Cover the bottom half of the letters and show the top half to a friend. Probably the sentence can be read. The *whole* of the letters was not needed as a stimulus. Through long association the part

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had come to call out the response that belonged to the whole. *Do you find that the bottom half of the sentence leads to recognition as easily as the top half?* Are some parts of the stimulus more important than others? When familiar material is read, many minor mistakes may go unnoticed, because the reader builds up a perception from past experience. The process is the same as when a man in the distance is mistaken for a friend, because he is about the same height and walks in the same way. Often we feel very sure of such a wrong perception, or illusion. Perhaps we awake in the middle of the night, and the light of the moon falls in a certain way on some clothing hanging against the wall. We are sure that it is a man in the room, and feel we see him plainly, though when the mistake has been discovered it is difficult to see any resemblance between the actual stimulus and our perception.

What we really *see* then is not the whole word or group of words included in our span of perception. We actually receive sensations of a few letters,or of parts of letters, perhaps, and of the general length of each of the words. We then fill in such words as are associated with such sensations and also with the general meaning of what we are reading. Often mistakes are made of a minor nature that do not affect the meaning, and errors in printing are not noted. The word is seen as correct, for wrong letters are not noticed, and are filled in by the right ones. It is plain that such filling in as this can only be done after many bonds have been built up. Unfamiliar material must be read much more slowly, and with many more eye-pauses. Little can be filled in. And when a foreign language is first read it may be necessary to look separately at each letter or small group of letters, or at each part of a character.

To repeat, the greater one's experience in life, the greater will be his power of general perception. As reading is a form of experience, we see that the more one reads the easier it is to read with clear perception. Since we have found that reading is a matter largely of perceiving we can see the value of storing

up as many S-R bonds as possible in our nervous system between printed words and meanings. As we read, then, comprehension or perception will be more ready because the stimuli from the printed symbols will call to mind their old associates. Thus it may be truly said that we can read *out* of books only we can read *into* them from our store of S-R bonds.

Regressive Movements. Poor readers not only make many pauses per line, but their eye-movements are also broken up by so-called "regressive movements" which result in confusion and delay. When the eye fails to recognize a word or phrase, it tends to go back, and there is a period of more or less wavering back and forth around the word. These movements back are called regressive movements. A good reader who makes few such pauses and regressive movements will be able to develop a certain rhythm of the eye-movements. It is important for all students to cultivate habits of rhythmic movement, if they wish to become good readers. It is true that it will be impossible to eliminate regressive movements entirely, for there will always be words or phrases that puzzle the reader. Nevertheless one should aim so as not to be held up too often.

Rate in Reading. The rate in reading is not only measured by the rate of the eye-pauses per line as described above, but also by the number of words read per minute on a page of standard size and print. The following norms in rate of silent reading were common in American schools a few years ago. It should be kept in mind that the difficulty of the material read increases year by year.

Second year Primary	95 words per minute
Third Year Primary	125 words per minute
Fourth Year Primary	155 words per minute
Fifth Year Primary	180 words per minute
Sixth Year Primary.....	200 words per minute
First Year Junior High School	220 words per minute
Second Year Junior High School	240 words per minute

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These rates are much lower than they should be. By the use of modern methods of teaching many schools today have achieved higher rates. It is important that every college student find out whether he is a fast or slow reader. If it is found that one is especially slow in reading, it is of the greatest importance to increase the speed. It may seem that such increase will prove inefficient because of a corresponding decrease in comprehension. We often hear people say "I believe in being slow and thorough. These people who skim along fast when they read never get anything of value from their reading." This is false. There is found to be close correlation between rate and comprehension in reading. As a rule the more rapid readers are the ones who best comprehend the matter read. In cases where this is not so, special measures of training should be undertaken. The ideal situation in learning to read is to have comprehension and rate advance together. One reason why speed often seems to aid comprehension may be suggested. A paragraph contains one main thought, and if this is read rapidly it may be better grasped as a whole. Slow reading of each sentence may interfere with proper emphasis of the leading idea.

Vocabulary. Comprehension in reading depends a great deal upon the possession of a large and extensive vocabulary. The vocabularies of pupils of various ages have been studied and recorded, so that we know something of their nature and extent. In Prof. Thorndike's recent "word book" is given a list of 10,000 words most commonly used in the English language. It has been found that the mastery of these words equips a student with a good working vocabulary in English. A person as he goes through school should "build up" such a list of useful words. It is estimated that Chinese students entering the Freshman year of college, mostly using English as a temporary medium, should be familiar with at least 5,000 of these words. During the Freshman and Sophomore years the remaining 5,000 words should be acquired. As many in this list are compounds of words in the first five thousand, and some are proper names not so important

for Chinese students, it would mean that only some three thousand would be really new.

Some suggestions may be made for easily learning new English words:

1. Words may be made meaningful and thus be more easily remembered by analyzing them into their roots, e. g.
   Democracy—Demos (People), cracy (rule)
   Biology—Bio (life), logy (science)
2. Attention should be given to prefixes, e. g.
   *Re*read (Read again)
   *Im*moral (Not moral)
3. The suffixes should be noted, e. g.
   Wicked*ness* (Quality of being wicked)
   Hope*less* (Without hope)
4. Practice in working out synonyms is of especial help in enlarging vocabulary, i. e. generous-liberal.
5. Learning antonymns, and practice in contrasting these words of opposite meaning, e. g. generous vs. miserly-stingy-penurious.

Although it is true that the possession of a large and meaningful vocabulary is important, one must realize that the ability to read well depends as much upon the other factors mentioned in this chapter as upon the vocabulary, and one may know the meanings of many thousands of words and yet be a very poor reader. And the meaning of a word may be developed by abstraction as it is met in reading, as well as learned from a dictionary. Abundant use of the latter can in no way take the place of a large amount of practice in reading itself. Yet as a necessary foundation for reading it is important for everyone to build up as quickly and as strongly as possible a strong working vocabulary, and the habit of using a dictionary constantly is one well worth the time spent.

Reading as Reacting. A situation alone cannot cause a change in our bonds. There must also be a response. Merely allowing our eyes to rest on a printed page, without special attention and without effort to react is not likely to form bonds that

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will be of permanent value. Surely much of our reading should be done without effort and based on interest alone, both for recreation and for benefit. When interest is intense we cannot help reacting - attention takes care of itself. But where material is difficult or interest is less intense, effort on our part is necessary. We must read with a definite set, or purpose. This may take two forms. Often we go to a particular book or magazine article with a particular question in mind, or else as we read questions come up that we try to answer from the text. We argue with the writer and test ourselves to see if we clearly comprehend his or her idea. This method is extremely valuable, and should be used far more than it is used by most of us. But it carries the possible danger of shutting ourselves off from new ideas of the author that do not directly bear on our questions. It may therefore be combined with an endeavor to see the writer's meaning as a whole, perhaps by making an outline of it. Such an outline will often disclose relations between the ideas that we never before suspected. Another form of this method is to let each paragraph be the stimulus for whatever thoughts it may suggest, giving ourselves time to let our minds play about them. Each of these methods has great value, and each should be used. The lack of any one of them will cause us to suffer.

Observation and Experiment. How have the problems of efficient reading been studied scientifically? One way already mentioned has been the study of eye-movements, with their careful measurement. Ingenious ways have been devised of recording these in fractions of a second, by use of complicated machines. But it seems unlikely that such work will prove of very great further value. For as Gates, one of the leading workers in this field, has observed, if reading becomes more efficient by the use of other methods, the eye-movements will become more rapid and regular of themselves; it is very difficult and generally unwise to give attention to them directly.

Much has been done by Mrs. Hollingworth and others on the causes of special failure in reading, in cases where a

child reads much more poorly than his or her intelligence would suggest, for it has been found that ability in reading correlates quite highly with general intelligence.

But the most valuable work up to the present seems to have been along the line of measuring reading ability accurately. By testing thousands of children as to speed of reading material of given difficulty, and amount of comprehension, it has been possible to set standards for ages and grades that can serve as a stimulus to improvement. Most of us could improve our reading if we had any accurate method of knowing where we stood and just how much we improve after practice. For *trying* to read efficiently seems in most cases the most effective way to become more efficient. To devise scales that can be used for measurement is not easy. Each one is spoiled as soon as it is used, for a certain person, and there must be other passages for later use that have been shown by long testing to be of equal difficulty. In perhaps the best-known of the reading tests, the Thorndike-McCall, there are ten different forms that have been found to be about equal.

In the future it is be hoped that there will be much comparison of methods of teaching reading, made scientifically between groups which differ only in the method of learning used. *Other things must be equal.*

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1. Do you agree with the first sentence of this chapter?
2. For what reasons is ability to read well silently of more importance than formerly?
3. What proportion of the important bonds that you form do you think come from reading? In what other ways are bonds formed?
4. After you have left college, about how many hours do you expect to spend each month in oral reading? In silent reading?
5. Explain the reading process in mechanical terms, listing as many steps as you can.
6. In what ways can the principles discussed in Chapter 7 be applied to the problems of reading?
7. List in order of importance as many rules for learning to read efficiently as you can.

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8. What do you think are your own greatest weaknesses in reading? How can they be corrected?
9. Why is the measurement of reading ability important? Explain in terms of the Law of Effect.
10. Is reading more or less difficult to test than arithmetic? Why?
11. Are the problems of this chapter those of Psychology or of Education? What is the relation between Education and Psychology? Does one include the other?

CHAPTER 10

Some Conditions of Effective Study

有交力的用功法底條件

Direct and Indirect Control. In endeavoring to improve one's habits of study, it is important to distinguish the direct and indirect factors involved. In the preceding chapters numerous direct methods of improvement have been suggested, such as, the use of the whole method in memory, the value of distributed periods in learning, etc. In this chapter particular attention will be devoted to pointing out other factors that condition indirectly one's study habits. By taking care to control such conditions in study, marked improvement in the ability to work will be made: For convenience in discussion the essential conditions of effective study may be grouped as follows: environmental, and psychological.

Physiological Conditions. Despite the fact that there have been notable exceptions to the rule, it may be said that a sound body makes for a sound mind. In other words, there has been found to be a high positive correlation between bodily health and mental health. The nervous system receives its strength from the body, and so if the body is weakened a great strain is put upon the nerve cells and mental exhaustion sooner or later sets in. It is therefore of the utmost importance that students keep themselves in the best of physical condition. There are three foundation stones of health that need to be considered: food, exercise, and rest.

General Health. *Food.* The kinds and amount of food one takes has a very close relation to one's mental efficiency. The function of eating is chiefly recuperative. The cells of the body are supplied with new material and are thereby renewed. If

the body has been undergoing severe physical exercise a large quantity of food is needed. Farm laborers therefore need much more food than college students. It is generally agreed that many college students suffer from the effects of over-eating The system is clogged with excess products which interfere with the normal functioning of the system. Not only are temporary feelings of drowsiness and weariness experienced by the student, but eventually his or her phyisical machinery is impaired and the functioning of the mind permanently handicapped by ill health. The problem of the right kinds of food to eat is a complex one, and cannot be taken up here. It need only be said that one's diet should be as well-balanced as possible. Excessive eating of meat or sweets is to be particularly avoided. The conditions during meal times shonld always be as pleasant as possible. An attractive dining room and congenial company make a decided difference in the functioning of the digestive system, as emotional factors are involved which may hinder normal digestion.

Exercise. The question of proper and sufficient exercise is a most important one for a student to consider. One's food often does not digest well, nor does one sleep well, when the body has not received sufficient exercise. Students are sedentary workers for the most part, and so need to take special pains to make up for the inaction of the day by plenty of exercise in the afternoons. Bodily activity, especially in the form of outdoor recreation and games, stimulates the digestive, circulatory and excretory systems of the body. It is a true saying that "exercise clears the mind" for study. All students should be careful to see that every day the chief muscles of their bodies are thoroly exercised either through some form of recreation or by short "setting up" exercises, or preferably by both. It will be found that time spent thus will result in a much higher grade of study in the end. There is need to caution some students however against engaging to excess in games such as football and basketball. The physical energies are used up to such an extent that the students are unfitted for study in the evenings.

Rest. Most students suffer more from lack of sleep than from too much of it. Brain workers need at least eight hours of sleep a day in addition to periods of rest now and then in the daytime. During sleep and rest one's body is given an opportunity to build up the cells that have been broken down and to take care of the waste products that have collected. When sufficient rest is not secured, the cells are not built up nor are the waste materials eliminated. Socalled fatigue poisons are formed and the body is weakened. We know that muscular fatigue comes as a result of continuous and heavy physical exertion. It has been proved experimentally that nerve cells are not as easily fatigued as muscle cells. Yet, since mental work generally involves musculur exertions of the eyes, arm, hand, and the body in maintaining the posture, we experience muscular fatigue in study before actual nerve fatigue sets in. The tired feelings that many students complain of are not therefore due so much to exhaustion of the nerves as of the muscles. This fatigue of the muscles takes place early in study when a student is not in good physical condition. Students need to worry less about the danger of "mental fatigue," and pay more attention to keeping up their bodily health. Rest is one of the greatest curatives known and should be fully taken advantage of by students.

Special Conditions. For effective work not only must the body be kept in good condition but existing physical defects must be either removed or treated when possible.

Defective Eyesight. One of the greatest handicaps that a student can have is defective vision. Most readers sooner or later suffer from eye-strain and come to need glasses. It is important to know just when that point has been reached so that prompt attention to the matter can be given. Students who frown, squint, hold books close to the eyes, or suffer from such maladies as twitching of the eyelids, eyeache, or headache, should consult a competent doctor or oculist. It may be that the question is one of an inherited defect in vision, such as astigmatism, nearsightedness, etc, or it

may be one of eyestrain. In both cases the wearing of suitable glasses will probably be necessary. Under no circumstances should one delay in having the eyes attended to, for the consequences of such neglect are most serious, especially in the life of those who spend most of their time in reading and study.

Other Defects. Defective hearing may or may not be possible in certain cases to remedy. Sometime slight operations are of great help and should by all means be undergone. Adenoids for example in the uppor part of the throat interfere with hearing and may be removed. When cases cannot be cured, they should have special consideration and be seated in the front of the classroom. There are many other physical defects, such as, enlarged tonsils, bad teeth, nasal troubles, etc., as well as may kinds of diseases of more or less serious nature, which may effect one's health and thus in turn one's ability to study. In all cases wherever possible these handicaps should be removed and if not removed at least treated so that they will be less of a hindrance.

Environmental Conditions. Not only are our study habits adversely affected by the bodily conditions just pointed out, but they are conditioned also by the environment in which we study. The environmental conditions of modern civilized life are so complex that the human organism, made as it was primarily for a simple life, finds it difficult sometimes to adjust itself satisfactorily. Yet we find that even in such a refined and artificial activity as study, individuals are able to adjust themselves at least for a time fairly well under trying conditions. It should be the aim of students however to choose as favorable an environment as possible in which to carry on their study, so as to avoid mental and physical strain that often leads to dire consequences. While it is true that no fixed standards in environment will meet all the individual differences of students, it is possible to point out certain favorable conditions for studying which will apply to the majority. We shall take up a number of factors in our environment which are closely related to effective studying.

Light. The simple rule that light shonld fall over one's left shoulder when studying is often disregarded. Its importance is obvious for, inasmuch as most students are right-handed, light from the left does not cause a shadow to fall on the work one is doing. Furthermore in this way the light does not enter the eye directly as it would if one faced a window or a lamp. Thus all students should acquire the habit of invariably choosing a seat for study that allows the light to come over the left shoulder. The use of a shaded light directly in front of one in a dark room is unwise. It is far better either to have the light behind one to the left or to use a system of indirect lighting whereby the whole room is diffused with a good light.

The quality of light used in studying is an important consideration. Direct sunlight or the light of a high powered electric bulb on a book is so strong that it is injurious to the eyes. Or the other hand students are apt to be careless and try to read in a room where there is only a dim light or few windows. When reading in the library or in one's room in the late afternoons one is liable to forget that the light is fading fast outdoors and that one's eyes will be injured if the reading is kept up. In choosing places to study the question of proper light is an important environmental consideration.

Temperature. Rooms that are too warm cause one to feel sluggish and drowsy, The exact amount of heat needed depends on many factors, such as, the clothing worn, one's age. the kind of food eaten, the geographical location etc., but it has been determined that the temperature that is probably best suited to good studying is 68 Fahrenheit.

Ventilation. Closely related to the matter of heating is the question of ventilation. Students should be sure that the rooms in which they do most of their studying are constantly receiving fresh currents of air, so that the circulation of air in the rooms is good. The cells of the body need a certain amount of oxygen in order to function properly. It has been estimated that the optimum amount of fresh air needed per

person indoors is 45 cu.ins. Crowded and unventilated rooms do not afford this amount of air and should consequently be avoided.

Humidity. One is often made uncomfortable while studying because of the low humidity of the room. The amount of humidity needed for comfort varies with various factors that need not be gone into here, but it is generally estimated that a relative humidity of 50% is most suitable for study. In the winter time especially in dry climates when artifical is used, any sort of device that will add moisture to the air will enable the skin and mucus membranes of the body to function better and tend to make one less irritable and uncomfortable.

Quiet. A quiet place for study that shall be reasonably free from interruptions and other distracting features is greatly to be desired. Too many students try to do their preparation of lessons under conditions that are far from ideal. Study demands the closest of attention, and every happening in the room in which one is working makes a claim for attention. A portion of the energy that is needed for study is expended on trying to disregard these distractions. Even if one schools oneself not to attend to such attractions, they continue to exert a subconscious influence and are a drain on the nervous system. Clearly then if studying can be done in a room in which these outside appeals are reduced to a minimum, there will be a gain in the amount of energy available for work.

The Study Desk. Since most study demands a certain amount of activity of the hand in writing, a proper table and chair constitute one of the features in the environment of a student at work that should be considered. The study desk and chair should be of the right height for individual need. Too low a desk encourages stooping-shoulders, a contracted chest and a congested head. Too high a desk is awkward for writing and brings the work too near one's eyes. The equipment of the desk should be arranged so that the various tools for study are convenient for use. Such tools as pencils,

erasers, a ruler, pen, blotter, dictionary, paper, reference books, etc, should all have a place. The study desk should be reserved for studying and should not be used for other less serious purposes. If this is done, the mere physical act of sitting down to the desk will lead the mind to think of studying. Thus a so-called "place-study" habit will be formed.

Some Psychological Factors in the Environment. For real effective study the mental attitudes with which one faces his work are determining factors in the environment. Only a few such attitudes will be taken up here, leaving others to be developed in the next chapters.

Purpose in Study. In order to derive the greatest value of college courses definite purposes for the study of each must be appreciated and held by the student. The work in each course taken should relate to some felt need in one's life. Purpose supplies motive and interest to work so that attention becomes easy and natural. It also gives one a basis for collecting and arranging the facts studied. Moreover a clearly understood and strongly sensed aim in the studying of a given subject insures a practical hold on the facts for use in later life. For these and other reasons that might be mentioned most of the studying that one does should be carried on under the urge of fundamental desires in the life of the student.

Confidence. Confidence in one's ability to master a lesson or assignment results in the release of energy for the task at hand. The consciousness of failure or inability on the other hand results in an interference that blocks the full use of the energy available. Students should aim to acquire what has been called the "habit of success" which comes from doing small tasks so well that when more difficult tasks are encountered they will be faced with a feeling of confidence. Most students could attain higher standards of work than they are attaining if they estimated their own abilities a little more highly and attacked their lessons with a greater expectation of success.

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Ideals in Work. It is a valuable practice for students to set up for themselves ideals of workmanship. Such ideals as those of Accuracy, Neatness, Speed, Mastery, for example, when set before one constantly through the college course cannot but help to exert a strong influence on the character of the studying done. As skill in studying develops under the stimulus of such ideals, a student can come to take as real pride in the character of his scholarship as the carpenter takes in his workmanship.

