AGRICULTURAL EXPERIMENT STATION

KANSAS STATE AGRICULTURAL COLLEGE
MANHATTAN, KANSAS

STUDIES OF INHERITANCE AND EVOLUTION IN ORTHOPTERA. V
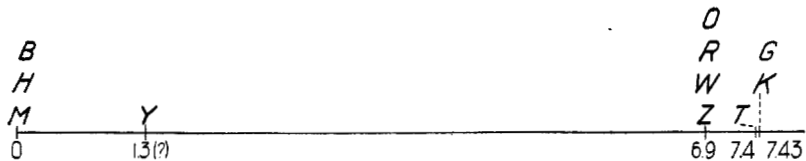
The Grouse Locust, Apotettix Eurycephalus Hancock

SUMMARY

Eleven factors for contrasting color patterns, and the normal recessive, of the Grouse Locust, *Apotettix eurycephalus,* have been used in the breeding experiments. About 500,000 reactions, such as segregation and linkage, have been recorded.

A summary, or average, of the data derived from the three-point experiments and the percentage of crossing over permits the construction of a factor diagram, or chromosome map, as follows:

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                                                    O
   B                                             R     G
   H                                             W     K
   M              Y                               Z   T
   |--------------|--------------------------------|---|-|
   0            1.3(?)                            6.9 7.4 7.43
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The females reproduce parthenogenetically as well as bisexually.

Segregation and crossing over occur in females reproducing parthenogenetically as well as in those reproducing bisexually.

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STUDIES OF INHERITANCE AND EVOLUTION IN ORTHOPTERA. V

The Grouse Locust, Apotettix Eurycephalus Hancock[1]

ROBERT K. NABOURS.

INTRODUCTION

A breeding investigation project in the Agricultural Experiment Station using organisms such as the grouse locusts which, of themselves, are apparently of no economic importance, has been supported by the directors on the ground that the results, supplemented by records of the breeding of cattle, sheep, pigs, and other animals, would be the most direct method of approaching an understanding of the laws governing the inheritance of characters in domesticated animals. Thousands of grouse locusts of strikingly contrasting characters, and ten or twelve succeeding generations, may be bred with the facilities, expense and time required in breeding one or two individuals of the higher domesticated mammals. Just as the bulk of the facts of surgery and medicine has been gained largely through experimentation on invertebrates, frogs, and lower mammals, so the laws of inheritance as applied to domesticated animals and man may be largely discovered through the utilization in experimentation of such rapidly breeding, and comparatively simple forms as fruit-flies, grouse locusts, and lower mammals.

The use of the grouse locusts *(Tettigidæ)* as material with which to study inheritance was begun in 1906, at the suggestion of Dr. C. O. Whitman, and through his introduction of the author to J. L. Hancock, M. D. The latter had already given much attention to the taxonomy and natural history of this subfamily of the Orthoptera, and had bred some in glass jars in the windows of his study (Hancock, '02). Hancock had brought the group to the attention of Whitman, and both had recognized the possible value of these insects in investigations of genetic physiology, provided they could be bred successfully.

If the characters exhibited by animals and plants should be proved units, the products of occasionally mutating factors (genes) which are integral parts of the chromosomes, whose maneuvers in

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1. Contribution No. 75 from the Department of Zoölogy.

turn condition their segregations and recombinations, as had been lately proposed by Mendel, DeVries, Bateson, Sutton and others (1900-'06), we should then have arrived at the crux of the problem of inheritance and, perhaps, even of evolution. While skeptical of some of the extraordinary claims then being advanced, Whitman was keenly alive to the vast significance of this proposition. He was impressed by the grouse locust color patterns which were as distinct as diagrams and extraordinarily varied; therefore, he encouraged the work of breeding them as an enterprise which might contribute towards the elucidation of some phases of the intricately involved problems.

Professor W. L. Tower generously shared his greenhouse facilities and expert knowledge of insect bionomics during the early years of the work. Since the removal of the experiment to the Kansas State Agricultural Experiment Station, in 1910, the following persons have especially rendered service: Dr. T. J. Headlee, A. W. Bellamy, Wallace Park, Clennie Bailey, Martha Denny Pratt (who had full charge an entire year) and Caroline M. Perkins, who has also aided in the preparation of the manuscript. Mr. S. Fred Prince has made the drawings for the plates and many others for the records.

Some northern (region of Chicago) species of the genera *Tettigidea, Tettix,* and *Paratettix* were first used. However, as these gave only one or, at best, two generations a year, and required a critical period of hibernation, they were abandoned in favor of *Paratettix texanus* Hancock first secured at Houston, Texas, September, 1908, and others of the same species which were thereafter added by collections from various points in Texas and Louisiana. Under the greenhouse conditions these were found to give as many as four generations a year, and they did not require a hibernating period. In 1910 the experiment was moved from the University of Chicago to the Kansas Agricultural Experiment Station.

Sixteen factors for color patterns have been reported in *P. texanus.* Fifteen of these, including one that originated in the laboratory, probably a mutant, are apparently in one series of multiple allelomorphs.[2] Another factor, for melanism named ⊖, from nature, was found to segregate independently of the members of the multiple allelomorph group (Nabours, '14, '17). Still another factor, for red color, designated Φ, yet to be described, also from

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2. The term multiple allelomorphs is perhaps incorrectly used, since the origins of all, except possibly one, are not known. They might better be called alternatives.

nature, segregates independently of both ⊗ and the multiple allelomorph.[3]

In *Tettigidea parvipennis pennata* Morse there have been analyzed in this laboratory six factors for color patterns, five of them behaving as multiple allelomorphs, or alternatives, and the sixth segregating independently (Bellamy, '17).

APOTETTIX EURYCEPHALUS HANCOCK

At the village of Tamos, near Tampico, Mexico, in August, 1911, several specimens of *Apotettix eurycephalus* Hancock were collected. To these have been added, the dates and sources shown in tables IV and V, specimens from the regions of Houston and Sugarland, Texas. Messrs. Rehn and Hebard have examined specimens of these and definitely determined that they all belong to the same species (Nabours, '19).

A preliminary account (Nabours, '19) shows that the members of the species *A. eurycephalus* behave in breeding as follows: (1) They are bisexual, the fertilized eggs producing males and females in equal numbers, and parthenogenetic, the unfertilized eggs, with rare exceptions, hatching females. (2) A mated female may have part of her ova fertilized, and also produce from her unfertilized ova, by parthenogenesis, an additional number of offspring, nearly always females. (3) The factors of both males and females segregate, and those of the females in parthenogenesis as well. (4) Crossing over occurs in the females reproducing parthenogenetically as well as bisexually. (5) The statement formerly made that crossing over occurs in the males has been definitely confirmed only once (mating 1438) during subsequent extensive breeding. Therefore, crossing over in the males occurs, but very rarely.

MATERIALS AND METHODS

These southern forms of *Apotettix* have habits similar to those of most other grouse locusts (Hancock, '02), *Paratettix* (Nabours, '14, '24), and *Tettigidea* (Bellamy, '17). With care, four generations a year may be bred in the greenhouse, two during the favorable period, March-June, inclusive, and two more during the remaining eight months. Soon after hatching, the offspring are transferred with ordinary curved tweezers from the smaller breeding cages to the larger growing cages (Nabours, '14). The food con-

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3. J. B. S. Haldane, Journal of Genetics, Vol. 10, No. 1, after reviewing the author's data (Nabours, '14, '17), suggests, possibly with good reason, that instead of being an independently segregating factor, Θ crosses over with the members of the multiple allelomorph group to the extent of about 24 per cent in the males and 46 per cent in the females.

sists of various algæ, mainly *Spirogira,* which grow in the greenhouse in tanks of slowly running water.

The death rate from the time of transference, as a rule during the first instar, until the records are made, usually during the third or fourth instar, is rather large. There is then a further high mortality before the imago is attained. Of 190,481 individuals transferred during the twelve years covered in this paper, 134,208, or 70.4 per cent survived to be recorded. Table I shows the distribution of this mortality throughout the year, and with figures 1 and 2, also indicates the months more favorable for breeding.

During the twelve years of the experiment, among the 3,311 matings, exclusive of parthenogenesis, 920 produced no offspring while 2,391 (2,044 used in pedigree tables) gave from 1 to 288 individuals each. Table II, and figures 3 and 4 indicate the distribution of the productive and nonproductive matings throughout the months of the years.

Difficulty is frequently experienced in finding the proper males when the females are ready to mate, or vice versa, as they mature at irregular intervals. During the long, comparatively barren period, July-February, inclusive, the task of carrying over the stocks developed during the more favorable season, March-June, is usually found to be most arduous.

No sure means of eliminating the possibility of the contamination of stocks is known. When an unexpected individual is discovered among any offspring, before it receives serious consideration its appearance must indicate, or further breeding must show that it is different from any contemporaneous specimens in the other cages. While such contaminations are comparatively rare, they nevertheless occur.

The eggs of these grouse locusts are laid in the ground in batches ranging generally from 20 to 40. The mated individuals often live as long as four to six months. The oldest recorded life-span is that of a female which lived a few days more than nine months. They appear to thrive best on a moist, well-drained, loose loam. Because of the decay of the algæ, containing bacteria, animals and other organic matter, and the excreta of the insects themselves, the balanced, sterilized soil does not long remain in good condition.

In the breeding cages (glass cylinders) in the greenhouse, especially during March-June, the optimum breeding period, the growing individuals are exposed to extreme variations in temperature, humidity and other atmospheric conditions. Owing to the wide

TABLE I.—Numbers transferred compared with numbers recorded.