Work and Fatigue. If attention is given to all of the foregoing points, there need be little fear of ill effects from mental fatigue. If we mean by this the feeling of tiredness and distaste that comes from continued mental work, it probably does not come from exhaustion of the nerve fibers themselves. As has been said, much of it is often muscular, and can be greatly lessened by a few moments of relaxation or of exercise of other muscles, with deep breathing. But a more important cause of it is lack of interest. Many experiments have shown that actual mental efficiency, even in very difficult work, is not greatly reduced in most cases by fatigue. And if we could depend far more on non-voluntary attention, based on interest that we have developed, we would find it possible to work for long periods not only with efficiency but with pleasure. A third cause of the discomfort of fatigue is our failure to satisfy certain needs of the body or mind, such as exercise, sleep or social intercourse with our friends. If these are properly satisfied we can perhaps double or triple or working capacity without fear of ill effects. As Thorndike sums it up:

> It is impossible to find any uniform rule for deciding when to stop work. 'Follow nature,' 'Work as long as you can,' 'Work until a decreass in efficiency appears,' or any other rule announced for all workers, is bound to be wrong. It is unnecessary for most workers to stop when they are bored and sleepy, and it is unsafe for some to work until they are. The best practical rule seems to be to make sure of adequate exercise and sleep, to divide the balance of time reasonably between the duties and pleasures of life, and to work throughout the amount of time due for work, diminishing the natural checks (such as fatigue) so far as may be by se-

curing proper physical conditions, interest and motive, and, for the rest disregarding them. What amount of exercise and what amount of sleep are adequate varies with age and individuality. To insure against injury, the allowance may be made generously. The essence of mental hygiene is then—interest for efficiency; and for protection, sleep.

Observation and Experiment. While much of the evidence on which the suggestions of this chapter are based has been supplied by physicians, psychologists have made many experiments to show the influence of various factors on the effectiveness of work. Work curves have been traced that rise or fall according to increase or decrease of efficiency. While these generally seem to show that if effort is made work can be kept up fairly well in quality and quantity, regardless of fatigue or of distractions, it is naturally impossible to experiment over long periods of time and determine the injury that may be done by the putting forth of such constant effort. Of course experiment on animals is of no use to us here. We can do little more than observe in general the serious effects of nervous strain, and can reason with the help of medical doctors as to the most serious causes.

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1. Make a list of those conditions of effective study which you most often fail to observe in your own studying.
2. Which of the desirable conditions mentioned in this chapter are most often lacking in Yenching? Is the trouble due to the students themselves, to the rules of the University, or to some other cause?
3. Do you find the conditions for study suggested above are best for you in your study? May the conditions of study vary with individual differences?
4. What other psychologial conditions of study might be mentioned?
5. Give any examples of which you know of students whose habits of study have been improved by observing the conditions laid down in this chapter.

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CHAPTER 11

Expression In Study

修學的表現

If suggestions for effective study had to be stated in just one sentence, that one sentence could probably give no better advice than to apply the well-known saying '*No impression without expression.*' We study in order to remember, and to remember, impressions must be made on the nervous system. How can any fact or any principle be impressed on the mind? That is the great question.

It was already answered in the first chapter of the book, when the nature of the nervous system was explained. In order for resistence at the synapses to be changed, not only did the sensory neurone need to act. The current had to *pass through.* There had to be response, or expression. Now it may possibly be true, though most psychologists dispute it, that vivid sensations may be received in the cortex and remembered, and thinking may go on through the play of central neurones, without special action of the motor neurones. But all experience goes to show that when these motor neurones do act, when expression is by means of them, impression is likely to be far more permanent and sure. Certainly the mistake in studying that accounts for far more waste than all others put together is the neglect of adequate expression. We look and listen—we neglect to *respond actively.*

Forms of Expression. When we survey the modes of expression that may be used in study, we find them to be of several kinds. Speech is one. This is the form of expression for which the class discussion is provided. If you wish to grow as a student, utilize the

discussion period and welcome every chance to speak, for things about which you talk in class are more effectively learned. Talking about a subject uuder all circumstances will help you learn. When studying subjects like political economy, sociology or psychology, seize every opportunity to talk over the questions involved: hold frequent conferences with your instructor; voice your difficulties freely, and the very effort to state them will help to clarify them and fix them in your mind. It is a good plan for two students in the same course to come together and talk over the problems; the debates thus stimulated and the questions aroused by mental interaction are very helpful in impressing facts more vividly upon the mind.

Writing is another from of expression and is one thing that gives value to note-taking, outlining and examinations. Its value is further recognized by the requirements of themes and term-papers. By engaging in writing while we study we find that our attention is more easily held to the task. Moreover, by expression through writing we find that our ideas are more thoroughly learned and more clearly understood.

Another medium of expression that students may profitably employ is drawing. This is especially valuable in the studying of the sciences. Students in Botany are required to do much drawing of the plant-forms which they study, and this is a wise requirement, for it makes them observe more carefully and report more faithfully. When reading in a Geology text-book about the stratification of the earth in a certain region, a drawing of the parts described and a labeling of them according to the description will make the subject clear. In the other subjects, diagrams, charts, maps and graphs are all of value for the student in making his study effective. We shall now take up in detail several important forms of expression.

The Marking of Books. One form of expression that is very commonly used by students is the marking of books. This practice is a very helpful one because it forces one to be more active mentally in his studying. Instead of merely passively

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reading an assignment in a text a student will take out his pencil and by the use of a certain individual system of marking indicate his reactions to the material read. The important points will be distinguished from the unimportant, perhaps by the method of underlining. By such a method not only are the important points more permanently fixed in the memory, but the task of reviewing will be much simplified. Students often however underline too much of the material being studied, thus losing much of the real value of underlining, which is to indicate only the most important or "key" sentences, phrases or words.

When it is thought that several points are important but not equally so, a check on the margin of the page may be added to indicate the one that is regarded as the most important. Thoughtful marking with a view to showing relative values is likely to increase the amount of reflection on the part of the reader who makes the marks. There are other marks that a good student will also want to use in his studying. When a certain sentence or phrase in a paragraph is not clearly understood, it is a good plan to indicate the fact by placing a question mark on the margin of the page beside it. When an opportunity comes in class discussion the student can clear up the point by asking a question of the instructor. Often students in a class seem to have no questions whatsoever to ask in regard to the text studied, indicating to the teacher that they have not really studied the material carefully enough to note the points that are not clear. When a paragraph contains a number of major and minor points it is often helpful to indicate the points by numbers (1,2,3,4) or by letter (a,b,c,d). This kind of careful analytic study of the text soon enables a student to tell at a glance what are the various points that are taken up in the paragraph. Another form of marking that Chinese students especially engage in is that of noting the meaning of new and difficult words. It is generally thought best to place the translation of a new word on the margin of the page rather than over the word itself, in order that in a second reading the mind will be forced to at-

tempt a correct recall before looking at the translation again. Other additional ways of marking books might be mentioned, but it may be left to the individual student to think out ways that will suit his purposes best. Careful study is critical study and marking is a good method by which one's reactions can be set down.

It is sometimes objected that the habit of marking books once acquired handicaps one when reading books that are not one's own and cannot be marked. While this probably is true to some extent it may be answered that the advantages to be gained from marking one's own books are greater than the disadvantage that may be encountered when reading others. The same objection moreover can be made against outlining, namely that when once the habit of outlining is acquired, not to outline the material read decreases one's ability to master the material. The ideal method of learning would be to use marking and outlining as stepping stones to an ability to do without them both. They should serve as a training in critical study.

Another objection that students sometimes make towards marking it that it soils the book used. While it is well to keep one's books neat and clean, the student must not forget that books are but tools and anything that makes a book a better tool is justified. We should remind ourselves of the well used tools in which a carpenter takes justified pride. Carefully marked books are an indication of careful critical study.

The Making of Outlines. We have now to take up a more active form of expression than that of marking books. If a student really wishes to master an assignment, one of the best ways of contributing to that end is to outline the material to be studied. By so doing the material is definitely organized by the mind and is more likely to become one's own. The very task of organizing a paragraph or selection from a text requires a high degree of mental activity and expression, so that the material once organized is more permanently and clearly remembered. There are two stages in the process of organization which need

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to be kept in mind. First there is an analytic and selective study of the material. Students find that the facts brought out in the lesson are not all of equal value. The field of knowledge is not a level plain but a hilly country with the main ideas supported by towlands of details. In the organization of one's ideas there must first be a selection of relative values, and the making of an outline requires just this activity. The second and last step in the organization of ideas is a synthetic one. After a given selection has been well analyzed and its points worked out, there is found to exist a definite interdependence between the various facts. Facts are related one to another and details group themselves in various combinations. The aim in study is not to collect a mass of unrelated facts, but to learn facts in their relations. In the making of an outline such relations once decided on are indicated by the definite arrangement of points in various series and orders. Certain letters and numbers are used in standard forms of outlines, to indicate main headings and subheadings and it is well that students follow some system such as the following:

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Outlines should be much condensed, preferably made up of topics, partial statements, catch-wards and phrases rather than of full sentences. There is no royal road to learning and although the work of outlining is often laborious, it is one of the surest methods of mastering assignments, especially those that are extensive and complex.

The Working out of Examples and Illustrations of Principles.

Students should early form the habit of working out their own concrete examples of general rules and principles brought out in the text-book studied. Expression in this form is a good test of one's mastery of the real meaning of a principle or law. Passive dependence on readymade examples found in the text does not guarantee real understanding. An active search in one's own experience for examples that will illustrate the principle stated in the text is what is needed. Such examples when thought out can either be jotted down on the margin of the text or listed in one's notebook. If one follows such a practice in expression the knowledge that he gains through study will have a practical value for him in life as principles are more clearly understood and more closely related to one's own experience.

Practice in Recall and Reflection. Students often make the mistake of confining their entire attention in study to the text before them or to the materials immediately at hand. They bury themselves as it were in the assignment without allowing time for mental review, recall and thought. These forms of mental expression are perhaps the most important and highly developed forms of expression possible and need to be cultivated in studying. When studying it is often well to stop for a moment, take the eyes off the book, and try to recall some of the main points of the material, thinking over the material read and organizing one's thoughts on the problems treated in the text. Such activity is distinctly worth while and in fact should be emphasized more than it is in ordinary everyday study. Close your book as soon as you think you have finished preparing your lesson for the next day and spend five or ten minutes in memory work and thinking. By giving more time to recall and reflection during and directly following the preparation of a lesson, a student may come to acquire a characteristic of the best type of student.

In addition to making outlines and working out examples, it is often helpful to engage in some of the following practices of good students. When an assignment contains a number of

new terms it is well to attempt to write out definitions of these terms. Practice in defining terms is an excellent method of clarifying one's thought. Many students are hazy in regard to the real meaning of certain terms, just because they have not set about to define them carefully and as far as possible in their own words. Definitions should be accurate, complete, simple and well-worded. Practice in formulating good fact and thought questions based on the text is a helpful method in study, as well as a good way of interpreting the questions to be asked by the instructor in class or in an examination. Finally the writing out of a number of true and false statements based on the important points in an assignment is a form of expression that is eminently worth while. Clearness in thinking and exactness in statement are the results of such practice.

Note-taking. A form of expresssion used by most educated people, at some time or other, is the taking of notes. This is especially true of college students. Many students do not realize that there is any skill involved in taking notes. Not until examination time arrives and they try vainly to labor through a maze of scribbling, do they realize that there should be some system in note-taking. A careful examination of the question shows that there are rules or principles of note-taking, which, when followsd, have much to do with increasing ability in study.

One criterion that should guide in the preparation of notes is the use to which they will be put. If this is kept in mind, many blunders will be saved. Notes may be used in three ways: as material for directing each day's study, for reviewing, and for permanent, professional use. Thus a note-book may be a thing of continued as well as of more immediate value. Notes you take now as a student may be valuable years hence in professional life. Recognition of this will stimulate you to prepare your notes more carefully.

The chief situations in college which require note-taking are lectures, library reading and laboratory work. We shall take up the first two of these topics.

Lecture Notes. When taking notes on a lecture, there are two extremes that present themselves, to take exceedingly full notes or to take almost no notes. One can err in either direction. On first thought, entire stenographic reports of lectures appear desirable, but second thought will show that they may be dispensed with, not only without loss, but with much gain. The most obvious objection is that too much time would be consumed in transcribing short-hand notes. Another is that much of the material in a lecture is undesirable for permanent possession. The instructor repeats much for the sake of emphasis; he multiplies illustrations, not important in themselves, but important for the sake of stressing his point. You do not need these illustrations in written form, however, for once the point is made you rarely need to depend upon the illustrations for its retention. A still more cogent objection is that if you occupy your attention with the task of copying the lecture verbatim, you do not have time to think, but become merely an automatic recording machine. Experienced stenographers say that they form the habit of recording so automatically that they fail utterly to comprehend the meaning of what is said. You as a student cannot afford to have your attention so distracted from the meaning of the lecture; therefore reduce your classroom writing to a minimum.

Probably the chief reason why students are so eager to secure full lecture notes is that they fear to trust their memory. Such fears should be put at rest, for your mind will retain facts if you pay close attention and make logical associations during the time of impression. Keep your mind free, then, to work upon the subject-matter of the lecture. *Debate mentally with the speaker.* Question his statements, comparing them with your own experience or with the results of your study. Ask yourself frequently. "Is that true?" The essential thing is to maintain an attitude of mental activity, and to avoid anything that will reduce this and make you passive. Do not think of yourself as a vat into which the instructor pumps knowledge. Regard your-

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self rather as an active force, quick to perceive and to comprehend meaning, deliberate in acceptance and firm in retention.

After observing the stress laid, throughout this book, upon the necessity for logical associations, you will readily see that the key note to note taking is, *Let your notes represent the logical progression of thought in the lecture.* Strive above all else to secure the skeleton—the frame-work upon which the lecture is hung. A lecture is a logical structure, and the form in which it is presented is the outline. This outline, then, is your chief concern. In the case of some lectures it is an easy matter. The lecturer may place the outline in your hands beforehand, may present it on the black-board, or may give it orally. Some lecturers, too, present their material in such clear-cut divisions that the outline is easily followed. Others, however, are very difficult to follow in this regard.

Reading Notes. The question of full or scanty notes arises in notes made on reading just as in lecture notes. In general, your notes should represent a summary, in your own words, of the author's discussion, not a duplication of it. Students sometimes acquire the habit of reading single sentences at a time, then of writing them down, thinking that by making an exact copy of the book, they are playing safe. This is a pernicious practice; it spoils continuity of thought and application, furthermore, isolated sentences mean little, and fail grossly to represent the real thought of the author. A better way is to read through an entire paragraph or section, then close the book and reproduce in your own words what you have read. Next, take your summary and compare with the original text to see that you have really grasped the point. This procedure with be beneficial in several ways. It will encourage continuous concentration of attention to an entire argument; it will help you to preserve emphasis of parts; it will lead you to regard thought and not words. (You are undoubtedly familiar with the state of mind wherein you find yourself reading merely words and not following the thought.) Lastly, material studied in this way is remembered longer than material read scrappily. In short, such a method of reading makes not only for good memory, but for good mental habits of all kinds. In all your reading, hold to the conception of yourself as a thinker, not a sponge. Remember, you do not need to accept unqualifiedly everything you read. A worthy ideal for every student to follow is expressed in the motto carved on the wall of the great reading room of the Harper Memorial Library at The University of Chicago: "Read not to contradict, nor to believe, but to weigh and consider." Ask yourself, when begining a printed discussion, What am I looking for? What is the author going to talk about? Often this will be indicated in topical headings. Keep it in the background of your mind while reading, and search for the answer. Then, when you have read the necessary portion, close the book and summarize, to see if the author has furnished what you sought. In short, always read for a purpose. Formulate problems and seek their solutions. In this way will there be direction in your reading and your thought.

Examinations. The last form of expression we shall discuss is the very important one of tests and examinations. They are often times of great distress, and we should learn to meet their exacting demands with the greatest ease and and effectiveness.

Examinations and tests serve several purposes, the foremost of which is to inform the instructor regarding the degree of scholarship attained by the student. In trying to discover this, two general kinds of examination questions may be employed; first, those that test whether or not certain things are remembered; second, those that test how well the student can use and apply his knowledge. But this is not the only function of examinations. They also inform the student of his standing in relation to the standards of scholarship set up by an instructor in a given course. They also often serve to give an incentive to harder work on the part of the student, for if one knows that there will be examinations in a subject, one usually studies with reater zeal than when an examination is not expected. And

also if one knows that he is behind other students in scholarship he will generally try to improve his work. Lastly, examinations may cause the student to link up facts in organized wholes, and to see them in new relationships. One can easily see that examinations constitute a valuable device in college education.

But students are not very patient with philosophizing about the value and purpose of examinations, declaring that if examinations are a necessary part of the educational process, they wish some advice that will enable them to pass with credit to themselves. So we shall turn our attention to the practical problems of passing examinations with credit.

Preparation. Our first duty in giving advice is to call attention to the necessity for faithful work throughout the course of study. Some students seem to think that they can slight their work throughout a course, and by vigorous "cramming" at the end, can make up for slighted work and pass the examination. This is an extremely dangerous attitude to take. It might work with certain kinds of subject-matter, a certain type of student mind, and a certain kind of instructor, but as a general practice it is a most treacherous method of passing a course. The greatest objection from a psychological standpoint is, as we have seen in Chapter 8, that learning thus concentrated is not so permanently effective as that distributed over a long period of time. For instance, a course in History extending over a year has much to commend it over against a course with the same total number of recitation hours crowded into two months. We may lay down as a rule that feverish exertions for a few hours at the end of a course cannot replace conscientious daily work throughout the course.

In spite of general objections to it, however, we must admit that cramming has some value, if it does not take the form of new acquisition of facts, but consists more of a manipulation of facts already learned. As a method of review, it has an eminently proper place and may well be regarded as indispensable. Some students, it is true, assert that they derive little benefit from a

pre-examination review, but one is inclined to question their methods. We have already found that learning is characteristically aided by reviews, and that recall is facilitated by recency of impression. Reviewing just before examination serves the memory by providing repetition, recency, and added meaning, which, as we also learned in Chapter 8, are conditions for favorable retention. It also helps to disclose many new relationsships that were not noticed as the facts came during the term in more or less detached form. It is also true that the task of reviewing in a few hours the work of an entire course is so huge that the attention is closely concentrated, impressions are made vividly, and the entire mentality is tuned up, so that facts are well impressed, coordinated and retained. In the final review it is also valuable to try to anticipate some of the questions that may be asked in an examination or test. The important points in the course should be put into question form and answered by the student orally or in writing. These advantages in the review are not all present in the more leisurely learning of a course, so we see that intensive reviews may be regarded as a very useful device in learning.

Having made proper preparation of the subject-matter for an examination, the next step is to prepare yourself physically for the trying mental test, for it is well known that the mind acts more ably under physically healthful conditions. Go to the examination room with your body rested after a good night's sleep. Eat sparingly before examinations; heavy food may clog mental operations.

Writing the Examination. Having reached the examination room there are a number of things to keep in mind. To mention them may seem superfluous, but instructors who correct examination papers surely see the need of each one. Let your first step consist of a preliminary survey of the questions; if they are of the ordinary type read them over thoughtfully in order to discover the extent of the task set before you. A striking thing is accomplished by this preliminary reading of the questions. It

seems as though during the examination period the knowledge relating to the different questions assembles itself, and while you answer one question, the answers to the other questions are formulating themselves in your mind. It is a semi-conscious operation. In order to take advantage of it, it is necessary to have the questions in mind as soon as possible; then it will be found that relevant associations will come to the surface when you reach particular questions. During the examination when some of these associations come into consciousness ahead of time, it is often wise to digress from the question in hand long enough to jot them down. But by all means preserve them, for if you do not write them down they may leave you and be lost. Sometimes very brilliant ideas come in flashes, and inasmuch as they are so fleeting, it is wise to grasp them and fix them while they are fresh.

In writing the examination, be sure to read every question carefully before answering it. Each question has definite point; look for it, and do not start answering until you are sure yon have found it. Discover the implications of each question; canvass its possible interpretations, and if it is at all ambiguous seek light from the instructor if he is willing to make any further comment.