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly totals.	Per cent recorded.
1911	Trans........	....	....	....	....	....	....	....	....	....	180	139	20	339	10.6
	Rec.........	....	....	....	....	....	....	....	....	....	7	28	1	36	
1912	Trans........	7	5	....	135	175	69	151	284	178	....	....	....	1,004	50.3
	Rec.........	6	5	....	40	118	69	151	72	45	....	....	....	506	
1913	Trans......	....	....	....	178	201	55	43	300	21	....	39	....	837	61.8
	Rec.........	....	....	....	101	172	55	26	133	13	....	18	....	518	
1914	Trans......	52	210	617	353	584	627	232	237	410	68	87	40	3,517	70.2
	Rec.........	31	191	429	350	288	491	201	104	238	43	72	34	2,472	
1915	Trans......	280	242	823	2,252	1,969	600	2,124	1,225	1,859	3,348	1,008	61	15,791	67.2
	Rec.........	184	222	496	1,527	1,469	453	1,460	722	1,216	2,438	422	13	10,622	
1916	Trans........	0	288	2,261	650	322	193	1,453	155	411	1,155	1,459	22	8,369	48.5
	Rec.........	0	159	1,742	357	142	151	539	102	70	318	459	20	4,059	
1917	Trans........	180	858	2,432	2,282	1,375	1,936	3,276	1,583	1,367	841	1,451	1,157	18,738	60.7
	Rec.........	119	401	1,384	1,699	918	1,339	2,281	1,100	619	365	636	521	11,382	
1918	Trans......	315	487	2,498	3,587	2,254	3,204	1,528	795	99	303	3,244	2,078	20,392	64.2
	Rec.........	204	306	2,282	2,857	1,630	1,546	551	208	80	208	2,084	1,154	13,110	
1919	Trans.......	1,472	1,044	3,945	5,618	3,792	5,635	5,574	1,142	369	556	579	420	30,146	73.1
	Rec.........	1,038	743	3,135	4,662	2,692	4,513	3,548	608	189	443	266	225	22,062	
1920	Trans.......	531	808	2,107	2,540	4,434	3,433	2,477	953	447	1,593	876	926	21,125	73.5
	Rec.........	330	533	1,783	2,073	3,455	2,459	1,968	597	251	837	598	660	15,544	
1921	Trans.......	898	418	2,752	6,175	5,686	5,188	3,539	461	835	2,549	4,081	716	33,298	69.9
	Rec.........	666	307	2,050	5,106	4,839	3,692	2,682	352	602	1,214	1,335	460	23,305	
1922	Trans.......	134	78	535	4,118	5,055	5,177	4,645	7,327	2,114	2,625	2,066	3,051	36,925	82.8
	Rec.........	65	62	457	3,550	4,349	4,704	4,124	6,702	1,829	1,786	1,224	1,740	30,592	
Totals	Trans...	3,869	4,438	17,970	27,888	25,847	26,117	25,042	14,462	8,110	13,218	15,029	8,491	190,481	
	Rec.....	2,643	2,929	13,758	22,322	20,072	19,472	17,531	10,700	5,152	7,659	7,142	4,828	134,208	
Per cent recorded...		68.3	65.9	76.5	80.	77.6	74.5	70.	73.9	63.5	57.9	47.5	56.8	....	Av. 70.4

variations in ventilation, sunshine, and the moisture content of the soil of the cages, it has been found impracticable to record even approximately the conditions in each of the 500 cages arranged in a space 30 x 50 feet. The thermohygrograph at the center of the room is known to have recorded at times variations in tempera-
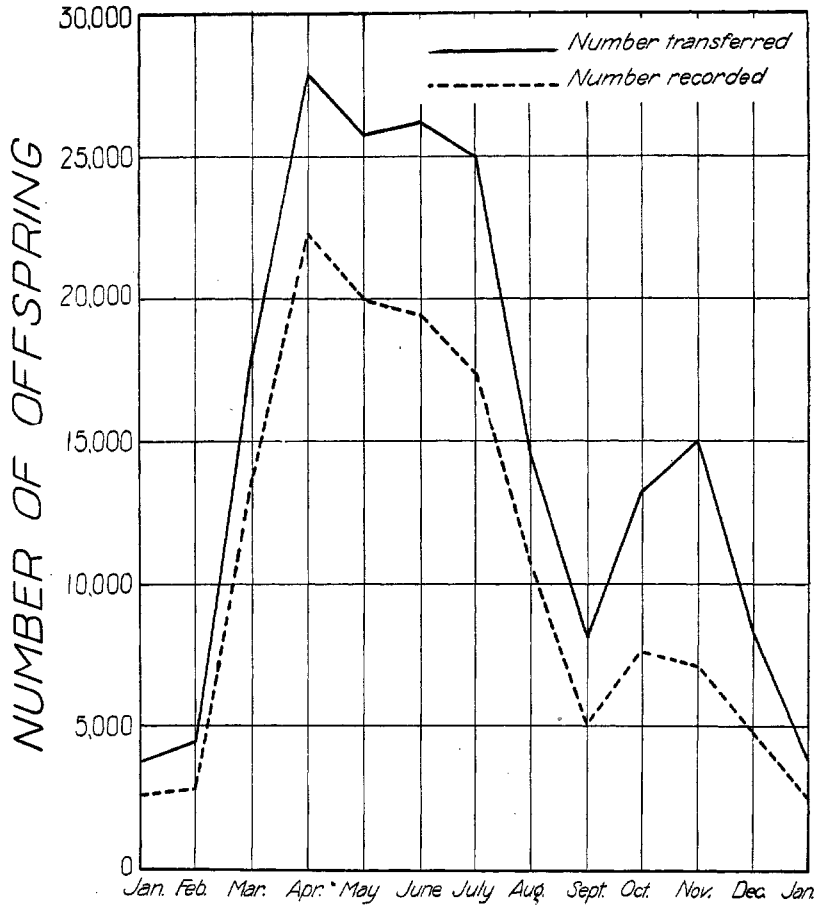