It is well to have scratch paper handy and make outlines for your answers to long questions. It is a good plan, also, when dealing with long questions, to watch the time carefully, for there is danger that you will spend too much time upon some question to the detriment of others equally important, though shorter.

One error which students often commit in taking examinations is to waste time in dreaming. As they come upon a difficult question they sit back and wait for the answer to come to them. This is the wrong plan. The secret of a flow of ideas lies in activity. Keep active, so that the associative processes will operate freely. Stimulate brain activity by means of writing and making notes. Instead of waiting idly for flashes of inspiration, begin to write something. You may not be able to write directly upon the point at issue, but you can write something about it, and as you begin to explore and to express your meagre fund of knowledge, one idea will call up another and soon the correct answer will appear. In writing the answers to questions it is often an aid to clear thinking and a source of joy to the instructor for the student to put the answer in the form of points,—one, two, three, four. Many questions may be answered in this simplified and clarified way if the student wishes. Time will be saved, and the answers will probably be clearer both to the student and to the instructor.

You should maintain towards all examinations an attitude of confidence. Believe firmly that you will pass. Make strong suggestions to yourself, affirming positively that you have the requisite amount of information and the ability to express it coherently and forcefully. Fortified by the consciousness of faithful application throughout the work of a course, reinforced by a thorough, well-planned review, and with a firm conviction of the strength of your own powers, you may approach your examinations with comparative ease and with good chance of passing them creditably.

This chapter has been concerned with *expression* as an aid to learning. It cannot be remembered too often just *why* expression is so important. Learning is reacting and reacting is learning. There can be *no impression without expression.*

(Adapted from various authors.)

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1. Try to find in some text in psychology a fuller explanation of why expression is so important in study.
2. List all the forms of expression in study that you can. Can you add any to those mentioned in the text?
3. Be ready to explain to the class your system of marking books. If you do not believe in marking books, explain your reasons in terms of psychological principles.

4. Recall the last lesson that your prepared carefully and list the method of study that you actually used.
5. Analyze your method of taking notes by looking over your last yearu notebooks. What are the strong and weak points of your method.
6. Write out a full plan for keeping your notebook.
7. Should all examinations be abolished? If so, list the different ways in which examinations aid learning and explain how equal or better results could be achieved in other ways.
8. List ten different kinds of examinations. What are the uses of each?
9. How should your methods of study differ with different kinds of courses? Choose two courses, and make a list of the resulcs that yoss desire to gain from your study of each of them. Be prepared to explain which methods of study you think can best achieve each of these results.

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0622

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19. W.S. Yang; 木藍 ( ),"Scientific World"
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1. Laboratory Manual of Quantitative Analysis
2. Preparation of Inorganic Compounds
3. 染色学实驗
4. 無机化学实驗
5. 現代染色概要 (徐維理著)

* in co-operation with Dept. of Chemistry, Cheeloo University
** In co-operation with National Agricultural Research Improvement Bureau

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0623

A review of the new systems for alphabeting Chinese characters

圖書館學季刊第二卷第四期單行本

各家檢字新法述評

萬國鼎

中華圖書館協會出版委員會重印

中華民國十七年十二月

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0624

各家新檢字法述評

(1)羅馬字拼音排列法
(2)日本假名排列法
(3)注音字母排列法
(4)林語堂新韻索引法
(5)聽濤字音檢字法
(6)江山于古法
(7)元亨利貞法
(8)陳立夫五筆檢字法
(9)黃希聲漢字檢字和排疊法
(10)沈祖榮胡慶生檢字目錄
(11)桂質柏中文著者姓名號碼表
(12)陳德芸德芸檢字法
(13)林玉堂漢字索引制
(14)萬國鼎漢字母筆排列法
(15)何公敢單體檢字法
(16)卜賈諦雙部首法

各家新檢字法述評

萬國鼎

3 1 3 3 - 4 8 0 4
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(17)魯森僕五段排列法
(18)林語堂末筆索引法
(19)周辨明半周索引法
(20)林慨首筆部首檢字法
(21)蔣一前漢字序次法
(22)陳文首尾面線檢字法
(23)電報記號檢字法
(24)畫數部首法
(25)畫數首筆法
(26)秦禹卿速檢字典
(27)中央大學圖書館檢字法
(28)中央黨務學校圖書館檢字法
(29)杜定友漢字排字法
(30)王雲五號碼檢字法
(31)張鳳形數檢字法
(32)橫直斜檢字法
(33)加減檢字法
(34)王雲五四角號碼檢字法
(35)胡亞福異氏號碼檢字法
(36)姜福成首尾號碼檢字法
(37)陸衣言頭尾號碼檢字法
(38)張華穆首尾四筆檢字法
(39)禪心五筆檢字法
(40)出筆始末檢字法

我國排檢漢字，向無善法。近年始爲學術界注意，新法輩出。或刊專書，或見雜誌，聚觀非易。爰草斯篇，介紹各家新法，以爲同志研究之資。至商榷標準，比較得失，以及如何求得最完善之法，將另詳於漢字排檢問題一文，茲不贅述。

介紹之前，請先述完善檢字法應合之條件，以爲批評標準。其條件爲：(一)條例整齊嚴密，簡單明白，易曉易憶，不可有例外；(二)各字有一定位次，即在二字之小範圍內，亦須絕對不能先後易位，否則在排檢辭語上即發生不少困難；(三)無論何字，須能一望而知其所在之處，不可有推敲部首，計算畫數，或先查附表，或先算號碼等周折，蓋一經周折，即費若干時間，減低排檢便捷之程度；(四)不可根據於面、角、筆順等不固定的基礎，蓋基礎不固定，則疑似難定或不規則之弊將隨之而生矣。

本篇敘述次第，爲便於比觀計，以類相從，先音後形。新與諸法，就所知者言之，約計四十種，可大別

之爲五類如左：

新檢字法
- 音——五種（一至五）
- 形
  - 母筆法——十種（六至十五）
  - 部首法——八種（十六至二二）
  - 計數法——十種（二四至三三）
  - 號碼法——七種（三四至四十）

左列分類，不甚準確，間有兩類相通或頗覺牽强者。一類之中，亦顯有派別可尋，茲亦不復細分。僅爲便利計，辨其大體而已。

【一】羅馬字拼音排列法

西人概以羅馬字拼音，依其字母次序，排比漢字。如 Giles 之漢英辭典，密勒氏評論報社之中國名人錄等，皆用此法。

【二】日本假名排列法

日本大都以假名次序排比漢字及和文。

按以上兩法，雖便於熟悉西文或日文者，均非一般國人所能用。

【三】注音母字排列法

自注音母字創製後，間有依其次序排列者，如陸衣言中華國音新檢字（中華書局出版）、蔣兆燮新體國音字典（上海新民圖書館出版）等。

按年來注音字母本身之成績，並不見佳，將來如何，尚難逆料。

（四）林語堂新韻索引法

見圖書館學季刊一卷一期，民國十五年一月出版。大體如左：

（一）本法依韻母分字如「同」屬 ung，「台」屬 ai，「孫」屬 un，「牛」屬 iu。計得國音新韻三十六，如左表：

開口類（a,e）：

一 啊	a	
二 哀	ai	
三 安	an	
四 盎	ang	
五 敖	ao	
六 厄	eh	（ㄛㄜ併于此）
七 黑	ei	
八 恩	ên	
九 亨	êng	
十 而	êrh	

齊齒類（i）：

十一 衣	i
十二 亞	ia
十三 奄	ian（舊作 ien）
十四 央	iang
十五 夭	iao
十六 耶	ieh（ㄧ丫併于此）
十七 因	in
十八 英	ing
十九 幽	iu
二十 雍	iung（卽注音之ㄩㄥ）

合口類(o,u);

廿一	歐	ou
廿二	烏	u
廿三	窪	ua
廿四	歪	uai
廿五	彎	uan
廿六	汪	uang
廿七	威	ui(uei)
廿八	溫	un(uen)
廿九	翁	ung
三十	窩	uo(o)

撮口類(ü):

卅一	於	ü
卅二	寃	üan
卅三	約	üeh(ㄧㄝ併于此)
卅四	云	ün

特別類(ŭ):

卅五	之	ih
卅六	茲	ŭ

(二)同韻母之字,以聲調分別之。計得陰平、陽平、上、去、入五聲。

(三)同韻母又同聲調者,以聲母分之。平常檢用只須記得四類(百p得t格k哲ch四類)。

(四)同韻母、聲調、聲母之字,以字上頭之平直撇點爲斷。

按余於聲音學毫無研究,不敢妄論新韻之善否;惟以普通人之眼光觀之,殊非通俗所易辨別。林先生規定『分韻一依京音爲主。』則江浙閩粵等處讀音與京音頗異者,將更難適用。

(五)聽濤字音檢字法

見十七年十一月二十三日民國日報覺悟欄。『(甲)先就一切子音母音所拼合的音排列起來,(乙)就中國文字中的基字(Primitive)各附於各音系之下,(丙)把一切從某基字的都隸屬於該音系之中。

例1(Chah) (基字1.)札同系各字:……
(基字2.)鍘同系各字:……
(基字3.)乍同系各字:……

例1(Chang) (基字1.)昌同系各字:……
(基字2.)章同系各字:……

『這些基字究竟有多少?我現在還不能確定,據Williams的A Sylablic Dictionary of the Chinese Language所列,有一千〇四十個;我現在正在依據他的研究,再精密攷定一下,理一頭緒出來。』

按聽濤先生反對從字形求檢字法,以爲字形根本上不規則,以時以地以人而異,且字形在社會民衆間業已改變不少。不知字音之不固定,猶遠甚於形體。即退一步言,字音能固定矣,猶不能據以爲序,蓋漢字爲單音字,同音者多至百餘,無所準以爲先後也。遑論聽濤先生之基字,已非純粹從聲,與前述四種從聲之檢字法不同,同音之各基字,及同從一基字之各字,能僅恃字音定其先後乎?倘不能使各字有一定不易之位次,仍不得謂爲完善之檢字法。總之,竊信除非將漢字根本改革,則字音殊難據以爲序也。

(六)江山千古法

依各字首筆分爲『丶一丿乙』四部分者也。蓋漢字雖多，其起筆不外此四種。

(七)元亨利貞法

用意與前法同，僅次序之異，改爲一丶丿乙。

按以上兩法，爲清末排比檔案所用。爲法雖便，未免太簡。

(八)陳立夫五筆檢字法

十七年春印有油印說明書，並見東方二十五卷五號，十七年三月出版。復編有姓氏速檢法，南京各書肆代售。

該法分筆畫種類爲點、畫（即橫畫）、直、撇、鈎、撇、捺、弧八種，歸納爲點畫直撇屈五種，蓋併趯入撇，併捺入點，併鈎與弧入屈而成者也。其所編姓氏速檢法，即先比第一筆，第一筆相同者，再比第二筆，首次兩筆均同者，列入一類，共得二十四類（因點直類無字）同類者仍按舊部首法爲序。國民革命軍總司令部排比文件，即用此法，甚爲便利。

按此法所分筆畫種類及次序，簡單合理，頗爲精到。惟祇分漢字爲二十四類，同類者即用舊法排列，仍不澈底。蓋創於軍務倥偬之際，僅成雛形也。

(九)黃希聲漢字檢字和排疊法

見廣東教育會雜誌一卷五號。分筆畫爲『丶一丨丿乙亠冂凵匚厂乚』等二十種，視與英文字母相同，即照英文按字母排列之法，逐筆比較筆畫之種類，以定先後。謂英文之M AN三字母合而爲Man（人），猶漢字之一撇一捺爲『人』一樣。

(十)沈祖榮胡慶生檢字目錄

見仿杜威書目十類法，民國十一年文華大學出版。分筆畫爲『丶一丨丿乙亠冂凵匚厂乚』等十二種，亦如前法，逐筆比較以定先後。

(十一)桂質柏中文著者姓氏號碼表

見杜威書目十類法，民國十四年齊魯大學出版。分筆畫爲『丶丿一亠冂凵匚厂乚』等二十六種，亦如前法，逐筆比較以定先後。

(十二)陳德芸德芸檢字法

嶺南大學圖書館目錄片即用此法排列，業已數年，惟尚未有文字發表。計分筆畫爲橫、直、點、撇、曲、捺、趯七種，亦如前法，逐筆比較以定先後。

按以上四法，所定筆畫種類及順序，末一種頗佳，餘則似均雜亂難憶。又四法皆不論筆畫間位置上之關係，是爲一大缺點。蓋漢字由各種筆畫交互錯綜而成，以同一筆畫同一順序，每可結成多種不同之形體。若論其位置上之關係，則往往察其首先二三筆，即可定字之先後。遇左旁或字首相同時，則

除之而辨其餘部。故辨別甚易。若不論關係，則必逐筆比較至許多筆；不獨比較廢時，且因形體不同，易使目迷，致生錯誤。

（十三）林語堂漢字索引制

見新青年四卷二號，民國七年二月出版。『取字之首先筆畫，名之曰首筆。而以漢字中所有首筆，會集成表，定其位次，別其先後。欲檢一部首，即以是部之首筆檢之；部中檢字，以餘部之首筆檢之。……例如鯉字先檢「夕」於部首中，即得「魚」部；復於「魚」部中檢「口」，則得「鯉」。』計分首筆爲橫、直、撇、點、鈎五種；兼論第二筆時，則得十八種；而其增廣首筆表，論及第三第四筆，則有八九十種。

按林先生係華人研究新檢字法之最早者，欲使各字無不有其一定邏輯之位置，方法亦頗可取。惟其全體組織，尚欠完備，故施之實際，窒礙仍多。

（十四）萬國鼎漢字母筆排列法

初稿見東方二十三卷二期，民國十五年一月出版；修正大綱見圖書館學季刊一卷二期，十五年六月出版。凡例如左：

第一條　母筆有八，其名稱及順序如左：

一　丨　丿　丶　乀　乁　乚

橫　直　點　撇　趯　捺　灣　翹

（註一）母筆以無銳折爲原則。如「了乙」「乚乜」等尋常認作一筆者，本法一律認作複筆。惟直筆下有鈎者（亅），仍作直一筆論；僅在干于兩字「于」居「干」後，又捺筆前附帶短畫者（如八入乂等字之第二筆），仍作捺一筆論。蓋此等鈎及短畫往往可有可無者也。

第二條　排列之次第：

（一）先論首筆之種類。依上述順序爲先後。

（二）首筆相同，再論次筆。

（三）首次兩筆均同，再論該兩筆之關係。關係之種類及順序如左：

離　（例如豆）
　首筆在左（例如川）者居前
　首筆在上（例如禹）者居後
接　（例如丁）
　自左而右（例如耳丁）
　自上而下（例如口上）
　自外而內（例如口曰）
交　（例如十）
　自左而右（例如廿十）
連　（例如司）
逆　（例如水）

（四）關係亦同，然後論第三筆之種類，及其與前兩筆之關係。三筆以下類推。

（註二）離接不明時，作接論。

（註三）筆順大抵自左而右，自上而下；間有先右後左者，因名其關係曰逆。然若其上已有他筆，雖其下有先右後左者（例如司字），不作逆論。

（註四）筆畫之長短不論，僅在母筆之種類及關係完全相同之字，始將先寫之橫筆較短者居前。例如「士」居「士」前，「日」居「曰」前，而士旁與士旁，日首與曰首之字，則仍混排。

第三條　凡數筆相合，已可獨立成一字者，即用爲單位，以不爲他筆所犯者居前；例如「兄」居「中」前。同屬未爲他筆所犯者，則以在左者居前，在上者次之，在中者最後；例如皓皇樂三字，「皓」居前，「樂」最後。

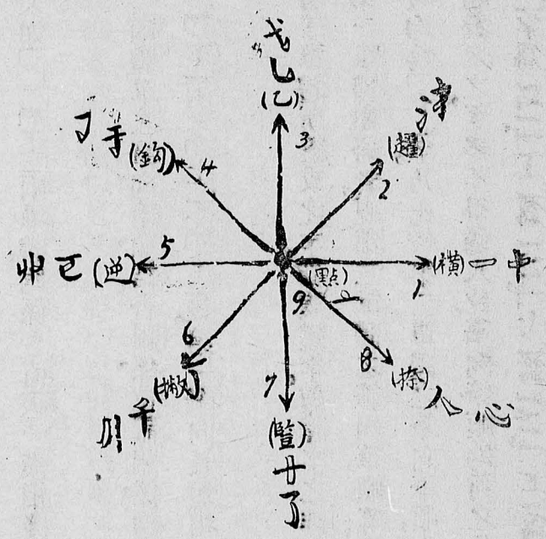
（註五）第三條所言以母筆之種類未變更者爲限，若因作偏旁而橫變爲趯時即認作趯，直變爲撇捺變爲點時亦然。

第四條　凡筆順不一致時，則用次序在後之母筆爲首筆；例如馬字，或作直起，或作橫起，則用直起。一筆而有數種寫法者，亦遵此例；例如言字之首筆，或作橫，或作點，則用點。

按此法使各字有一定位次，不容先後互易。因有位置關係及數筆所成單位之規定，以字中小團體與他字之小團體較，不必逐筆相比，可以一見而定字之先後。故一旦熟於此法，排檢非常便捷。惟須依據筆順，而筆順初不一致，則其短也。

（十五）何公敢單體檢字法

見東方二十五卷四號，民國十七年二月出版。分筆向爲九種，並以數碼表示之，如左圖：



然實用上祇有1 2 6 7 8 9等六種。其排列規則如左：

（一）按筆向筆順排列　漢字之排列，先按起筆之筆向；起筆相同者，視第二筆向；第二筆向復相同者，視第三筆向，以下類推，至成一單體爲止。

（二）按結合關係排列　兩單體之筆向、筆順均相同者，視第一筆向與第二筆向之結合關係。先離立結合，次接觸結合，次交叉接合。例如「八」「人」「乂」三字，先「八」字，次「人」字，次「乂」字。

（三）按位置關係排列　兩單體之筆向、筆順、結合關係，均相同者，視第一筆向與第二筆向之位置關係。先上下，後左右。其係上中下或左中右之比較時，則先上次中次下，或先左次中次右。例如：「丁」「士」兩單體，其第一筆向，均係一橫，第二筆向之直，在「丁」字係與第一筆向成上下關係，「在士」字則成爲左右關係，故應先排「丁」字，次排「士」字。又如「卜」「卜」兩單體，第一筆向均係一直，第二筆向之橫，在「卜」字係與第一筆向之中間一點相接觸，而「卜」字則係與第一筆向之最下一點相接觸，故其次序應先「卜」後「卜」。又如「工」「工」兩單體，均係一直與一橫相接觸，「工」字在最左，「工」字在中，故其序先「工」後「工」。

（四）按長短關係排列　兩體單之筆向、筆順、結合關係、位置關係、均相同者，比較筆向之長短，短者居先，長者居後。例如：「士」「士」兩字，「士」先「士」後。第一筆向長短相同，則比較第二筆向。例如：「壬」字居先，「壬」字居後。

（五）按單體排列　由若干單體所組成之字，稱複體字。複體字之排列，從其第一單體（按筆順先寫之單體，稱第一單體。）第一單體相同者，視第二單體之筆向筆順等，定其先後，以下倣此。例如：「仁」「仕」兩字，其第一單體均爲「亻」字。乃比較第二單體之筆向筆順，先排「仁」字，次排「仕」字。每一單體以其筆向之號碼表示之，至多不得過八位。筆向筆順均同之單體，其號碼亦同，則於右肩加「指數」以別之。例如「工」字爲171，「工」爲171²，「七」爲171³，「士」爲171⁴等是。

檢字時，察看其所欲檢之字之第一單體，按該單體之號碼，一檢便得。第一單體相同之字，檢該字之第二單體。餘類推。

按何先生此法，亦將複筆剖開計算，名之曰筆向，即余之母筆，惟順序不同。至排列規則，其第二條結合關係，即余所謂離按交之關係；其第三條位置關係，似余之自上而下自左而右之關係；其第四條長短關係，同余附註四中所規定；其第五條按單體排列，亦頗似余之第三條所謂單位。余固不敢謂何先生採取余意，至少其所見大體與余暗合。故此兩法實大同小異，利弊亦相似。惟何先生對於筆順之研究，較余爲精；然理論終難改變一般人之習慣，其原則多條，或且令人不耐細讀，仍不能免除筆順不一致之困難。又何先生以號碼表示單體，似可不必。每一單體之號碼，可以多至八位，則含多數單體之複體字，或將多至數十位，若注入字書或目錄片等，其枉費地位，消耗時間，殊屬不少；即有可取之處，亦覺得不償失。

（十六）卜賚諦（P. Poletti）雙部首法

編有華英萬字典，一九〇七年（即光緒三十三年）上海美華書局出版。先按字典舊例分部，同部首之字，再將其餘部按部首編次，並將二百十四部首依次系以號碼。例如「標」字屬木部，其號碼爲75；除木旁外，其剩餘部分「票」字屬示部，號碼爲113；故標字之號碼爲75.113，按號碼求之即得。

按此法雖免除計算畫數之煩，仍不能減舊部首之弊，且餘部亦未必一一合於部首。

（十七）魯森堡（O.Rosenberg）五段排列法

魯森堡俄人，偏有五段排列漢字典，民國五年在日本出版。未見。據王雲五先生云：『其檢字法先取五種方向的「一」「丨」「丿」「丶」「乀」各母筆爲基礎，再演爲二十四子筆，更進而演爲五百六十七個字母；這五百六十七個字母，分列六十欄。檢字時，先看右旁最低一筆係屬何種母筆，再由母筆推定其屬何種子筆，又從該子筆項下查明此字屬於那一個字母；然後按照這字母欄下所列的欄數，向字典本部中檢得該欄和該字母。至於同字母的許多字，則按照字體結構的情形而排列，計將各字體分爲三種。一爲單純字體，如「立」字等；二爲左右相連字體，如「泣」字等；三爲上下相疊字體，如「笠」字等；其順序先單純字，次左右相連字，再次爲上下相疊字；而同一順序的字，則就其首筆依五種方向的先後分別排列。』

按此法分折頗精；惟須檢查附表，間接而費時，則其短也。

（十八）林語堂末筆索引法

曾由商務印書館石印單行本，余惜未見，尋求經年，猶未能得。惟據北新記者所介紹（北新週刊第八期，民國十五年十月）：『他把中國字的全體分爲一千三百一十段，再把這一千三百一十段歸爲一百三十九部，再把這一百三十九部歸爲九個最低筆畫。

口　一　丨　丿　乀　乚　丶　ノ

『這九個最低筆畫，分別管轄那一百三十九個部首，例如「口」下有「田、目、日、口、凸、凹」六個部首，每個部首下註有分段的數目字如下：田(1)目(12)日(21)口(54)凸(106)凹(107)。這意思是說：「田」部共有十一段，所以「目」部下註十二；「目」部共有九段，所以「日」部下註二十；「田」部共有二十三段；所以「口」部下註五十四；「凹」部共有五十二段，所以「凸」部下註一零六，餘照此類推。這樣每一個「最低筆畫」管轄若干個部首，搆成一張「部首表」。檢查的時候怎樣呢？我就舉林先生所述「檢法」的例：(一)「蒙」字最低筆畫「丿」，檢之於表中得部首「豕」(448)，按448檢之即得。……(六)「晴情清請」等字依「青」字之最低筆畫「冂」，檢之表中即得部首「月」(648)，按648檢之即得「青」660)。』

復據北新記者言：同右旁之字，依餘部上端「最高筆畫」之平直撇點爲準，故先「驅」次「樞」次「傴」又次「謳」。餘部在左者居先，餘部在上者居後，故先「瑚糊糊湖」次「鬍葫」。所謂最低筆最高筆，單論高低，不問筆順。若一字有二三最低筆畫，以在右者爲準，「警」直首，「憊」撇首。所謂左右旁，單論左右，不論諧聲，且須可截然中斷，分爲左右二旁者，方得稱左右旁（若「信」「詰」「頡」等）。若「冠」「趁」仍以最低筆畫檢之（乀）。凡部屬不明者皆互見。例如「嘗」既見「旨」，又見「日」；「舉」既見「丰」，又見「手」。

按此法頗似魯森堡五段排列法，均以最低筆檢字，一方可免筆順之弊，一方可將諧聲字排在一

處，此其長也。惟所謂能將諸聲字排在一處者，僅就大體言之，頗不整齊；且檢字須先查部首表，間接而耗時，在詞語之排列尤覺不便，則其短也。

（十九）周辨明半周索引法

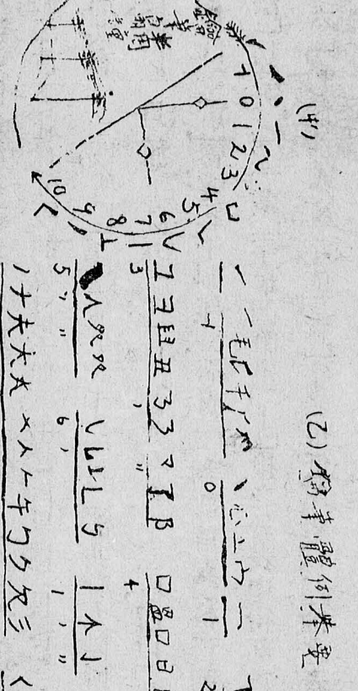
編有半周字彙索引，十七年七月出版。茲錄其例言如左：

（一）本索引法以宋體字爲主，取其每筆之全體爲運用。例如「ㄑㄴ」ㄅㄟ」皆認爲每筆之全體。

（二）凡字次第之編列，由下述「鑰筆」、「解字」、「形目」三要說規定之。

鑰筆說：（三）凡字最高之右筆，謂之「鑰筆」。

（四）凡字屬於何類，統由鑰筆定之。



（五）每筆以數碼名之，並順其數碼之序而定其次第。

（六）鑰筆凡十二類，由「半周鑰筆自明鐘」辨別之。

（七）鑰筆自明鐘與鑰筆之變體及要例，如上圖及表：

解字說：（八）複合字各部之解法，正如讀中文之舊習，以最高之部爲先，次高者次之，同高者由右而左。例如「鬱」字爲「木缶木冖彡鬯」，「糶」字爲「羽隹出米」。

（九）單體字或複合字之一部，各筆之解法，以最高筆爲先，次高者次之，同高者由右而左。似此，則任舉兩字，按筆順序比較，即可定其先後。

（十）筆之範圍：鑰筆及其連帶之筆，自成一範圍；凡字須先在該範圍內解筆，作第一番之比較。任何兩字，若在各該範圍內之筆非全雷同，則可不必再從事於他範圍之比較。例如：

比較之字　比較之範圍

引：汁　=　丨：十

勾：刁　=　冂：刀

（十一）以宀、艹、竹起部之字，概準其下部分解之。

形目說：（十二）與鑰筆連續之部，佔字之一隅者，謂之「形目」。同由一形目產生之字，可又作爲形目而滋生另一串之同形目字。例如「立」爲「笠泣粒拉位音意竟章童辛」諸字之形目；而「位」又生「涖」字，「音」又生「諳喑暗黯」字，「童」又生「潼曈瞳憧幢鍾僮艟」諸字。

(十三)同形目字，依其形目所居之方位，分爲四式；同式內之字，依其餘部之鑰筆，編定次第：

(甲)形目居「疒廾竹」之下者，如「疝；痂茄笳。」

(乙)形目居右旁者，如「汕仙；迦珈跏耡枷伽。」

(丙)形目居上方者，如「嵩嶽；巍袈哿駕賀架。」

(丁)形目之空處夾帶他部者，如「山」之「幽；「王」「之玉噩」「土」之「喪嗇坐」「口」之「國因」「大」之「奭陝夾爽犬」「戈」之「或我栽」「戊」之「咸戚」

(十四)連綿字依首字排列；首字相同者，依第二字排列。餘倣此。

檢字法：(十五)凡字於其鑰筆數碼之下求之。

(十六)同鑰筆字之中，依解字法推較至相差之筆，即可檢得欲求之字，有形目之字，先準該形目檢之。例如欲求「編」字，檢「丨」類中「戶」之「扁」。

定名(十七)依本法之排列，適如西文字母法，任何一字必有其絕對之地位，且同時即爲尋求他字之導引。其關鍵端賴在半周形上之鑰筆，故名「半周索引法」，簡稱「半周法」。

按此法蓋脫化於林氏末筆索引法，亦將諧聲字排在一處，惟用最高之右筆爲檢字起點，則與末筆法不同。其解字形目諸說，頗有研究價值，與余所主張以字中之小團體與小團體較，及何公敢先生之按單體排列，用意畧同。因有解筆順序之規定，不必依賴詳細部首表，所收諧聲字亦較多，是爲此法較林氏末筆索引法進步處。惟諧聲字之歸類，仍不整齊，不過五十步與百步之差。鑰筆體例舉要表中所列，亦無顯然易辨之順序，勢難記憶，不得不依賴附表，仍屬間接而費時。其取筆順序，自右至左，違反習慣，亦未見妥。

(二十)林憾首筆部首檢字法

見十七年十二月七日至十日民國日報覺悟欄。將筆畫分爲「點橫直撇捺」五種，撇複分橫撇，斜撇，直撇三種。選定一百二十餘部首，依其首筆種類爲序，除「捺」無首筆外，統於「點橫直捺」四大部。四大部均有適當的必須的部首，而將不成構造的無部首的字容納在「、部」「一部」「丨部」「丿部」同部之字，更按其餘筆畫之種類爲序。

按此法注意字中之小構造，立意甚善。何公敢單體檢字法及余之母筆排列法等亦合此意，兼有部首功用。所不同者，一爲自然而兼及之結果，一則出發點即在建立部首也。因立意建立部首，於是有不成構造而無部首之字，強納於「、部」「一部」等，於是字之隸部，有一部分費推敲矣。其部首次第，亦未明定標準，使人難辨。竊謂宜當納爲若干簡單明白之條例，以爲根據，使何任一字得援某條凡例以定其先後。

(二一)蔣一前漢字序次法

蔣先生研究檢字法有年，數經修改試驗，工作甚勤。今已將次完成，擬在中華圖書館協會年會中

發表之。茲先介紹其大體如次。該法以數筆所成之小組織爲單位。從四萬餘漢字中找出小組織五百餘，歸納爲十二大類如左：

(1)點組(例如氵)　(4)撇組(例如彡)　(7)角組(例如厂)　(10)折組(例如弓)

(2)橫組(例如三)　(5)捺組(例如乏)　(8)穿組(例如木)　(11)匡組(例如匚)

(3)直組(例如川)　(6)灣組(例如犭)　(9)叉組(例如又)　(12)方組(例如口)

每類之中，有多至百餘小組者，有少至六七小組者。同類之小組，依形編次。列成一表。排檢時，先論字中第一小組之種類；第一組相同，再論第二組；第三組以下類推。取組順序，自左而右，自上而下，自外而內，自中而旁，

按字中小組織確有可取之處，上文已屢言之；惟如何始能運用圓滿，煞費研究。蔣先生於此中用力甚勤，當有以解決之。聞將着重附表，不立凡例，則不敢贊同。

(二二)陳文首尾面線檢字法

印有小冊，十七年十月發表，並見同月新聞報學海欄，及民國日報覺悟欄。分筆形爲十類如左：

記號	名稱
一	橫
丨	直
丶	點
丿	撇
乀	捺
乂	叉
⊿	角
十	小
八	八
口	口

檢字；先檢字中最高筆之筆形，是爲字首，次檢最低筆之筆形，是爲字尾，各以記號代表之；再檢字中之面數及線數，點亦作線計（參看張鳳形數檢字法）是以每字均有二記號及二數碼，依記號及數碼之次序而排檢之。

代表的筆形	
一	
丨	
丶	
丿	
乀	
乂	
冂	(首)
冖	(尾)
小	
八	
口	(首)
口	(尾)

例：陳 ⊿(首) 十(尾) 4(面) 6(線)

文、(首) 乂(尾) 0(面) 4(線)

按此法蓋合林玉堂漢字索引制，王雲五四角號碼檢字法，張鳳形數檢字法而成，故自稱第四發明者。其以最高筆最低筆爲字首字尾，可免四角之繁瑣，點亦作線計，可免點線難分之弊，是其長處。惟排檢一字，須兼用記號及數碼，未免太煩；在字典尚無大礙，在排比書目索引等時，若須註明記號及數碼，則異常不便矣。

(二三)電報記號檢字法

見十七年十二月二十九日民國日報覺悟欄。張鳳先生代行發表，謂係「人」君的發明。方法如左：

(一)假設字之四出爲硬線，將字印於軟體物質上而得其留存之痕跡爲•及丨。

(二)分字爲單獨、上下、左右三類。單獨及上下者先計上下出，後計左右出之痕跡；左右者先計左右出，後計上下出之痕跡。

例：電 ⿱ 報 ⿰ 記 ⿰ 號 ⿰

按此法新奇而不合實用。

(二四)畫數部首法

先依筆畫多寡爲先後。同畫數之字，再按部首編次。中國圖書公司國文成語辭典之難字索引，即用此法。日本字書亦有採用此法者。

(二五)畫數首筆法

先依筆畫多寡爲先後。同畫數之字，再分橫、起、直、起、撇、起、點、起。中華書局新辭林及新式學生字典之檢字表，即用此法。

(二六)秦禹卿速檢字典

見十七年十月二十四日時報。依筆數分類。自一筆至三十餘筆，每筆之中，又以起首一筆爲標準，分成點、撇、鈎、豎、畫五部。每部之中，又畧依首筆之正偏長短爲先後。據謂字典業已付印，不日出版。

(二七)中央大學圖書館檢字法

印有小册，十七年秋出版。先依筆畫之多寡爲先後；筆數相同者，以起筆之形式分先後如左：

(1)、 (2)一 (3)— 丨附 (4)「 ㇇附 (5)丿 (6)㇇附 (7)乀 (8)乙

(二八)中央黨務學校圖書館檢字法

先依筆畫之多寡爲先後；筆數相同者，依陳立夫五筆檢字法爲先後。

(二九)杜定友漢字排字法

印有單行本。民國十四年上海圖書館協會發行。規則如左：

(一)漢字之排列，以全字之筆畫多寡爲次序，筆畫少者在前，多者在後。(附則二節從畧)

(二)同筆畫之字，則以筆法爲先後，以撇、橫、直、撇爲大綱。照「永」筆法爲次序。

附則(一)同筆畫，又同第一筆者，以其第二筆爲準。餘類推。(二)筆法爲四大綱之變化者，計有首筆八種，附筆六種。茲詳列如下。各字之排列順序以此。

筆	附
(3)「／」橫趨	
(10)「丨」直趨	
(11)「ㄣ」直折	
(13)「丿」直曲	
(14)「乚」直灣(乙)(乚)(亾)	
(18)「丶」捺	

筆首	大綱
(1)「丶」	
(2)「一」	
(4)「ㄱ」橫直	
(5)「ㄱ」橫鈎（ㄱ仝）	
(6)「乙」橫灣	
(7)「ㄱ」橫撇（一同）	
(8)「丨」直	
(9)「L」直橫	
(12)「亅」直鈎	
(15)「丿」撇（ ）同	
(16)「ㄑ」撇點	
(17)「ㄥ」撇橫	

附則(三)至(六)從畧

按以上六法，其第一步皆計算全字畫數，蓋因舊法而加以補充改良者也；雖合習慣，然計數費時，且一字筆畫之多寡復時有出入。其第二步再按部首編次者，舊部首之弊仍在；按首筆筆形編次者，復有筆順不一致之困難。六者之中，以杜定友先生之法爲最精，然其筆法有十八種之多，較難記憶，則其短也。

(三十)王雲五號碼檢字法

見東方二十二卷十二號，民國十四年六月出版。將筆法分爲五類。欲檢某字時，先計算該字所含第一類筆法之數，記在第一位；次計算第二類筆法之數，記在第二位；如此記至第五位，卽得該字號碼。若有某類筆法全缺者，以『〇』記之；某類筆法超過九數者，仍以9記之。舉例如左：

位次	第一位	第二位	第三位	第四位	第五位
筆法名稱	橫和趯	點和捺	豎和豎鈎	撇	屈折和右鈎
筆法形式	一 ノ	• 丶	丨	ノ	ㄱ ㄴ ㄥ ㄣ ㄟ
舉例	天	地			
	2	2	0	2	0
	1	0	2	0	2
	0	1	0	1	0

此外尚有補助規則，茲從畧。

按此法簡單明白，對於初學之疑義較少。惟同碼字甚多，且每字號碼須分五次計算，耗時不少。故王先生於發明後，旋亦棄之，另從事於四角法之研究。

(三一)張鳳形數檢字法

第一次發表於一般二卷二號十六年二月出版。同年十月印行單行本。十七年七月發行張鳳字典創造本。檢字正例一條如左：

面——由線合成之方格形。(面外引長之線不再計數)例如：口尸女等字各有一面。

線——由點聯成之長條形。(不論曲折)例如：一丿丶フ乚ノ3等。

點——尖圓形，例如：丶、丶、(其與點對列之短撇丿短趯ノ，如り八ㄟく等，算線不算點。)

檢字時，先數該字共有幾面，得第一數爲面數；次數共有幾線，得第二數爲線數；後數共有幾點，得

第三數爲點數；卽得該字之正碼，例如：張字爲〇二〇，鳳字爲264。按碼排檢。

面線點正碼相同之字，則分數其交接折之數，以定先後。線或點搆成之交乂形，函四角度者，曰交；如十×等。線或點搆成之接觸形，函兩角度者，曰接；如下上等。線或點搆成之折斷形，函一角度者，曰折；如厂」等。

按此法簡單明白，極易了解，是爲最大長處。惟面之界限，點線之分別，及筆數之多寡，有時難定。例如「華」「齊」兩字均無面，而「佳」作三面，「鹿」作五面，殊難索解。三角形不作面（例如「支」字無面），亦背幾何原理。正碼相同之字，計算交接折之數，仍不能除同碼字之弊。而其最大缺點，則爲計數耗時。與前述王氏號碼檢字法利弊相若，可謂簡明而不便捷。

（三二）橫直斜檢字法

見十七年十二月二十七日民國日報覺悟欄。張鳳先生代行發表，謂係『善兄的』發明。方法如左：

（一）分斷筆爲橫直斜三種（點亦爲斜，鈎挑不算）

（二）計算每字之橫直斜卽得。例如

橫764　直631　斜326

按此與前述王氏號碼檢字法大同小異。

（三三）加減檢字法

見十七年十二月二十九日民國日報覺悟欄。張鳳先生代行發表，謂係『美及雲華的』發明。方法如左：

（一）計全字筆畫之總數一，分數二，由總數減去第二分數得第三分數；或先計兩分數，相加而得總數，故名。

（二）分中國字爲獨體合體兩種，獨體字無分數。

例　中　四

華　十二　四　八

民　五

國　十一　三　八

（三四）王雲五四角號碼檢字法

第一次發表於東方二十三卷三號，十五年二月出版。嗣於同年分別刊有中英文單行本。第二次改訂本於十七年五月出版，修改甚多。同年九月印行四角號碼國音學生字彙及四角號碼學生字典，十月印行三版。第二次改訂本，復略有修改。茲錄最後發表之凡例如左，至原有舉例，因刻字不易，且王先生之字典及說明書發行已廣，概從略。

第一條　筆畫分爲十稱，各以號碼代表之如下：

號碼	筆名	筆形
0	頭	亠
1	橫	一 ㇇ ㇈
2	垂	丨 亅
3	點	丶 乀
4	乂	十 X
5	插	丰
6	方	口
7	角	弓 ㇄
8	八	八 ㇏ 人 乂
9	小	小 㐅 业 个 忄