FIG. I.—Monthly totals of offspring, 1911 to 1922 inclusive.

ture greater than fifteen degrees F., and nearly as great percentages of relative humidity, from conditions prevailing in remote parts of the room. Even if a thermohygrograph for each cage could be maintained, the records would still be far from significant. Take, for example, an individual in a cage, the ventral parts very close to, or in contact with the surface of the water-saturated soil, and it hops
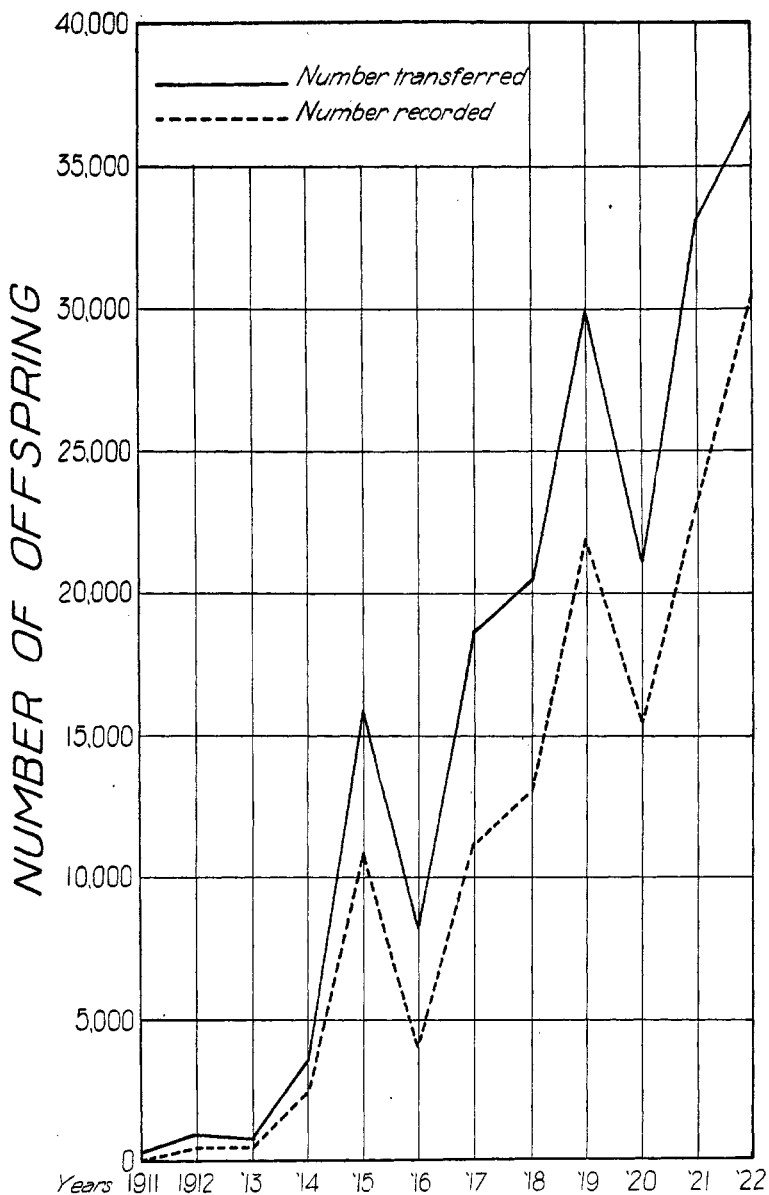
FIG. II.—Yearly totals of offspring, 1911 to 1922 inclusive.

TABLE II.—Productive and nonproductive matings.

(First number indicates productive, second, nonproductive matings.)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly totals.	Combined totals.	Per cent of matings productive.
1911									10-0				10-0	10	100
1912		2-0	3-0	10-0	1-0		9-8	0-5		0-1		2-0	27-14	41	65.8
1913	1-2	3-2	2-0			5-1	1-0	0-3			3-1	2-1	17-10	27	62.9
1914	12-1	2-1	9-0	1-0	6-0	3-2	9-2	6-2	2-5	3-2	6-0		59-15	74	79.7
1915	9-2	1-0	22-3	7-1	5-0	25-7	14-2	16-2	17-3	12-2	8-9		136-31	167	81.4
1916		15-3	14-4	8-2	2-2	17-19	15-16	4-3	20-8	3-0	15-8	3-2	116-67	183	63.3
1917	18-3	28-3	25-6	16-1	27-7	21-4	27-6	7-1	6-4	26-5	5-0	17-3	223-43	266	83.8
1918	8-0	15-6	24-1	31-3	24-6	22-6	8-10	7-25	36-12	37-4	28-5	9-8	249-86	335	74.3
1919	38-19	73-13	35-8	33-1	56-6	55-14	18-34	18-35	12-39	16-15	4-15	14-21	372-220	592	62.8
1920	47-27	35-12	52-5	30-2	61-15	17-9	23-18	40-24	18-9	8-2	22-15	18-10	371-148	519	71.4
1921	23-9	74-16	65-9	49-16	50-7	62-65	6-13	37-19	85-49	5-16	2-4		458-223	681	67.2
1922	2-1	37-2	54-8	22-2	23-3	48-8	52-13	17-2	24-7	54-14	18-2	2-1	353-63	416	84.8
Totals	158-64	285-58	305-44	207-28	255-46	275-135	182-122	152-121	230-136	164-61	111-59	67-46	2,391-920		
Combined totals	222	343	349	235	301	410	304	273	366	225	170	113		3,311	
Per cent of matings productive	71.1	83	87.3	88	84.7	67	59.8	55.6	62.8	72.8	65.2	59.2			Av. 72.2

to the top of the label stick into an arid atmosphere of more than 100°F., onto the hot wire screen covering the cylinder and remains quite awhile. It is apparent that, under such circumstances, the environment is so widely variable that it can neither be recorded nor even approximately controlled.
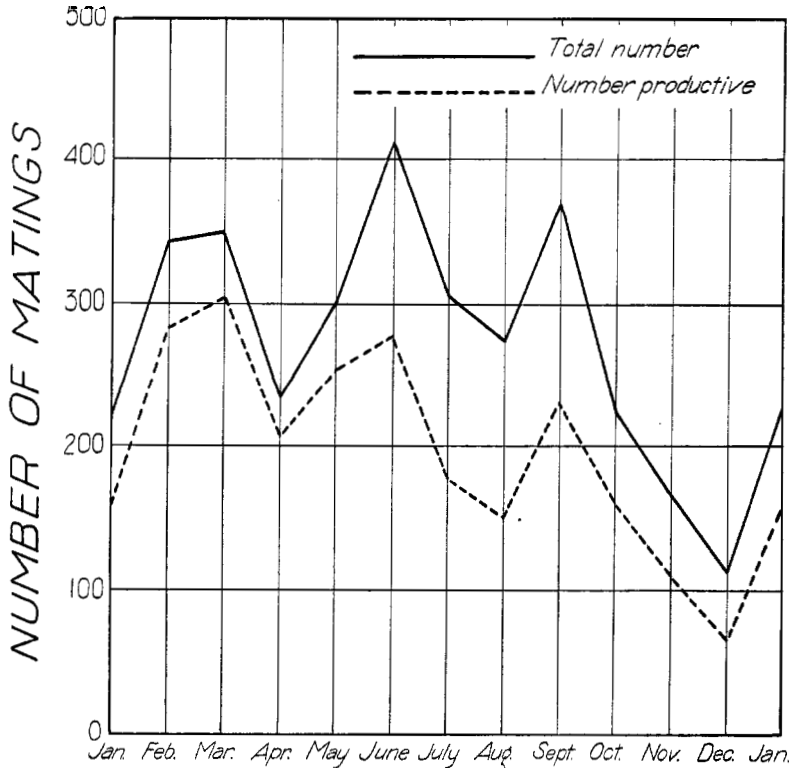

FIG. III.—Number of matings by months, 1911 to 1922 inclusive.

DESCRIPTION OF CHARACTERS AND SYMBOLS

The symbol + (or +/+) is used to indicate the type that constitutes the majority of all individuals found in nature. It also results from crossing over among the dominant factors. Therefore, it is regarded as the primitive, normal recessive, or "wild type." The letters B, H, M, Y, O, R, W, Z, T, G and K represent factors for color patterns that are dominant, or partially so, to parts or all of the pattern of the normal recessive type. (Pl. I.)

As shown in the plate, the M, Y and Z patterns, respectively, obscure only small portions of the normal pattern, while the patterns

O, R, and T almost, or wholly, eliminate it. The factors for all these elementary patterns are linked or alternative. The factors B, H and M are allelomorphs, or alternatives, and are placed arbi-
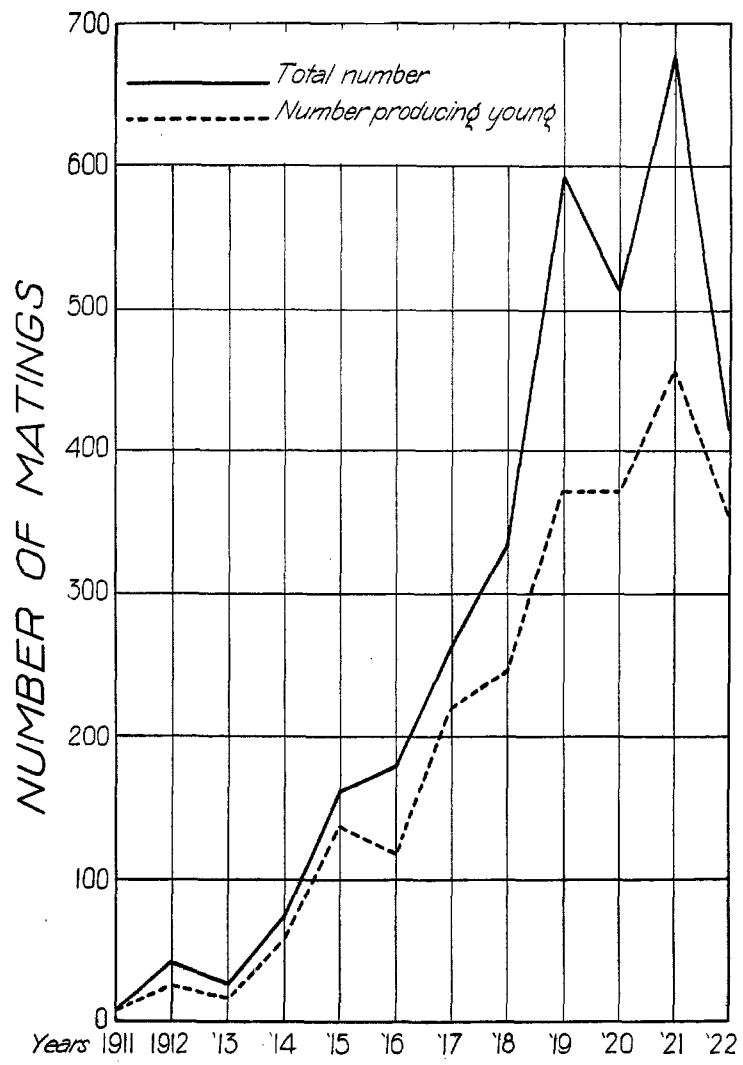