第二條　每字祇取四角之筆，其順序：(一)左上角，(二)右上角，(三)左下角，(四)右下角。檢查時按四角之筆形及順序，每字得四碼。

第三條　字之上部或下部，祇有一筆或一複筆時，無論在何地位，均作左角，其右角作○。每筆用過後，如再充他角，亦作○。

第四條　由整個「口」「門」「冂」所成之字，其下角取內部之筆，但上下左右有他筆時，不在此例。

附則：(一)字體均照楷書。

(二)取筆時應注意之點：

(1)「宀」「戶」等字，凡點下之橫右方與他筆相連者，均作3，不作0。

(2)「尸」「皿」「門」等字方形之筆端延長於外者，均作7，不作6。

(3)角筆之兩端不作角。

(4)交叉之筆不作8，如「美43」

(5)「业」「业」中有二筆，「水」「小」旁有二筆，均不作小形。

(三)取角時應注意之點：

(1)獨立或平行之筆，不問高祇，概以最左或最右者爲角。

(2)最左或最右之筆，有他筆蓋於其上或承於其下時，取蓋於上者爲上角，承於下者爲下角。

(3)有兩複筆可取時，在上角應取較高之複筆，在下角應取較低之複筆。

(4)斜撇爲他筆所承，取他筆爲下角。

(5)左上之撇作左角，其右角取右筆。

(四)四角同碼字較多時，以右下角上方最貼近而露鋒芒之一筆爲附角；如該筆業已用過，則附角作○。附角仍有同碼字時，得按各該字所含橫筆(即第一種筆形包括橫刁及右鉤)之數順序排列。

按此法較前述號碼檢字法進步多矣。四角號碼，一望即可報出，不必一一計數。故熟練後，其便捷遠過前法。複筆亦頗有研究價值。惟論及第五角，再加橫筆，仍不能免同碼字之弊。推算號碼雖快，終係間接方法，在排字時，尤其在排列詞語時，須將號碼一一注出，費時不少。四角亦非固定基礎。雖有人爲的規定，頗涉細碎，易生誤會。於余前述四條要素未能盡合。總之，王先生此法，已達相當便捷，尚非澈底辦法。字典可以採用，在書目索引等，卽感不便。

(三五)瞿重福瞿氏號碼檢字法

見青年進步第一〇五期，十六年九月出版。將漢字筆畫分爲十類，並以號碼代表之，如左表：

號碼	名稱	筆法
1	點	、
2	平阻撇之兩與畫	丿一
3	短畫	一
4	長畫與捺	一乀
5	短直	丨
6	長直	丨
7	直撇與挑	丿乀
8	斜撇與捺	丿乀
9	灣	乚
0	鈎	亅

推算號碼時，先將字剖爲兩半，謂之「初一半」與「餘一半」，再檢「初一半」首筆與末筆之號碼，及「餘一半」首筆與末筆之號碼，如此每字共得號碼四位。按碼排檢。此外尚有無法可分之字及三連字等特殊規定，茲從畧。

按此法蓋倣王氏四角號碼檢字法而稍加變更者也，號碼之弊未除，復引進筆順之困難。三連字之破分法亦欠妥；例如「商」字認作三連字，剖爲「亠」「冏」兩半，未免離奇。

(三六)姜福成首尾號碼檢字法

見十七年九月十九日申報教育消息欄。「經過七月之時間，四百餘種方法之變更，始告成功。據實驗結果，祇須十分至二十分鐘之指示，便可了然而不易錯誤。」方法未詳。惟以名稱推之，或亦脫化於四角號碼檢字法，而與瞿氏號碼檢字法相類者也。「四百餘種方法之變更」云云，知未確否？

(三七)陸衣言頭尾號碼檢字法

見十七年十一月二十二日時報。「由三百七十一個原質字，出納歸十種基本筆畫。每種基本筆畫配一個號碼。號碼從〇號起，至九千九百九十九號止，共一萬一千號。一萬字內同一號碼的字，最多只有二十三個。檢查方法，十分便捷；只憑字的起頭一二筆及末尾一二筆筆畫的號碼，就能檢出。故名頭尾號碼檢字法。聞該檢字法說明書及新字典均已編好，大約年內可以出書。」

按此法與前述瞿氏號碼檢字法利弊相若。

(三八)張華穆首尾四筆檢字法

見十七年十一月二十五日京報副刊。分筆形爲九類，各以號碼代之如左：

1	2	3	4	5	6	7	8	9
、	丿	乀	乀	一	一	乃	乃	乃
一	一	一	乀	乙	乃	乃	乃	乃
乃	乙	已	乙	乃	乃	乃	乃	乃
乃	乃	乃	乃	乃	乃	乃	乃	乃

遇字檢其首二筆及末二筆形，即可按該筆形之屬於何號碼而檢得該字；例如

滕8133　王7764　高1487　閣6887

遇字之不敷四筆者以〇代之；例如

一0004　丁0045　丈0484

按此法所分筆形，頗覺紛亂，尚不及瞿氏之善。

(三九)禪心五筆檢字法

見十七年十二月三日民國日報覺悟欄。分筆形爲七種，各以號碼代之如左：

(1)點・　(2)畫一　(3)撇丿　(4)直丨　(5)屈「「凡筆形屈曲者屬之」　(6)趨丶

(7)捺乀

筆形概以工諸爲標準。檢字法先檢頭兩筆，次檢每字之第二部分之第一筆，末檢末兩筆，其不敷五筆以〇代之。遇字不能分何者爲第二部分時，概以每字第三筆代第二部分之首筆。例如：

五23520　筆31524　朱32237

按此法亦與瞿氏號碼檢字法利弊相若。

(四十)出筆始末檢字法

見十七年十二月二十七日民國日報覺悟欄。張鳳先生代行發表，謂係價人的發明。方法如左：

(一)分中國字筆畫的出向爲五種，各各切斷，在其始末共給以十個碼字：

0、1　2一3　4丨5　6丿7　8乀9

(二)分中國全字爲卑獨、上下、左右三組；一二兩組計上下的出筆始末，第三組計左右的出筆始末。

例：出444(上)——23(下)

筆66(上)——5(下)

始27(左)——123(右)

末4(上)——759(下)

按此法在號碼法中別樹一幟，頗爲新異；與前述數種之模倣四角法者不同。然不合實用。

結論

敘述既竟，有不能已於言者：新法四十種，雖各有短長，求其完善，能合前述四條件者，蓋無一焉。是不得不一方面望同志努力，向不同途徑盡量開發；一方面各棄成見，勿以已得爲滿足，勿以異己而斥人，均抱學術爲公之心，協力以求一最完善之法，此則余草斯篇之意也。

十七，十二，三十一日，南京

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Notes on Ts'i Min Tao Shu,
an agricultural book
written before 534 A. D.

圖書館學季刊第二卷第三期單行本

齊民要術解題

萬國鼎

中華圖書館協會出版委員會重印
中華民國十七年九月

3 1 3 3 . 4 8 0 4
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齊民要術解題

萬國鼎

後魏賈思勰撰。思勰始末未詳。四庫總目稱「惟知其官爲高平太守而已」，未知何所本。按陳振孫書錄解題作後魏高陽太守賈思勰撰。今世所存齊民要術各種刊本，亦作高陽。是高平當爲高陽之誤。（鄭堂讀書記作襄陽，亦誤。）北魏郡名之稱高陽者有二：一屬瀛州，舊治在今直隸高陽縣東二十五里；一屬青州，舊治在今山東臨淄縣西北三十里。是處所指，未知何郡。要皆在中國北部。當時南北割據，逾淮已屬南朝。故賈書所記，不無稍偏於北之處。如橘、柚、枇杷、甘蔗、龍眼、荔支之屬，爲南中所產，而北部所無者，均視爲非中國物產，其明徵也。後魏傳國一百四十九年，起西歷三八六年，訖五三四年。是書作於後魏何時雖不可知，至少距今約千四百年。在現存首尾完具之農書中，誠爲最古者也。

是書歷時既久，展轉流傳，脫文譌字，錯見疊出。茲就刊本之可考者，列舉如左。

（一）北宋天禧四年刻本（西一〇二〇年）據玉海卷一七八及李燾序。

（二）北宋天聖中崇文院本（西一〇二三至一〇三一年）據葛祐之序。

案今日本京都博物館（舊藏高山寺）有齊民要術殘本第五第八兩卷。每半頁八行，行十七字。上虞羅振玉氏謂卷中通字缺筆，避眞宗劉后父名通之諱，在仁宗初年明道間。即不復諱，因推定爲明道以前刻本。按天聖亦在明道前，未知此本即崇文院本，抑天禧中刻本耶？今此本已印入羅氏吉石盦叢書，天津貽安堂出售。

(三)南宋紹興十四年張轔刻本。(西一一四四年)據葛祐之序，轔字彥聲，濟南人。官龍舒守時據崇文院本刊於州治。

案昔黃蕘圃購得一校宋殘本，至第七卷之半作秦州春酒麴法一段止，不知出於誰氏之手。首葉簡端記有宋本行欵，每葉二十行，行十七字。張氏愛日精廬、陸氏皕宋樓及瞿氏鐵琴銅劍樓等所藏校宋本，則又據此本傳錄者也。今校宋本雖不易見，而今本所應校補之處，已由陸氏輯入羣書校補中，可以取而案之也。

(四)元刊本(西一二七七至一三六七年)莫友芝郘亭知見傳本書目云：元刊本要術每頁二十行，行大字十八字。

(五)明嘉靖三年馬氏刊本(西一五二四年)據王廷相序，馬直卿刻於湖湘治所。世稱湖湘本。

(六)明萬歷天啓間秘册彙函本(西一六〇〇至三〇年)海鹽胡震亨刊，世稱胡本。胡跋無年月。惟稱戊戌入都，獲之燈市。又秘册彙函刊版未竣，卽燬於火。殘版後歸毛晉補刊，編入津逮秘書。是則此本之刻，必在萬歷戊戌以後，崇禎以前明矣。

(七)明崇禎三年津逮秘書本(西一六三〇年)海虞毛晉汲古閣編刊。今上海博古齋有影印津逮秘書出售。

(八)明五朝小說本未見。

(九)明居家必備本未見。

(十)華亭沈氏竹東書舍刻本未見。

(十一)清嘉慶九年學津討原本(西一八〇四年)昭文張海鵬照曠閣編刊。今上海商務印書館有影印學津討原出售。

(十二)清光緒元年湖北崇文書局本(西一八七五年)編入百子全書，亦單行。

(十三)清光緒二十二年漸西村舍叢刊本(西一八九六年)桐廬袁昶刊，今由松江益智書社發售。

(十四)清光緒中觀象廬叢書本彭縣呂調陽編刊。

(十五)民國龍溪精舍叢書本未見。潮州鄭氏編刊。

(十六)民國四年石印百子全書本(西一九一五年)上海掃葉山房據崇文書局百子全書另寫石印。

(十七)民國十一年四部叢刊本(西一九二〇年)上海商務印書館借江甯鄧氏羣碧樓藏明鈔本影印。四部叢刊書錄云：『每葉二十行，行大十七字，小二十四五字。常皆作嘗，當出崇禎間人手筆。卷一第一葉周書云云，提要謂當作夾注，此正作夾注。目連正文皆作單排欵式，與日本高山寺藏北宋殘本同，宇句亦無大異。葛祐之後序遇朝廷字提行，源出于宋。』

(十八)民國十五年四部備要本(西一九二六年)上海中華書局據學津討原本排印。

(十九)民國千種叢刊本上海商務印書館編印，尚在籌備中。

右齊民要術印本十九種。宋刊祇存殘本。元刊本未見，不知尚有存者否。明嘉靖湖湘本，錢曾讀書敏求記謂其『注中刪落頗多。如首卷簡端周書曰。「神農之時，天雨粟」云云，原係細書夾注，竟刊作大字等類。文注混殽，殊可笑也。』胡氏秘册彙函本源出湖湘本。而毛氏津逮秘書本即就胡刻補刊。脫誤相類。華亭沈氏刊本，勞權謂其較胡本脫誤尤多。張氏學津討原本源出毛氏津逮，止據農桑輯要校補脫誤數十處。而四部備要本復據張氏討原本校刊。黃琴六嘗以校宋本逐條細勘之，謂：『知農桑輯要所引，與宋本悉合。而凡徵引所未及，可刊落胡刻之脫謬者，復得十之二三。前後計補脫正文百餘字，注文七百餘字，卷五脫葉文注四百一十餘字，零星羨文訛字及塡補空墨又得五百一二十字。』後四卷尚因校宋本殘缺未校。然則湖湘以下諸本脫誤之甚，滋可驚矣。湖北崇文書局本，蓋據毛氏津逮，桑柘篇脫葉猶未補入，而上海掃葉山房百子全書復一依崇文本重寫石印，又出學津討原本之下矣。袁氏漸西村舍始據校宋本校刊，然與陸氏羣書校補所載宋本不盡合，蓋校者以意取舍之也。觀象廬叢書本稍類袁本而不盡同，校勘頗疏，尚不及袁本之善。四部叢刊影印明鈔本，嘗取羣書校補及吉石盦叢書影印北宋殘本校之，亦間有不盡合者，然勝於明清諸刻遠矣。千種叢刊本尚未出書，將依金陵大學農業圖書研究部校本排印，蓋以宋刊殘本及明鈔爲主，參以他書所引，附加校勘記，使成一完本者也。

是書之註，不題撰人。四庫總目據文獻通考所載李燾序孫氏齊民要術音義解釋，推定爲孫氏所作，其名則不可考矣。周中孚鄭堂讀書記並謂卷首雜說五則，疑亦孫氏附入。案李燾生於政和三年，紹興八年登進士第，淳熙十年卒。序中稱『今運使秘丞孫公爲之音義，解釋略備。』又曰，『今公幸以稽古餘力，悉發其隱，盡併刻焉。』是孫氏當爲南宋初年人。方李燾撰序時，孫氏之注猶未刊版。然今所存校宋殘本，已有注及卷首雜說。若校本係據紹興十四年張氏刻本，似尚不能列入孫氏之註。葛祐之序中亦未言及。即註爲孫氏所撰，則張轔與孫同時，不當遺漏孫氏之名。且日本高山寺所藏殘本，經羅振玉推定爲北宋明道以前所刻，今印入吉石叢盦書者，亦已有註，與今本無異。是則不無可以研究之處矣。姑誌之以俟續攷。

是書序跋，余所見者如下：(一)賈思勰自序；(二)宋紹興甲子葛祐之序；(三)宋李燾序；見馬氏文獻通考(四)明嘉靖甲申王廷相序；(五)明沈士龍跋；(六)明胡震亨跋；(七)清嘉慶甲子張海鵬跋；(八)道光元年張紹仁跋；見面宋樓藏書志(九)道光五年黃琴六跋；見愛日精廬藏書續志(十)光緒二十二年袁昶序，(十一)同年劉富曾跋；(十二)光緒中呂調陽跋；(十三)民國三年羅振玉跋。

齊民要術之名，何所取義耶？史記曰：『齊人無蓋藏。』如淳注曰：『齊無貴賤，故謂之齊。人者古今言平人也。』是則齊民要術云云，若以今語譯之，猶言人民治生之要術也。

全書凡九十二篇，分爲十卷，每卷皆有目錄，而缺總目。檢閱殊感不便。竊謂以後重刊。宜增總目。卷一述耕田，收種，種穀。卷二大抵爲農作物，兼及瓜瓠。卷三大抵爲蔬菜，又有雜說一篇。卷四述果水，又有園籬，栽樹等篇。卷五

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大抵爲蠶桑竹木及特用作物。卷六述畜牧家禽及養蜂。卷七八九大抵爲釀造烹調等，又有貨殖，筆墨等篇。卷十則爲五穀果瓜菜茹非中國物產者。此編制之大較也。全書字數，大字約七萬，小字四萬餘，合讀書共十一萬餘字，序跋在外。茲更列表如左以明之。

	篇數	大字數	小字數	共字數
卷一	三	約四八〇〇	約五八〇〇	一〇六〇〇
卷二	一三	五六〇〇	四四五〇	一〇〇五〇
卷三	一四	五四〇〇	四四〇〇	九八〇〇
卷四	一四	二四〇〇	四七五〇	七一五〇
卷五	一一	七〇〇〇	三八〇〇	一〇八〇〇
卷六	六	六二〇〇	九一〇〇	一五三〇〇
卷七	六	八九〇〇	九五〇	九六五〇
卷八	一二	六八〇〇	七六五〇	一四四五〇
卷九	一二	九六〇〇	七〇〇	一〇二〇〇
卷十	一	一二七五〇	七五〇	一三五〇〇
共計	九二	六九四五〇	四二三五〇	一一一八〇〇

書中大小字之分，非即正文與註之別。如第五十一篇種竹，永嘉記曰云云，均作大字；而所引竹譜及食經，祇「竹譜曰」「食經曰」等作大字，引文則作小字。又如卷七作各種酒法均作大字；而卷八『作黃衣法』『作黃蒸法』等，刋作大字，似標題；其方法則均作小字，似註。未知何所取義，於例殊乖。豈展轉譌異，傳錄有誤耶？

書中文字，除註及卷首雜說疑爲後人所加不計外，其正文或出自撰，或引他書。大抵卷一至三，引文恐占十之六七。其所徵引，以氾勝之書爲最多，崔寔四民月令亦頻見。卷四至六，徵引較少。大約不過四五分之一。卷七至九，除貨殖，筆墨兩篇外，引書極少。卷十則完全引自他書。若就全書論之，自撰約占十分之六。

是書在北魏當時，聲價若何，已不可考。唐韓諤輯錄氾勝之書，韋氏月錄，齊民要術等，編爲四時纂要。（見郡齋讀書志）後周竇儼請於齊民要術及四時纂要韋氏月錄中采其關田蠶園圃之事，集爲一卷，頒下諸州。（見玉海）宋天禧四年，詔並刻齊民要術與四時纂要二書，以賜勸農使者，然非朝廷要人不可得。（見玉海及葛祐之李燾等序）葛祐之曰：「齊民要術舊多行於東州。僕在兩學時，東州士夫有以要術中種植蓄養之法爲一時美談。」李燾曰：『其書與律令俱藏，衆弗得習，市人輒鈔要術之淺近者，摹印相師。』歷元明及清，重農書，如農桑輯要，王楨農書，農政全書，授時通考等，無不廣引是書。而近代百子全書，四部叢刋，四部要等，復刻此以當農家之目。要術之爲歷來所重視，從可知矣。

賈書所記，若以近世農學上之知識衡之，自不無簡略疎淺之處。然其是否合於近世農殖，筆墨爲圭臬與否，是爲另一問題。如其合耶，是爲我國千數百年來農業之無進步，殊非吾人所望。是書合讀書正在其記古代農業，爲近世治農者所應知，尤爲治農業史者所必讀。不獨在現存農書中以此爲刊作而已逸古籍，如養魚經、氾勝之書、家政法等，猶得託之以存。況其中亦往往有至理名言，爲近世所不可廢者。誠我國農書中至可寶貴者也。

十七，三，十六

略疎淺之處。然其是否合於近世

年來農業之無進步。然其

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Notes on Ku Chin T'u Chu Shi Ch'eng, the Imperial Encyclopedia of Ts'ing Dynasty

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古今圖書集成考略

萬國鼎著

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古今圖書集成考略

萬國鼎

一

古今圖書集成一書，舊稱蔣廷錫等奉敕撰。及細考之，殊不盡然。夫清代官修之書，如康熙字典，佩文韻府，淵鑑類函，廣羣芳譜，四庫總目，以及續三通，清三通，會典，一統志等，無不於卷首列有纂修職名。是書爲清代鉅製，而反無之，寧不可怪。按雍正帝御製序中稱聖祖『命廣羅羣籍，分門別類，統爲一書，成冊府之鉅觀，極圖書之大備。而卷帙浩富，任事之臣，弗克祇承，既多訛謬，每有闕遺，經歷歲時，久而未就。朕紹登大寶，思繼先志，特命尚書蔣廷錫等董司其事，督率在館諸臣，重加編校，窮朝夕之力，閱三載之勤。凡釐定三千餘卷，增刪數十萬言。』又蔣廷錫等表文稱『奉敕恭校聖祖仁皇帝欽定古今圖書集成，』亦無一語述及前修。卽序及表文言之，廷錫係校訂之人，決非原編纂者明矣。且全書爲卷一萬，而序稱釐定三千餘卷，爲字約一萬萬，而序稱增刪數十萬言，是則廷錫等所校訂者，亦殊有限。通常稱蔣廷錫等奉敕撰者，誣也。然圖書集成本書所載，但曰『蔣廷錫等』，無第二人名，豈非別有故耶。