FIG. IV.—Number of matings by years, 1911 to 1922 inclusive.

trarily at the extreme left end of the map of the whole linkage group (see p. 3). Very closely linked to them is Y lying just to the right. At a distance of about six units farther to the right is the group of four allelomorphs O, R, W, and Z. Half a unit still far-

ther to the right lies T, and just to the right of T, the alternatives G and K.   There are thus five distinct locations for the factors demonstrated.   In the pedigree tables and the subsequent discussion the above order of sequence of the factors will be used.

The individuals of *A. eurycephalus* are dimorphic, as well as variable, with respect to length of wings and pronota to the same extent as *Paratettix texanus*.   However, nothing has been ascertained which changes the tentative conclusion, arrived at in the study of *P. texanus,* that these characteristics appear to be conditioned by the environment, or the time of the year during which growth proceeds.   In the spring when growth is rapid and the period short, the wings and pronota are preponderantly long.   In the late summer, autumn and early winter when growth is slow and the period long, short wings and short pronota prevail (Nabours, '14).   Numerous cases of upturned, twisted, and otherwise aberrant pronota, and abnormal abdomens, such as fusion of sterna, have occurred.   Most of the individuals bearing these, when bred further, produced normal offspring.   However, there was indication in a few cases of upturned pronota and abnormal abdomens that the characteristics might be inherited, but that their manifestation might depend upon the environment.

Occasionally an individual feigns death in a most striking manner, falling over when touched, or landing on the side or back from a forced jump, folding up the legs and remaining entirely passive for a short time.   The change from this position to the normal is a very distinct and quickly executed act.   The characteristic is unmistakably individual and appears to endure throughout life, at least from the third instar on.   It has recurred among the offspring of a death-feigning male and normal female, but did not appear in the F_2 generation from these.

The matings are on record by daybook and pages, but in this paper they are arbitrarily numbered consecutively, regardless of chronology, according to the arrangement which places females of a kind together.   From the standpoint of analyses, the least important are placed first, and so on to those showing parthenogenesis, even though some of the adjacent matings are hundreds of pages in the daybooks, and several years of time apart.   This arrangement accounts for a low numbered mating often having its parents from a higher numbered one.

After the records are made, and it is decided that none of the remaining individuals will be reserved for further matings, all are

preserved in 70-80 per cent alcohol. After changing once into fresh 95 per cent alcohol, the tubes are hermetically sealed with a torch. The mated individuals, after the eggs have hatched, are similarly preserved when they do not die prematurely and become stained. In this way a large number of parents and offspring have been preserved over the entire period of twelve years. The patterns of those which have been in alcohol, even as long as eleven years, except in cases where some were preserved too soon after moulting, are entirely clear, often as fresh as on the day they were killed,

There are five general kinds of matings: (1) Group matings, in which the parentage was in question, or not known. Most of these are not published. (2) Those made in such a manner that for obvious reasons, crossing over in the female cannot be detected (Matings 1-645). These are of value, however, since in many cases they are used to analyze the males. (3) Those so arranged that crossing over in the females can be readily determined (Matings 645-1990). (4) Those individuals that reproduced both bisexually and parthenogenetically (Matings 5000-5054). (5) Those individuals that reproduced exclusively parthenogenetically (Numbers 5055-5419).

PEDIGREE TABLES
Directions for Reading the Pedigrees

In the pedigrees (Table IV) which follow, the first number, on the left, is that assigned to the mating. The next figures (in parentheses) refer to the sources of the parents, the upper indicating the mating from which the male was taken and the lower the source of the female. One number only in the parentheses shows that both parents were derived from that particular mating. The abbreviation g or gs, before a number in parentheses, means that the parent or parents were from a group mating which in turn was derived from the mating indicated by the number it precedes. The letter g refers to a single group mating, while gs indicates a succession of group matings, some of which go back to nature. T'11, H'11, S'14, or U'15, means that the original collections were made at Tamos, near Tampico, 1911, Houston, 1911, Sugarland, 1914, of unknown source, 1915, respectively. Group, g, refers generally to a mating the female or females of which had been exposed to unknown males, or a line which had been allowed to continue and the brothers and sisters of differing patterns, or combinations, permitted to reproduce. Some of these groups were carried three or four generations, usually as a precaution against losing the stock. In practically all cases

records were made, and though none showed inconsistencies, their relative unimportance justifies the exclusion of them from these extended data.