據陳壽祺所撰陳夢雷傳，

『陳夢雷字則震，一字省齋，福州閩縣人。未冠，登康熙九年進士，授翰林院編修，請假歸。會逆藩耿精忠叛，徧羅名士，幽縶夢雷及其父於僧寺，脅受僞官。夢雷不得已，庇瘠託疾以稽之。賊平議罪，有陳昉者，汚賊，京師僞傳夢雷也，復爲逆黨，徐宏弼誣告，徵下詔

獄，幾不測，朝旨減等，謫戍尙陽堡。……夢雷才敏，通國書，間關塞外十餘年。諸公卿子弟執經問字者踵接。聖祖仁皇帝東巡盛京，夢雷獻詩稱旨，蒙恩召還，教習西苑，侍誠親王禁庭。奉命編圖書集成三千餘卷，御書「松高枝葉茂，鶴老羽毛新」聯句賜之。雍正初，復緣事謫戍，卒於戍所。子孫遂家遼陽。有周易淺述八卷，松鶴山房集十六卷，天一道人集百卷，初刻者爲閑止書堂集二卷。」

（見國朝耆獻類徵初編卷百十六第四十二頁，文碑傳集卷四十四第十五頁。）

及康熙六十一年十二月十二日雍正帝所頒上諭觀之。

『陳夢雷原係附耿精忠之人，皇考寬仁免誅，發往關東。後東巡時，以其平日稍知學問，帶回京師，交誠親王處行走。累年以來，招搖無忌，不法甚多。京師斷不可留，着將陳夢雷父子發遣邊外。或有陳夢雷之門生，平日在外生事者，亦即指名陳奏。又楊文言乃耿逆僞相，一時漏網，公然潛匿京師，著書立說。今雖已服冥刑，如有子弟在京者，亦即奏明驅遣。爾等毋得徇私隱蔽。陳夢雷處所存古今圖書集成一書，皆皇考指示訓誨，欽定條例，費數十年聖心，故能貫穿今古，彙合經史，天文地理，皆有圖記，下至山川草木，百工製造，海西秘法，靡不備具。洵爲典籍之大觀。此書工猶未竣，著九卿公舉一二學問淵通之人，令其編輯竣事。原稿內有訛錯未當者，即加潤色增删，仰副皇考稽古博覽至意。』（見石印本東華錄雍正朝一第四頁。）

則是書爲陳夢雷所主編，而故意不載其名者。原因何在？英人齋爾茲（Lionel Giles）在其所編圖書集成索引（英文）導言中（第八面）謂：『觀雍正上諭，是書顯已完成於康熙帝歿時。不但稿已完成待印，字模亦已製就。

吳長元宸垣識略載，『武英殿活字板處，在西華門外北長街路東。長元按活字板向係銅鑄，爲印圖書集成而設。康熙中，……年久銅字殘缺過半。乾隆三十八年，易以木字，印四庫書，應刊樣本，賜名聚珍，有御製詩。』（見卷三第二十四頁）

且亦不能必其未嘗開始印刷。雍正帝即位之初，即急切於除去陳夢雷，蓋不欲其仇人之名，永留於其父在位時最足紀念之文獻鉅製也。其目的雖達，然遲至一八四五年，

梁章鉅歸田瑣記載『吾鄉相傳，國朝圖書集成一書，成於陳省齋之手，實未核也。恭讀康熙六十一年十一月諭……據此則圖書集成之成帙，非省齋所能專其功，而省齋之負才跅弛，讀此亦可見其概矣。』（見卷四第九頁）按後段所言，蓋不欲忤時王耳。

尙相傳成於夢雷之手。夢雷既去，勢必假託一人，以正式負其完成之名。遂派少年時以詩書著稱之蔣廷錫爲新總纂。然集成所載，概係引自他書，於上諭所稱之「潤色」，蔣氏不能大有爲也。因此可謂蔣氏之簡派，要在迷衆人之目，待至一七二六年，經過若干時間「幻想」中之錯誤已校正，始任其出版也。』

雍正帝何以認夢雷爲仇，齋氏未嘗明言。意者，或信其如上諭中所言，夢雷有不法乎？果爾，則亦不無誤會。考誠親王即皇三子胤祉，以文學著稱，而雍正帝即皇四子胤禛也。康熙中世以後，諸皇子各樹黨羽，謀奪嗣位。胤禛既以陰謀紹大統，猜嫌諸兄弟，因而罪及黨附諸王者。夢雷在胤祉處，而以才學著稱，宜乎胤禛於即位之初，即託故黜之也。明乎此，則集成之所以不署夢雷之名者，昭然盡揭矣。

二

圖書集成之刋本有三種。（一）雍正三年（西曆一七二五年）以銅版活字刋印，相傳祇印百部。一萬卷分釘五千册，每册二卷。分裝五百二十三函，每函八册至十册。另目錄二十册。其第一册則載有雍正四年九月二十七日御制序，雍正三年十二月二十七日蔣廷錫等表文，及凡例，總目。今北京故宮圖書

館有此種活字本，完全無缺。江浙間存者，余所見有三部，（上海東方圖書館，杭州省立圖書館，南潯嘉業堂藏書樓各一部）然均殘缺不全，互相鈔補。國外如倫敦巴黎柏林三處，亦有此種板本；僅倫敦所存者係全帙而無補配，今改訂爲七百四十五本洋裝巨册，藏於大英博物院中。（二）光緒中總理衙門石印本，大小與初版活字本彷彿，册數函數亦同。惟另加考證二十四册，共五千零四十四册。此種印本較多，各地多有存者。然爲價甚鉅，故通行者惟（三）光緒十年（西曆一八八四年）上海圖書集成局鉛印本，字體及板框均縮小，分訂一千六百二十册，內目錄八册，共印一千五百部。所用鉛字，概作扁形，與近今通行之鉛字異，益以排印密接，殊失美觀，且傷目力。圖尚可頗有譌字。

三

是書編制，凡分六彙編，首三編以天地人爲次，即所謂三才。三才既立，次之以物。然後及理學與經濟。蓋欲以包舉學問之全體。惟但觀彙編之名，不足概其內容。欲考其詳，須進而檢別編下所分之三十二典。

曆象彙編分四典：（一）乾象典，紀天地、陰陽、五行、日月星辰、及風、雲、雨、雪、雷電、等旁及火與煙。（二）歲功典，紀季節、月令、寒暑、干支、晨昏晝夜等。（三）曆法典，紀曆法、儀象、漏刻、兼及測量算法、數目等。（四）庶徵典，紀變異、災荒、夢、謠、讖等。

方輿彙編分四典：（一）坤輿典，紀土、泥、石、砂、汞、礬、黃、灰、水、冰、泉、井、以及歷代輿圖、分畫、建都、留都、關隘、市肆、陵寢、冢墓等。（二）職方典，分紀清代各省府地理。（三）山川典，紀名山大川。（四）邊裔典，紀外國。

明倫彙編分八典：（一）皇極典，紀帝王之事。（二）宮闈典，紀太上皇、后妃、宮女、乳保、東宮、皇子、皇孫、公主、駙馬、外戚、宦寺等。（三）官常典，紀百官之事。（四）家範典，紀家庭間事，並及宗屬、戚屬、奴婢等。（五）交誼典，紀師友、鄉里、以及社交、世態等。（六）氏族典，分紀各姓氏，按韻編次。（七）人事典，紀身體、年齒、名號、命運、感應之類。（八）閨媛典，紀婦女之事。

博物彙編分四典：（一）藝術典，紀農、醫、卜、星、相、術數、以及畫、奕、商、賈、傭工、優伶、娼妓之類。（二）神異典，紀鬼、神、釋、道等。（三）禽蟲典，分紀各動物。（四）草木典，分紀各植物。

理學彙編分四典：（一）經籍典，紀河圖、洛書、十三經、國語、戰國策、歷代史、通鑑、史學、地志、及諸子、集部、類書、雜著等，大抵偏重於經史。（二）學行典，紀人品、學問、名賢、列傳、及游俠、勇力等。（三）文學部，紀文學總論、名家列傳、及各體文、與詩、賦、詞、曲等。（四）字學典，紀音義、字體、法帖、書法、書家、聲韻、方言、以及筆、墨、紙、硯等。

經濟彙編分八典：（一）選舉典，紀學校、教化、及取士之科等。（二）銓衡典，紀官制、祿制、封建、及黜陟之法等。（三）食貨典，紀戶口、農桑、田制、蠶桑、荒政、賦役、漕運、貢獻、鹽法、雜稅、平準、國用、飲食、布帛、珠玉、金銀、錢鈔等。（四）禮儀典，紀冠、婚、喪、祭、朝、會、燕、饗等禮，而祀典爲最詳；又以服章正名定分，禮所必嚴，亦附

及之。(五)樂律典、紀律呂、歌舞、及各種樂器等。(六)戎政典、紀兵制、田獵、兵法、兵略、屯田、馬政、驛遞、兵器等。(七)詳刑典、紀律令、及盜賊、牢獄、聽斷、刑制、赦宥等。(八)考工典、紀諸工匠、規矩準繩、度量權衡、城池、橋樑、宮室、器用等。

以上各典之大概也。典之下分部。一部之中、復分彙考、總論、圖表、列傳、藝文、選句、紀事、雜錄、外編等。凡事之大綱入於彙考；瑣細而亦有可傳者入於紀事；百家及二氏之書所紀、有荒唐難信、及寄寓譬託之辭、臆造之說、錄之則無稽、棄之又疑於掛漏者、則入於外編。議論之純正者、入於總論；議論雖偏而詞藻可採者、入於藝文。麗詞偶句、則入於選句。其雖係聖經之言、而非正論此一事、僅旁引曲喻偶及之者、或集部所載、有考究未眞、難入於彙攷、議論偏駁、難入於總論、文藻未工、難收於藝文者、則統入於雜錄。疆域、山川、禽獸、草木、器物等、藉圖以顯者、則繪圖。星躔、官度、紀元等非表不能詳者、則立表。其有關於此部之名人、則載諸列傳。

右述部之下所分細目、非各部皆有、無者闕之。常有者大抵爲彙攷、總論、藝文、紀事、雜錄諸目。而彙攷尤爲編者所重視。其言曰：『彙攷之體有二：大事有年月可紀者、用編年之體、倣綱目立書法于前、詳錄諸書于後。則一事之異同疑誤、參伍可得。此典中之最宏鉅者也。或大事無年月可稽、與一事一物無關政典者、則列經史于前、而以子集參互于後。雖歲月未詳、而時代之後先、一事因革損益之源流、一物古今之稱謂、與其種類、性情、及其制造之法、皆可概見矣。』

一部彙攷、通常不復分門。然亦有例外。如職方典各省府部下之彙攷、分建置沿革攷、疆域攷、星野攷、城池攷、關梁攷、封建攷、公署攷、學校攷、戶口攷、田賦攷、漕運攷、風俗攷、祠廟攷、驛遞攷、兵制攷、物產攷、古蹟攷等。此等攷亦非各部均同、每有缺者、亦間有另加者、如壇廟攷、山陵考、宮殿考、苑囿考、國學考、船隻考、河防考、海運考、鹽政考、羌蠻考、峒蠻考、土司考等。考名亦間有不同者、如戶口考、田賦考、或作戶役考、賦役考。雲南土司部彙考下分各蠻族考、亦爲一特例。又如藝術典醫部彙考分素問、靈樞經、難經、脈法、外診法、臟腑門、經絡門、身形門、運氣門、頭面耳目及各種病等、共一百三十餘門。術數部彙考亦分太乙、奇門、六壬、三門。

除彙考外、總論與列傳、亦殊重要。如學行典之九十六部中、除聖人部一部外、有總論而無彙考。而列傳之多者、往往長至數十卷、有多至一二百卷者；例如將帥部列傳有一百卷、文學總部列傳有一百零六卷、閨節部列傳有二百零七卷。

部之下分彙考、總論、以至外編等十項、是爲各部通例、然亦間有另增者、如經籍典易經部外編之後、有易學別傳十六卷。又如戎政典兵制部、附有士卒名流列傳及士卒紀事。

四

全書凡六彙編、三十二典、六千一百零九部、一萬卷。卷之長短相仿、故可藉以估計全書字數、及各

門類之長短比較。

是書殿版每頁十八行，每行二十字。每卷平均約四十頁，計字一萬四千四百，除去空白，當亦不下一萬字。全書一萬卷，當有一萬萬字。據齋爾茲之言；『十一版之大英百科全書，爲字約四千萬。譯中國文言百字，約需英文一百五十字。故圖書集成一書，可謂大於最巨之英文百科全書三四倍。』按最近之十三版大英百科全書約計五千萬字。

彙編之長短，不在典之多寡。典之長短，亦不在部之多寡。要以卷數爲衡，茲就卷數推算各編與典之長短比較如左表。

	典名	部數	卷數	體積百分比	
曆象彙編 120部 544卷	乾象典	31	100	1.00%	5.44%
	歲功典	531	188	1.16	
	曆法典	6	140	1.40	
	庶徵典	50	140	1.88	
方輿彙編 1187部 2044卷	坤輿典	21	144	1.40	21.44
	職方典	223	1544	15.88	
	山川典	401	320	3.20	
	疆裔典	542	140	1.40	
明倫彙編 2987部 2604卷	皇極典	31	300	3.00	26.04
	宮闈典	15	148	1.40	
	官常典	65	800	8.00	
	家範典	31	116	1.16	
	交誼典	37	120	1.20	
	民族典	2694	640	6.40	
	人事典	97	112	1.12	
	閨媛典	17	376	3.76	
博物彙編 1130部 1656卷	藝術典	43	824	8.24	16.56
	神異典	70	320	3.10	
	禽蟲典	317	192	1.92	
	草木典	700	320	3.20	
理學彙編 235部 1220卷	經籍典	66	500	5.00	122.0
	學行典	96	300	3.00	
	文學典	49	250	2.60	
	字學典	24	160	1.60	
經濟彙編 450部 1832卷	選舉典	29	136	1.36	18.32
	銓衡典	12	120	1.20	
	食貨典	38	360	3.60	
	禮儀典	70	348	3.48	
	樂律典	46	136	1.36	
	戒政典	30	300	3.00	
	祥刑典	26	180	1.80	
	考工典	154	252	2.52	
共計		6109	10000	100.00	100

觀右表，六彙編中以明倫彙編爲最大，占全書四分之一以上；方輿彙編次之；經濟彙編又次之；曆象彙編爲最小，不及全書十九分之一。

三十二典中，以職方典爲最大，約占全書六分之一弱；幾大於曆象彙編三倍，而與博物理學兩彙編彷彿。以乾象典爲最小，祇占全書百分之一。茲爲明晰計，列表如左。

典別	百分比
職方典	15.44%
藝術典	8.24
官常典	8.00
氏族典	6.40
經籍典	5.00
300－376卷者九典	29.44
252－260卷者二典	5.12
100－192卷者十六典	22.36
共三十二典	100.00

觀右表，首列五典幾占全書之半。而三十二典中，有十六典不滿二百卷，共占全書不及四分之一。部之長短，參差更多。茲更列表以明之。

部別		共卷數	百分比
醫部		520	24.08%
閏節部		210	
100－199卷者	5部	646	
50－99卷者	16部	1032	
30－49卷者	23部	894	33.46
20－29卷者	37部	821	
10－19卷者	125部	1631	
5－9卷者	252部	1652	34.61
1－4卷者	940部	1809	
不滿一卷者	4709部	785	7.85
共6109部		10000	100

觀右表，最大者爲醫部，占全書二十分之一以上；幾與曆象彙編之大小相等，而三十二典中大於該部者僅有四典。全書六千一百九部中，五十卷以上者共二十三部，幾占全書體積四分之一。而不滿一卷者有四千七百九部，反不及全書十二分之一。部之小者，大抵爲邊裔、氏族、禽蟲、草木等典內諸部。邊裔典第八十六卷有四十四部。部之最小者，祇有一二行。

五

全書不下一萬萬字。規模之大，在類書中，除永樂大典外，無出其右者。而永樂大典雖大，然係按韻編次，與集成之分類者不同；且大典僅有鈔本二部，正本早燬，副本今亦散失，所存無幾，不若集成之有印本三種，尚能完好無缺，通行人間也。自餘類書之大者，如太平御覽、册府元龜、淵鑑類函等，多者亦僅及集成十分之一，不可同日語矣。

圖書集成所分之部類，若以近世科學衡之，自多缺點。如農工商均近世所謂應用科學，而工人經濟彙編之考工典；商歸博物彙編之藝術典；農則分屬藝術、食貨、考工三典，其間頗有重出者。殊爲失宜。而烟火之在乾象典，尤屬顯見之不當。部之長短相差懸絕，雖限於材料使然，而分併離合，固編者之權衡也。一部之中，編次亦每嫌蕪雜，不能條分縷析，首尾井然，然以較之前代類書，已不無進步。（關於各類書之部類比較，將另文考之）每部之中，分彙考、總論、列傳、藝文等項，亦屬創例，列傳尤爲特色。而收羅宏富，便於比觀，遑論我國今日尚無百科全書爲參考所必資，即他日有完備之百科全書時，欲綜觀前人對於某事某物之言論或記載，則此書亦不可廢也。固稍大之圖書館所應備之普通參考書也。

十，一，十八

0659

0990

h 0 8 h - E E 1 E E

Faculty

A playlet in one Act.
The Audience is requested not to weep

Personnel:

Dick Ritter: Mr. George Lochr (enters dressed in full evening dress, and carrying a box filled with earth.

Ran Sailer: Mr. Breece, who enters dressed in shorts and the upper half in Sailer's costume (loaned by Mr. Bevan) he leads in two goats (Peter Wilson and Pat Parr)

Dr. Brown: Mrs. Tayler who enters clad in ulster and carrying suitcase and tin of codliver oil, leading Brutus (Larry Mead, who carries odd bit of fur to serve as tail which he agitates.)

Bess Barnes: Hilda Hague who enters clad in riding kit and carrying hatbox

Edith Boynton: Eleanor Mead who enters neatly dressed for traveling and carrying suitcase which falls open and is revealed to be full of books, he hands are full of bills.

Tiny Armstrong: Mr. Bevan who enters clad in topee, brown coat and shorts, his hands are full of anything that will raise a laugh

Augusta: Dora Bent, who enters dressed in widows veil, carrying suitcase

Ch'en Yen Jung: Ch'en I, who enters carrying basefall bat in one hand and suitcase in other, dressed in gym dress.

Gladdie Parr: Gladdie Parr (her own sweet self)
Charles Parr: Charles Parr (his own sweet self)

Chorus: The whole troupe sing to the tune of "Anybody here seen Kelly)

0661

Scene: The Power House.

OBLIGATO: "All the World is waiting for the Sunrise".

Enter Sailer: "Is there yet time (strikes match and looks at watch) Two-thirty-one. There is. Nights candles are burnt out and jocund day stands tiptoe on the lonely mountain top. Our gallant Parr said he would be at the Power House gate at 6:30 sharp. Just four hours more in which to pack the luggage, the piano, Louise, the babies and the goats. Yet there is time.

Goats: "Baa, Baa,"
Dick Ritter (off stage) (shouting) "Is that you Charles? Where is the car?
Sailer: Hallow: Who's that?
Ritter: My name's Ritter.
Sailer: SPLENDID.
Ritter: (entering) Oh, its you Ran, didn't recognize your voice.
Goats: Baa, Baa.
Sailer: That wasn't me, that was the goat.
Ritter: Goats. What are you doing with those goats.
Sailer: To feed the babies on the voyage.
Ritter: Nize Babies! What do you mean, voyage.
Sailer. Well since the war has mucked up the train service to Tientsin we'd have lost our boat if Parr hadn't offered to take us down.
Ritter: Where are Louise and the Bebbies?
Sailer: They are meeting us at the Library steps. I thought I'd better got the goats on board first, they may be a little troublesome.
Goats: Baa, Baa.
Ritter: You are not expecting to go in Parr's car, are you? Not with those goats?
Sailer: Of course. He said last Tuesday he could take us all down. What is the matter with the goats any way? They are perfectly good goats. Usually ride in a Rools Royce, but they don't object to a Ford.
Ritter: Oh, it's quite all right I assure you, only Charles happens to taking all of us down too. We are to pick up Emma and the Nize Bebby and the Amah and our goats at the house at 7:00. We will call for Pansy in Peking.
Sailer: Holy Mackerel! Have you got goats too?

Ritter w Well hang it all, you are not the only one who has a Nize Bebby now. Why shouldn't we have goats? If you could take those goats to Peitaiho last summer on that sampan, I should think a little trip across the Pacific would be a simple matter. (Witheringly) Perhaps we had better order the President's car for the goats.
Sailer: (seriously) I don't believe the President would like that, He doesn't mind brides and babies, but he'd draw the line at goats.
Ritter: Well, there may be room for us all. (Pause) But what on earth are you rigged up like that for.

0662

Sailer: Well you see I've gotten so fat since I came to China that I am afraid the family won't be able to recognize me when I land. So I thought If I were a sailer's costume they could pick me out in the crowd in the GrandCentral Station in New York. But you don't look so hot yourself. Didn't you have time to change after that party at the Hotel last night?

Ritter: I haven't been to the Hotel. You see, I don't believe in wearing a dress suit in Yenching, but I think it will be quite suitable for traveling.

Enter Dr. Brown (running and holding up hand)

Dr. Brown: Stop that bus! Oh, I thought I had just missed Dr. Parr. How nice of you all to come to see me off.

Ritter: (in a resigned tone) Well I suppose there will be room for us all, if Dr. Brown won't mind sitting on my Peprermint Farm (indicates box of earth)

Dr. Brown (coldly) You don't mean you are all going in Dr. Farr's car? I am taking in two of Mrs. Learmonth's Patients to the P.U.M.C. They will need to lie down.

Ritter: Come, come, Dro. Brown, we can manage you and your luggage, but it will be dangerous for those patients. Why they would die of suffocation on the way.

Dr. Brown: Oh no, they won't, Because I'll make Dr. Parr take out a window. If he doesn't I'll break it. (shakes her umbrella)

Sailer Ah now I'll know where I can put my legs.

Dr. Brown: Any sign of Edith or Bess? Let me see, I believe Bess is riding in, so that makes one less. I'm not sure about Augusta, but I think Mr. Bevan has ordered the old Black 'Oss for the Widow's Ward.

Sailer and Ritter Sneezo

Dr. Brown: What's this a cold coming on. Its well I brought the cod liver oil. You will have a dose all round.

(She doses everyone including the goats and Brutus)

Enter Bess in riding kit

Bess: I wonder if there is a seat left for me.

Dr. Brown: Why I thought you were riding in this morning.

Bess: Well I thought I was too, but Dr. Sharman has gone off with the horses. I've been waiting an hour. I don't care for myself, but Irene Gailey came out to ride in with me. She brought her father. He's a little large, but two of us could sit on his lap.

Ritter: Oh, plenty of room, plenty of room. Two seats left on the roof. No extra charge. Splendid opportunity to see the country side. all you have to do is to hold a goat and three suitcases in your lap.

Bess: Perhaps Irene and I might each ride a goat in if they are quite quiet, but I don't believe they could carry Pop.

Enter Edith Boynton with books and bills.

Edith: Is it 8:00 yet? I do hope I'm not late for Dr. Parr's car.

0663

Sailor: He toldme to be here at 6:30
Ritter: No, he said 7:00
Dr. Brown (firmly) 7:30
Edith (bustling away) Well if he comes tell him to wait. Louis Holm still owes the Women's College one dollar and forty-five cents and ten coppers, and I must collect it before I go. Don't let the car go without me.
Exit Edith
Enter Tiny Armstrong (in topee, brown cost and shorts)
Tiny: Hallo, Hallo, all ready for the Bover Road, oh what? What's all this, it looks like a blooming circus.
Sailer: Where do you think you are going with all that Paraphenelia? You had better hurry or you will miss the bus.
Tiny: What bus? You don't think I'm going to risk my life in the Yenching bus, do you? There is no danger of missing Parr's bus.
Ritter: There is no room in Parr's bus. We are all going in it.
Tiny: Oh, splendid there is always room for one more
Sailer: not if you are the one
Tiny (genially) I told Bi to tell the boy to wake me at 8:30, but he forgot blooming idiot, just like Bi. Are Nancy and Hilda going in too to see us off? Oh by the way I think Bi intends to come too, he said something about it at breakfast, and I promised to take Faulkner to the station. I can't let him down.
Ritter: But this is impossible.
Enter Augusts dressed as a widow
Aug. Oh, has anyone seen Charles. I've been looking for him for half an hour for a last meeting of the landscape committee. There is still some rockwork to be attended to, and I don't like to leave until the landscaping of the President's house is settled.
Tiny (pause and scratches his head) Ih, its may cue now. Hilda wrote a fine answer to that Augusta, but I haven't learnt my lines yet. (Feels in pocket) Oh dash it all, I left that page in the pocket of my pajamas, and Lao Pai washed them by mistake.
Enter Yen Jung Chen
Yen Jung: I wonder if there would be time of r a baseball practice. (counting) there are just enough to makeup a team. The Girls are playing Bridgeman academy tomorrow morning and they need some practice. Dr. Brown will you be first base, Mr. Armstrong you'll make a splendid Babe Ruth.....
Tiny (interrupting) Miss Ch'en, I ask you to be gentle with us. We may look like the sole survivors on a desert island, but we are no blooming baseball team.
Enter Gladdie Parr
Gladdie: Hallo, everybody. Has Charlie come yet? He motored the teams to Mukden yesterday morning, but he said he would be back in plenty of time to leave you all at Tientsin. I'm afraid he will used some breakfast, and a bath and a shave first. I can't let him go to Tientsin without shaving. But it won't take him a minute. I've heard the road to Mukden is rather broken up and his tires are weak, so he may be a few minutes late if he has had a blowout. Has anybody here seen Charlie?

0664

All burst into song:

Has anybody here seen Charlie
C H you know how to spell it
Has anybody here seen Charlie
You can tell him by his smile
He's never been known to refuse a date
But once in a while he's a minute late
He's a jolly good sport is Charlie
Charlie from the Emerald Isle

Enter Charles panting and breathless: "I've one seat left for the Ming Tombs. I'm taking the President's guests up this morning. I'll just have a spot of breakfast and and shave and will be leaving in five minutes. Whoever is coming please don't keep me waiting.....

Utter collapse of entire troupe

CURTAIN

0665

Faculty

THE DOLL'S DRESSMAKER

A Christmas Phantasy for Children in Yenching.

Characters

Jenny Wren	A little girl twelve years old who has no father or mother, and who earns her own living by dressing dolls. She is lame and has a crooked back.	Mary Cookingham
The Lost Child	The play tells all I know about him.	Jantt Smith
Peter	We all know them.	
Larry		
Peteris Mother	She knows best, as you will see in the play.	Flo. Wilson
The Man from E. Lee's	The villain of the piece--but no doubt he cannot help it.	E. K. Smith

Toys

Miss Parlez-Voo, the Paris doll--		Nita Cherry
Miss Chrysanthemum	the Chinese doll	Ch'en I
Bobby	the policeman doll	Sam. Groff
The Russian twins		L.C. Porter and Dora Bent
Santa Claus Dolls		Henry Chou
Jack	The Jack in the box.	Chang Hun-chun

0666

The scene show a small room with a door at the back which opens into the street. A low fire burns in the open fire place to the left, and before it but near to the centre of the stage sits Jenny the Doll's Dressmaker busy at her craft. She is finishing the work on the Paris Doll, and other dolls, the Policeman, the Chinese Lady, the Russian twins, the Jack in the bo and the Santa Glaus doll, are standing on a low bench where she can reach them. Jenny is a queer little hunch back figure, with a shrewd face. Her crutch lies ready to heh hand.

Jenny (addressing the Paris doll) There you are my fine lady! Just a bit together in the waist line you ought to be. I went out last night on purpose to get Lady Nancy's latest French clothes as a model for you, and this is the way you should be. (she finishes the last stitch and holds the doll at arm's length) Very nice you look, if I do say it. (The church bell strokes six o'clock.) There is faint organ music O come all ye faithful) Six o'clock and time for the choir rehearsal in the church next door. I wonder if Larry and Peter will go to practise? Oh dear, dear, I'm tired. My back has worked as hard as my fingers getting this Christmas lot of dollies ready, but the E. Lee man should come within half an hour, and then he'll give Jenny some money, my dear. Yes, and off you'll go and maybe Rosalie's mother will see you, and buy you for Rosalie's Christmas stocking. Jenny won't get any stocking at Christman, but if she gets enough out of all you Christmas dollies to buy her some ceal for the fire, and some bread and milk, she'll call it a Christmas without a Paris doll. (She survey s the toys) I wonder, will you be sorry to leave Jenny? You're the only company I have, you know. I shall be lonesome without you. Merry Christmas, Jack! (She picks up the Jack and he pops out at her) I think I'm going to cry, Jack---did you hear? I-- I won't cry. M-m-erry Christmas Jack. (She is smiling to keep the tears back. There is a timid knock at the door) Come in.

(The door opens, and the Lost Child enters Hesitantly. He is shy and small and cold, and dressed in white.)

Jenny I can't get up, because my back's so bad, and my legs are so queer, but come in.

Child Please, who lives here?

Jenny I do, Shut the door if you want to talk. I can't do it easily myself because --well you see.

Child shuts the door and comes in.

Child Who lives here?

J Didn't you hear me say I do?

Child Haven't you got any father or mother? (J shakes her head) Do you live all alone then?

Jennie Of course, who would live with a hunch back like me? See (she points to various parts of the room) There is my bed room-- the fire place is my kitchen-- and this is my dining room work room and drawing room all in one. Please to make yourself at home.

0667

Child What are you doing?

Jennie I've just finished with Lady Parley-Voo here. I'm a doll's dressmaker. Here's my card.

Child (Reads) Miss Jennie Wren, Gownsand Wraps, Dolls fitted by appointments Evening thins a speciality.

Jennie This is an age of specialization. I'm an expert you see. And I use the British terms -- It's better business.

Child Oh-- I hope making doll's dresses is a very good business.

Jennie (briskly) No, poorly paid. You get tired you know --sitting up all night, because things have to be finished for Christmas.

Child What's Christmas?

Jennie I'm sure I don't know much about it, I know other children who don't have to work amake a great fuss about it--and they have a lot of singing in the Church next door. There's the organ now -- Listen!

(Music O come All ye Faithful)

Child Oh ins't that a pretty song. And children are singing it!

Jennie Yes --choir boys! But don't talk to me about them! I can't bear them.

Child Why not?

Jennie (viciously) I know their tricks and their manners! They know I make toys and so they come in her sometimes. Always running and screeching! Always calling manes through a person's key hole and making fun of a person's back and legs.

Child Why do they?

Jennie Beeause they're boys I suppose. Boys are all horrid.

Child But I don't call names.

Jennie Then you're the exception thatproves the rule. Which reminds me. Who are you and what do you want?

Child I'm lost.

Jennie Lost are you? And it's a freezing winter afternoon. How'd you come in here?

(Her tone grows kinder)

Child (laying a hand on Jennie's knee and looking up at her) I thought perhaps this was my father's house.

Jennie Do you mean you don't know your own home?

0668

Child My father has a good many houses.

Jennie O has he? It's getting pretty late for small fry to be out

Child (shivering) Yes, I'm cold, and I'm tired.

Jennie Well-come to the fire, though there isn't I will say. What's your name?

(before the Child can answer, a great racket sounds outside, the door bursts open, and Larry and Peter come stamping in)

Boys Hullo! Where are the toys?

Larry I want to see the policeman again!

Peter Gee! Pipe this Santa Claus! Isn't he swell?

Larry (spying the Lost Child) Hullo! Here's a new one!

Jennie He's lost.

Larry Don't you know where you live? Gee, Peter, this little guy is an awful nut! He doesn't know where he lives.

Both boys roar with laughter.

Jenny Go away, you naughty boys! Why can't you leave us alone?

Boys Cross-patch crosspatch!

Peter Hey, kid, where did you come from?

Child I'm lost.

Peter (kindly) well, your father will be out looking for you and it will be all right.

Larry My eye, Peter, look at this Jack.
(He makes him jump out of the box)
Jennie starts up passionately.

Jenny You'll spoil my toys. Don't you touch them-- don't touch them!

Peter runs off with Jack, and Jenny hobbles after him on her little crutch. Larry follows behind her imitating her. She takes the Jack from Peter.

Child (weeping) I'm lost!

Boys Cry baby, cry, cry baby!
A sweet voice off stage calls-- Larry! Peter!

Jennie There! Pepter's mother has just come out of the church, and she's calling you. (to the Child) Don't cry. We'll find you somehow.

0669

Larry (shamefacedly) We didn't mean to make the kid cry.

Jennie Peter, when you go home, please tell your mother there's a child here that's lost. She'll know what to do.

Peter (proudly) I bet she will! My mother always knows best.

(Voice outside-- Larry! Peter!)

Boys Whoopee!

They dash out. Other voices are heard shouting

Hunchback, Hunchback!
Jenny sits down and digs a finger into her eyes. The Lost Child watches her gravely.

Jenny (attempting to be brave) They don't think how it hurts a person when they shout about a person's back.

Child No, they don't know what they do.

Jenny Of course it wasn't Peter or Larry who shouted that. It was some others of those choir boys. Well, they're gone now. (she drées her eyes) You better stay till Peter's mother comes. She'll tell us how to find your father. Boys always act badly after choir practise, but mothers seem kind people as a rule. This one comes to see me sometimes and do you know I often dream about her.

Child What?

Jenny (hastily for fear the quaver in her voice should turn out a complete break) I dream sometimes, she takes me home with her.

Child I have dreams like that too.

Jenny Well, dreams are no use, are they?

Child Oh yes, they are! Lots of my dreams have come true!

Jenny You're luchier than most people then. You must want some supper-- don't you?

Child (nodding) Yes, I do.
(Jenny starts preparations) Child says, you are kind--like boys' mothers, aren't you?

Jenny (setting out two little bowls and a tray of bread) No.! I'm horrid, Didn't you hear them call me cross patch and spit fire? That's what I am! Sit down.

Child (sits) I don't feel so lostnow.

Jenny I'm afraid there isn't much milk. I drank nearly allof if this morning. And there are only two sardines, and two pieces of bread!
(She pours the milk into a pot and sets it on the fire to heat.)

0670

Child Jenny, can't you count?

Jenny Of course I can count.

Child No, you can't.

Jenny Why?

Child How many pieces of bread?
He shows the plate.

Jenny Six!

Child (gleefully) You said two.

Jenny (rubbing her eyes) But there were only two.

Child (laughing) And how many fishes, Jenny?

Jenny (firmly) Two.

Child Count, Jenny, Count!

Jenny Six, again!

Child (stooping over the hearth) The milk is warm. Let me pour it out.
He does so, and fills two bowls

Jenny There was only a tiny bit left in the bottle.

Child Maybe there was water in the pot. (he tastes) It's very good, Jenny, Eat, and drink.

Jenny (slowly) Things like this have never happened before.

Child No, but then you've never had me here be fore have you?

Jenny Who are you?

Child (mysteriously) I musn't tell you.

Jenny Why not? If you don't tell me your name, how can I ever help you to get found?

Child Wait till Peter's mother comes, She'll know me.

Jenny (gaily) All right. Only if we aren't going to be properly introduced you must call me Miss Wren.

Child (in a very grown up tone) This is a most desicious supper. Miss Wren.

Jenny (happily) It's just like a party.

Child Miss Wren-- what do you think?

Jenny What?

Child Next week is my birthday.

0671

Jenny Really!

Child Yes, it is! Will you come to my party?

Jennie Aren't you lost? How can you have a party when you're lost.

Child Oh, I get lost very often, but I don't stay lost Miss Wren. I'll be found by the time for my party. Didn't you say Peter's mother will come and find me?

Jennie Oh yes-- maybe she will. How many people go to your party?

Child (grandly) Everybody in the world.

Jennie (doubtfully) Even the poor people?

Child Specially the poor people. Rich people come too but it's lots hard for them to get in.

Jennie And people with queer backs and bad legs like me?

Child They have the best times of anybody at my party.

Jennie That's queer. How many parties have you had?

Child (chapping his hands) You mean how old am I?

Jennie Yes, how old are you?

Child Well, you have to count my candles of course to find out.

Jennie Of course. The candles on your cake.

Child But people put my candles on trees!

Jennie Why do they do that?

Child It's always mothers that do that, and mothers always know best. When do you think Peter's mother will come?
(A knock)

Jennie Perhaps she's here now, Come in.
(The door opens and a man in business clothes come in)

Man Are you Miss Jennie Wren?

Jennie Yew, sir.

Man I'm from E. Lee's

Jennie Oh you've come for the dolls.

Man Well, Miss, I'm sorry to say but I haven't.

Jennie I don't understand.

0672

Man E. Lee's says they can't take your goods, Miss, beaause they had to buy elsewhere to meet the Christmas trade.

Jennie (trembling) But I've worked as fast as I could. I sat up all night.

Child And it isn't good for her.

Jennie I thought you were to bring the money sir, and take the dolls to-night.

Man I'm sorry. My directions are to tell you we couldn't take your stuff. Good night.

He goes. Jennie sits down trembling and biting her lip.

Child You are crying.

Jennie How is a person to eat? And pay the rent?

She wrings her hands

Child Jenny don't cry. You can come to my party! It's only next week.

Jenny (to herself) And it's certainly too late to sell anywhere else!

Child (coaxingly) How warm the fire is, Jennie. Just feel how warm it is!

Jennie I musn't cry now. I must wait till Peter's mother has taken him away. (aloud to the Child) why yes-- the fire is good and I thought it was nearly out. (The child cuddles down at her knee.) Why how tired he is. He's almost asleep.

Child (drowsily) Do you hear? Mother is singing ---

(There is soft music/ the lights lower.
Song outside, "The Beautiful Mother is bending"
Jennie nods, I'm sleepy too)
There is only the firelight with the two sleep-children. The music changes to a merry rollicking theme. The lights go up. The dolls are all life size, a reel. The music ends the dolls bow and Jack pops into the face of the Paris Doll.

Jack Boo!

Paris Doll Jack I must beg of you, don't be vulgar.

Jack Force of habit. How about a little jazz?
May I dance with you?
Miss Parley-Voo?

0673

Paris Doll — I am really too much up set by that horrid E. Lee man to think of it. I had expected to spend the holidays in the country with my friend Miss Rosalie Wolferz-- you heard Jennie speak of it only this afternoon, and here this vulgar person actually takes it upon himself to say, that I am not to meet Mrs. Wolferz before Christmas.

Jack — Outrageous! He should be arrested by the Policeman and obliged to do Santa's beat all over North China. But in the mean time-- a little dance, Miss Parley -Voo--just a little one?

Policeman — Order! I don't think dancing is allowed in Peking--take the two o'clock for Tientsin, and make it snappy.

Santa — Rules are off at Christmas time, Bobbie, Beside your beat is in London, not in China.

Policeman — Thank you sir, there have been so many international activities of late that I've got confused.

Jack — Poor old Bobbie! You haven't brains enough to tell whether this is Peking or the Strand. Just stand up straight in your uniform and look handsome-- that's all that's expected of a doll policeman anyway.

Paris Doll — (sweetly) He can certainly do that!

Policeman throws out his chest and struts about very pleased.

Jack — That's right make a fool of him Miss Parley Voo. Just like a woman. Aha! Here were the Russian Twins!

The Russian Twins dance.

Chinese Doll — Santa, where shall we all spend the Lost Child's birthday?

Santa — I rather hoped Janet's mother would buy you for Jent-- she speaks such beautiful Chinese you'd feel quite at home.

Jack — (Winking) Oh, that isn't necessary.