The first symbols or letters to the right of the source give the composition of the male, and the symbols or letters following X that of the female parent. After the description of the parents the first figures represent the male, and the second, after the hyphen, the female offspring of the composition derived by combining the symbol +, letter or letters on the left of the slant (/) in the male parent with the corresponding +, letter or letters representing the characters of the female parent. The other one, or three sets of figures giving the noncrossovers are derived as in algebraic multiplication, and the letters representing the characters are excluded in order to save space. The characteristics of the crossovers are written out, the symbols representing the factors being arranged from left to right as nearly as possible in order of their occurrence on the factor diagram. They, with their numbers, finish the mating. If there are two hyphens separating three numbers, the last number represents those the sex of which was not recorded: *e. g.,* 10-11-13 = 10 males, 11 females, and 13 the sex of which was undetermined. The following detailed examples are intended to, facilitate the reading of the pedigree tables:

Mating 1: (721) signifies that both the male and female were from mating 721; +/+ represents the normal recessive type; X means mated to, or with; 41-50 shows there were 41 males and 50 females all +/+. (Invariably the males are on the left and the females on the right.)

Mating 21: g.T.'11 (in parentheses) = the male, +/R, from a group mating (not included in paper), the parents of which came from Tampico, 1911; (287) = female from mating 287; +/R = the male has a normal recessive gamete, +, from one, and a gamete containing the factor R from the other parent; X = mated to; M/M = the respective gametes producing this female carried the factor M; 0-0-24 = 24 offspring of the composition +/M, the sex not recorded; 0–0–23 = offspring of the composition M/R, the sex not recorded.

Mating 26: Both parents M/M were from mating 25. Going back through various matings and groups it will be found that the factor M came into the line from Houston, 1914; the other factors, some of the normal recessives, go back to Tampico, 1911. 92–81–31

= 92 males, 81 females, and 31 sex not recorded, all of the composition M/M. (g) at the right indicates that more than one male and female were used in the mating.

Mating 1906: Male +/T and female MRK/WG were from matings 1825 and 271, respectively. In the female the linked M, R and K came from one, and the linked W and G from the other parent; 9–13 = 9 males and 13 females of the composition +/MRK; 11–12 = 11 males and 12 females, +/WG; 8–11 = 8 males and 11 females, MRK/T; 9–8 = 9 males and 8 females, WG/T; +/MWG, +/RK and RK/T indicate that during gametogenesis in the female the factor M crossed over from the MRK combination to the WG, making MWG and leaving RK, respectively, in the gametes, and these were fertilized by the respective + and T gametes of the male; +/MRG, MRG/T, and +/WK mean that K and G exchanged places, or in a sense pivoted; *i. e.,* when, K came over from MR to W, G disappeared from that side, presumably reciprocally taking the place of K with MR and going to the polar body. (Considerable other data on relations of K and G indicate that they are very closely linked, if not exactly alternative, or allelomorphic.) Crossover gametes containing MRG and WK, respectively, were fertilized by + and by T spermatozoa, the T happening to miss a WK gamete in this mating (see O/WK, mating 1902).

Mating 1090: The male parent, +/RK, was from mating 1672 and the female, MZ/G, from mating 1006, and they gave the following noncrossovers: +/MZ, 17 males and 16 females; +/G, 16 males and 14 females; MZ/RK, 15 males and 22 females; RK/G, 20 males and 16 females, and crossovers as follows: +/MG, no males and 3 females, +/Z, 3 males and 3 females; MG/RK, no males and 3 females; RK/Z, 5 males and 3 females. If it is desired to follow the ancestry of this mating, 1090, look up mating 1672, the origin of the male, and mating 1006, that of the female, and then on through the various generations and combinations to nature. To ascertain the performance of the progeny, look along the underscored figures in Table V to 1090, and the numbers under it show in what matings, if any, they were used. If this process is repeated the line may be traced to extinction or to current matings (subsequent to the time of compilation of data) indicated by (C) after the numbers in table V.

In such matings as 393, M/G XM/Z, 397, M/T X M/T and 624, YK/T X YK/T, there were crossovers which passed undetected, since comparatively few were bred further. In 393 two individuals that were at first recorded as M/Z proved to be M/MZ (matings

394 and 823). It mating 397, there were probably M/MT, MT/T, +/M and +/T individuals which so resembled the noncrossovers M/T, M/M, and T/T respectively, that they readily passed. In mating 624, one individual which resembled the noncrossover YK/T showed in mating 918 that she was actually of the composition YK/YT. There were obviously many possibilities of the kind which these examples illustrate in matings 1 to 645.