The Chinese ladies from Shanghai
No longer seem so very shy!

(The Chinese doll is much abasjbed)

The Russian Dolls — And vee vanted to belong to Helen Ed th Vilson!

Jack — Wolcott Porter is the only person in the world I'd belongto.

Santa — I rather hoped Hugh Barbour would approve of me for the top of his Christmas tree.

Jack — I don't know what you think, Santa, but I vote that Bobbie goes over to E. Lee's and pastes that man one on the coco.

0674

Paris Doll Really, Jack, you are impossible!

The church bell begins to ring.

Chinese Doll Oh, does that mean we must all be quiet? It's such fun to move about.

Santa No, no. As long as the Dressmaker and the Lost Child dream, we may dance, for we are the toys in their dreams.

Policeman Then I will immediately proceed to Peking, and arrest the person of E. Lee, heartless capitalist!

Santa There's a better way than that.

All What?

Santa I told you we are the toys in the children's dreams. If the dream of the Lost Child could come true, then we could belong to the children who want us.

(The toys all look at each other)

Santa goes on, The Lost Child said he was looking for his father's house. I think--between you and me--it's the house next door, and if it is, they're going to have people there tonight, and Larry and Peter will sing, and Peter's mother will be there too. Do you hear the music?

The church music becomes louder. The Lost Child stirs.

The Chinese Doll (softly) Let us all go back to our places and wait to see what happens.

The toys return to their places. The Lost Child rises and moves through the toys to the door. The service in the church begins with the hymn "O little Town of Bethlehem." The lights lower.

When the lights come up, the child is gone and the dolls are toys once more. There is a knock. Jenny stirs. Another knock.-- the door opens. There is fleeting glimpse of the Lost Child pointing into the room, and Peter's mother in a long blue cape comes in. She should carry a suggestion of Madonna robes.

Peter's Mother Jennie!

Jennie Oh--I--have you come to take me home? --(she becomes more awake. Oh--I'm afraid I've been asleep.

Peter's Mother Yes, indeed you have--fast asleep by the fire.

Jennie You've come to find the Lost Child, haven't you?

Peter's Mother Yes, I did come for that, but I met him outside the door.

0675

Jennie (opening her eyes wider) Oh--he's gone.

Peter's Mother Yes, his house isn't far away.

Jennie That's nice. (anxiously) I wonder if he will remember he invited me to his birthday party?

Peter's Mother When is his party?

Jennie Next week.

Peter's Mother That's Christmas too, isn't it? Where will you spend Christmas, Jennie?

Jenny (in a low tone) I don't know.

Peter's mother looking about. The dolls are still here. Didn't you tell Peter you were going to send them to E. Lee's ?

Jenny (faintly) Yes.

Pepter's Mother But you didn't?

Jenny They weren't done in time--though I sat up all night to finish.

Peter's Mother Poor little Jenny!
Jenny breaks down, and Peter's Mother takes here in her arms.

Peter's Mother Hush Jenny--don't cry. Listen to the music--do you hear? The voices in the church swell louder in the last stanza.

O Holy Child of Bethlehem
Descend to us, we pray

Peter's Mother very softly Jenny, will you come home with me for Christmas? We're doing to have a Chrismmas tree.

Jenny (breathless) With candles?

Peter's Mother Many candles.

Jenny sitting up with shining eyes The it must be his tree, He said people always put candles on his tree, instead of one his birthday cake.

Peter's Mother If you will go home with me, you, and Peter and I will all celebrate the birthday party together.

Jenny But--but my back is so bad and my legs are so queer.

Peter's Mother (very quietly) In my house perhaps they will be better.

Jenny Oh--are you really going to take me to your house--or is it just a dream?

Peter's Mother Come and see.

0676

Jenny And I won't need to sell the dolls to pay the rent and buy the bread and milk?

Peter's Mother No.

Jenny Then I can give the dolls to all the children who want them. (she gathers them up) This Policeman doll, is for Pat, and the Paris Doll for Rosallie and Jack for Wolcott and the Chinese Doll for Janet and the Russian Twins for Helen Edith Wilson, and I will dress lots of other dollies for all the other children!

Peter's Mother stands at the door. The humn sounds louder again, and as it is ending Peter's Mother opens her blue cloak, and takes Jenny and her apron full of dolls under it. And so, the curtain falls.

FINISHED

0677

A TENTATIVE LIST OF MONOGRAPHS ON
FRONTIER STUDIES

Yenching University in Chengtu

(1) Prof. Lin Yueh-hwa, The Lolos of Liang-shan (涼山夷家) -- An Inquiry into their Clan and Kinship System. About 100,000 words supported by maps, genealogical tables, graphs and photographs, in print in the Commercial Press, Chungking.

(2) Prof. Lin Yueh-hwa, The Tibetans of Northern Sikang (康北藏民) -- A Study of their Family and Community. About 100,000 words supported by maps, genealogical tables and photographs, in the process of completion.

(3) Prof. Lin Yueh-hwa, The Giarung in the Territory of Four T'U-ssu in Lifan (四土戎人) -- A Study of their Family and Community. (In preparation)

(4) Mr. Chang Kun, A Study of the Giarung Language, Shang Meng T'un, Lifan (上孟屯戎語研究). (In preparation) Under the direction of Prof. Li Fang-kuei.

(5) Mr. Chang Kun, A Study of the Chiang Language, Lifan (羌語研究). (In preparation) Uncer the direction of Prof. Li Fang-kuei.

(6) Mr. Chen Shu-yung, A Study of the Giarung Language, Cha Ku T'un, Lifan (雜谷屯戎語研究). As a thesis for the partial fulfilment of M. A. degree in the Department of Sociology. (In preparation) Under the direction of Prof. Li Fang-kuei.

(7) Mr. Cheng Yung-ling, An Inquiry into the T'u-ssu System of the Giarung in Lifan (理番戎人土司制度). As a thesis for the partial fulfilment of M. A. degree in the Department of Sociology. (In preparation) Under the direction of Prof. Lin Yueh-hwa.

(8) Mr. Shen Chia-chü, A Field Study of the Lolo Community in Southern Sikang (西康腎屬儸儸社區). As a thesis for the partial fulfilment of B. A. degree in the Department of Sociology. (In preparation) Under the direction of Prof. Lin Yueh-hwa.

(9) Mr. Tao Tseng-chi, On the Religious Life of the Giarung in Wu-t'un, Lifan (五屯戎人宗教生活). As a thesis for the partial fulfilment of B. A. degree in the Department of Sociology. (In preparation) Under the direction of Prof. Lin Yueh-hwa.

* Mr. Lin Yueh-hwa is the Head of the Departemnt of Sociology.

0678

Manuscripts Ready for Publication and in Preparation by Yenching Faculty Since December 8, 1941

Since December 8, 1941, faculty members of Yenching who have remained in Peiping have prepared manuscripts for 46 books and 22 articles, in addition to some poetical works. This figure, including some works still in preparation, is not exhaustive.

Of this number of works only comparativly a few have appeared. Because the costs of paper and printing are extremely high, the suspended local publication activities have not yet been resumed.

It may be, however, of some interest to enumerate these works in the following list (A stands for articles, B for books, P for poetry):

I. Ch'i Ssu-ho (齊思和)

Ready for publication:

1. History of Chinese Political Thought (中國政治思想史) In two volumes, first volume finished. To be published by the Commercial Press — B
2. General Western History (西洋通史) In two volumes, first volume finished. — B
3. Geography of Early Chou Period (周初地理考) — A
4. Contemporary Chinese Historiography (現代中國史學評論) — B

II. Chao Ch'eng-hsin (趙承信)

Ready for publication:

1. Memoirs of Prison Life (獄中雜記) — B
2. Notes on Sociology (社會學注釋) — A
3. Human Demography (人口統計學) — B

III. Chao Tzu-chen (趙紫宸)

Ready for publication:

1. A Collection of Yü Hsi Sheng's Poems (王溪生詩集) An annotated collection of some 800 poems by Yü Hsi Sheng. — P
2. An Interpretation of Christianity (基督教進解) — B
3. 雨工牧子詩鐸 A Religious Poem, an extended exposition of Christianity in verse. — P
4. The Life and Letters of St. Paul (聖保羅傳) — B
5. Song of Nativity (聖誕曲) — P
6. A Book of Sermons (雨工牧子口鐸) — B
7. The Biography of a Pastor (一個牧師的傳記) — B
8. Prayers for Good Friday (受難節禱文) — B

IV. Ch'u Sheng-lin (褚聖麟)

Ready for publication:

1. A Chinese translation of Rojansky's Introductory Quantum Mechanics (羅翔斯基: 量子力學大綱) — B
2. An article in English, entitled "The East-West Asymmetry of Cosmic Radiation at a Geomagnetic Latitude 28°17' and an Estimation of the Difference of the Exponents of the Absorption Law for the Polar and the Equatorial Regions". This was prepared in coordination with Messrs. Francis Oster and Lü Lieh-yang of Fu Jen Univ. of Peiping. — A

V. William Hung (洪煨蓮)

In preparation:

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1. The transmission of the text of Shih-tung (史通) B
2. A definitive edition of the Shih-tung B

VI. Hou Jen-chih (侯仁之)

1. The Origin of the Settlement of Tientsin (天津聚落之起源) 1944 Not for sale. B

VII. Kao, Ming-k'ai (高銘凱)

Ready for publication:
1. 漢語語法論 A new system of Chinese grammar, theoretical and historical studies. B
2. La découverte d'Anyang et les résultats obtenus d'après l'étude des inscriptions oraculaires, avec une bibliographie complète et une bibliographie critique des ouvrages importants de la question. (In cooperation with M. J-M de Kermadec) B

In preparation:
1. A French translation of his articles on the particle 'ti' (的) A
2. A French translation of the grammar noted above. B

VIII. Li Jung Fang (李榮芳)

Ready for publication:
1. Great Characters of Israel (以色列的偉人), an edited Chinese translation. To be published by the National Committee of the Y. M. C. As B
2. Teaching of Jesus by Manson, a Chinese transl. (耶穌的訓言) B
3. Confucianism, Buddhism, Taoism and Christianity. (儒釋道與基督教) B
4. Changes of Ceremonies in the Worship of Confucius (祭祀孔子的演變) A

IX. Loehr, George

1. Ready for publication: The Paintings of the Early Catholic Missionary Castiglione, Dissertation in Italian at the Univ. Rome B
2. In Preparation: Catalogue Raisonné of the Paintings of Castigliane A

X. Lowenthal, Rudolf (羅文達)

1. The Development of Copyright in China: development of the conception and its present legal aspects. A
2. A Taoist Interpretation of the Old Testament. A
3. Index Generalis Collectanea Commissionis Synocalis A
4. The Mohammedans in China, by Palladius, an English transl. from the Russian A
5. Christian Radio Broadcasting in China A
6. The Catholic Press in China A
7. The Buddhist Press in China (6 and 7 are supplements to the book "the Religious Periodical Press in China") A
8. The Nomenclature of Jews in China A
9. Sources to the history of the Chinese military expeditions into Mongolia by Kasakevitch. An English transl. from the Russian A
10. An Early Source on the Chinese Jews by Chang Hsiang-wen Edited and Annotated English transl. A

Lowenthal

Ready for publication:
1. Author and subject index to the Bibliotheca Sinica of Cordier B
2. A German supplement to the Bibliotheca Sinica B
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Ready for publication:
1. Principles of Ancient Phonology (古音說略) B
2. New Rhyme Tables of the Shih-ching (詩經韻譜) B
3. Phonological Studies of Poetry from the Han to the Six Dynasties. (漢魏六朝韻例釋) B
4. Rhymes of the Four Great T'ang Poets (唐四家韻) A
5. Phonological interpretations of tu-jo (讀若) notations of the Shuo-wen (說文) (說文讀若考) A
6.

In preparation:
1. Ancient Mandarin (古官話音說) B
2. Phonological tables of the Shuo-wen (說文諧聲譜) B
3. Grammar and vocabulary studies of modern Pai-hua B

XIII. Lü Chen-chung (呂振中)

A new translation of the New Testament from the Greek B

XIV. Nieh Ch'ung-ch'i (聶崇岐)

In preparation:
1. A History of Chinese Functional System (中國官制史) B
2. A Dictionary of Chinese Functional System (中國職官辭典) B

XV. Ridge, Sheldon

Chinese contributions to the English language A

XVI. Shadick, Harold

1. Ready for publication: An annotated translation of the Travels of Lao Ts'an (老殘遊記) by Liu Tieh-yün (劉鐵雲) B
2. In preparation: An annotated transl. with an introduction of Ts'ang Lang Shih Hua (滄浪詩話) by Yen Yü (嚴羽) B

XVII. Shen Nai-chang (沈迺璋)

Ready for Publication:
1. A Note on Individual Differences in the Size-Weight Illusion A
2. Color Blindness Among Chinese Students with Reference to the Limitations of Ishihara Test. A

XVIII. Teng Chih-cheng (鄧之誠)

Ready for publication:
1. The Case of the Imperial Examination in the Eighth Year of Hsien Feng (咸豐戊午科場大狱記) A
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3. Book-reviews (桑園讀書記) B
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5. Poems (閉門吟) B

XIX. Torri, Ryuzo (鳥居龍藏)

1. Sculptured Stone Tombs of the Liao Dynasty 1942 B
2. 契丹與中央亞細亞服飾之類似 The Khitan (Liao) and Central Asia -- similarities of dress and ornament. Published in the journal 中央亞細亞 (Central Asia) 1934 & 1944 A

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In preparation:

1. Pre-historic China B
2. Culture of the Liao Dynasty from the archeological view-point. B

XXII. Weng Tu-chien (翁獨健)

Ready for publication:

1. Identification of foreign terms in the Yüan Tien Chang (元典章譯語集釋) A classified glossary, with explanations of the foreign terms, personal and proper names found in the Yüan Tien Chang (元典章) A
2. Life and Works of Professor Paul Pelliot (伯希和及其著述書目) A

In preparation:

1. A study of Yeh-lu Ch'u-ts'ai (耶律楚材) with an annotated English translation of his biography and of the account of his travels. A
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3. A general history of the Mongol-Yüan Period (蒙元通史) B

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文學院各教授之著作

國文學系

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戰國策詳註　文明書局

文品彙註　北平景山書社

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金文編

金文續編

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鄭振鐸：

文學大綱　商務印書館

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插圖本中國文學史　北平景山書社

海燕　新中國

文探　新中國

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George R. Loehr:

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明呂乾齋呂宇衡祖孫二墓誌銘攷　燕京學報第三期

崔東壁書版本考　史學年報第三期

駁景教碑出土於盩厔說　史學年報第四期

說苑引得　民國二十年　引得編纂處出版

白虎通引得　同上

考古質疑引得　同上

歷代同姓名錄引得　同上

高似孫　略箋正序之一　史學年報第五期

所謂修文殿御覽者　燕京學報第十二期

儀禮引得附鄭注引書及賈疏引書引得　民國二十一年　引得編纂處出版

四庫全書總目及未收書目引得　同上

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宋詩紀事作者引得　同上

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摩尼之二宗三際論　同上　第三期

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顧頡剛：

古史辨　第一册　民國十五年　北京樸社出版

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尙書研究講義　六册　民國二十至廿二年　燕京大學油印本

吳歌甲集　一册　民國十五年　北京大學歌謠研究會叢書之一

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春秋戰國地理史講義　民國二十二年　燕京大學油印本

州與獄的演變　史學年報第五期

兩漢州制考　中央研究院歷史語言研究所　蔡孑民先生六十五歲紀念集

新學制初級中學國語教科書　民國十一年至十二年　上海商務印書館出版　與葉紹鈞周予同吳研因等同編

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中西交通史料匯篇　輔仁大學出版

馬哥孛羅游記（譯本）　燕京大學國學研究所出版

中國史書上關於馬黎諾里使節之記載　燕京學報第三期

斐律賓史上李馬奔之眞人考　燕京學報第八期

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哲學系

黃子通：

亞里斯多德與康德之關係(英文)

康德論本體　本學系印行

中國哲學問題(英文)　在英美印行

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分析命題與綜合命題　同上

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朱熹哲學　燕京學報

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T.B.C.F.制之檢討　中國測驗學會研究報告之十四

英法德丹俄的生產教育　教育雜誌第二十五卷第六號

科學的教育　教育與文化第五十五期

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測驗與教育　教育心理第一卷第一期

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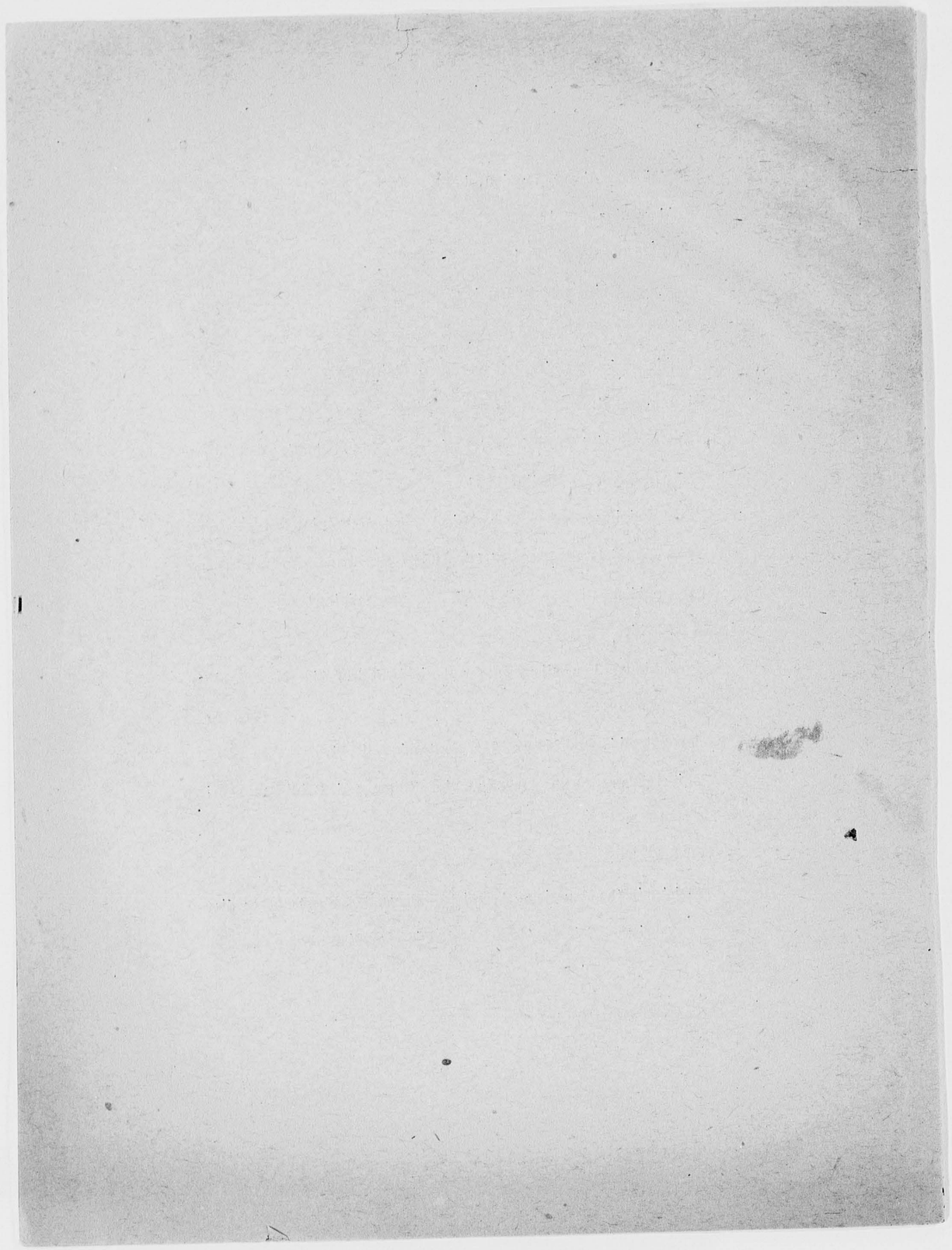

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