In mating 1246, one of the progeny at first recorded as +/YWK, proved to be YWK/YWK, in mating 274. Similarly in mating 5040, an individual recorded as +/MZ was shown to be MZ/MZ, in mating 237. These individuals were undoubtedly of parthenogenetic origin, and there were likely many such. In those matings where the males gave recessive gametes, any of the female progeny which were not tested might have been, in fact, of parthenogenetic origin, as in the examples cited.

In order further to facilitate the use of the main tables, which are necessarily abbreviated to the limit, one short pedigree (Table III) from the possible hundreds has been prepared by Miss Perkins. It indicates how MT, MTG, MRTG, and other combinations come about, and how relations of factors may be determined by the working of the "three- and four-point experiments," This sample pedigree follows:
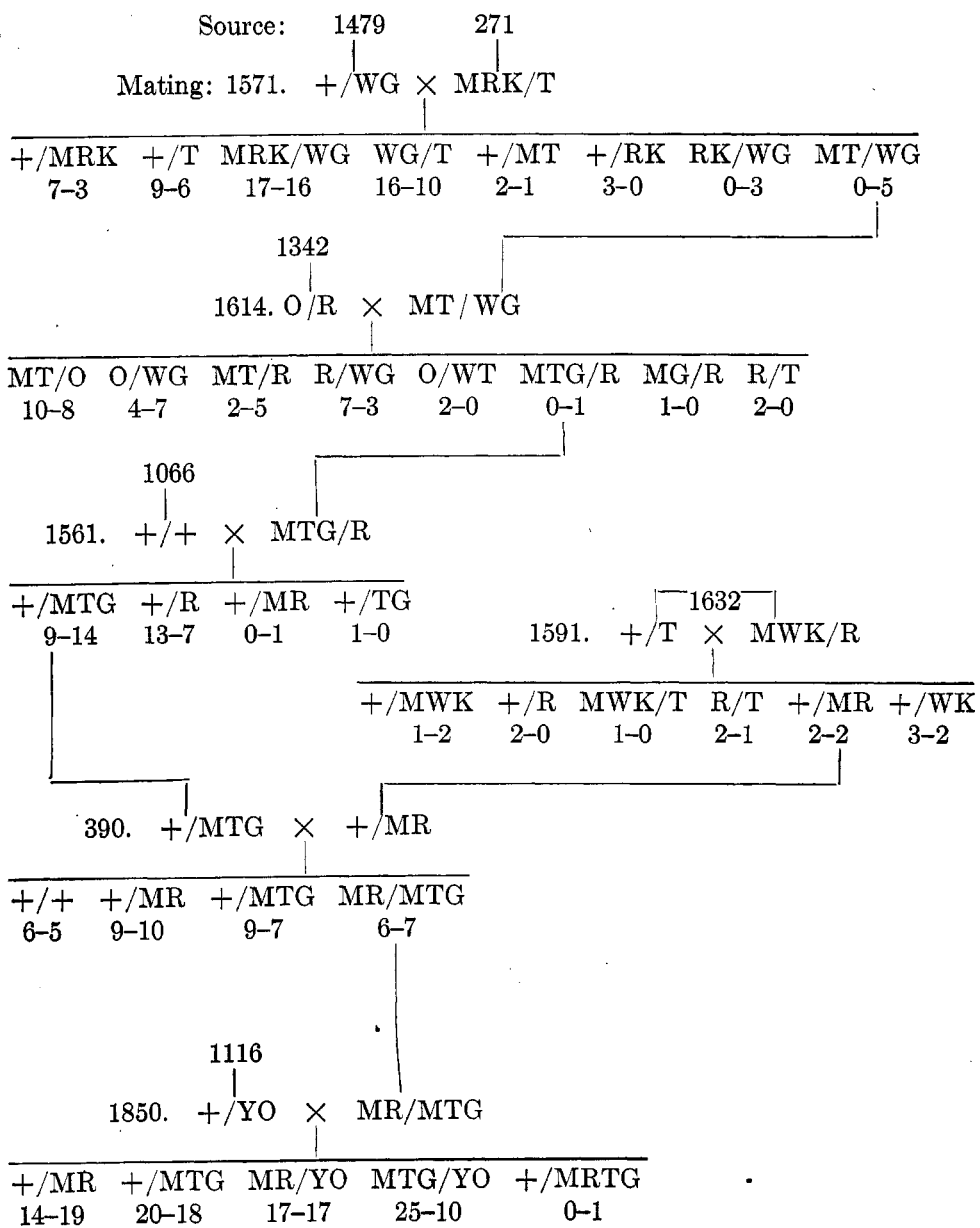
TABLE III.—Sample pedigree.

Source: 1479   271

Mating: 1571.   +/WG × MRK/T

+/MRK	+/T	MRK/WG	WG/T	+/MT	+/RK	RK/WG	MT/WG
7–3	9–6	17–16	16–10	2–1	3–0	0–3	0–5

1342

1614. O/R × MT/WG

MT/O	O/WG	MT/R	R/WG	O/WT	MTG/R	MG/R	R/T
10–8	4–7	2–5	7–3	2–0	0–1	1–0	2–0

1066

1561.   +/+ × MTG/R

+/MTG	+/R	+/MR	+/TG
9–14	13–7	0–1	1–0

1591.   +/T × MWK/R   ⌐1632⌐

+/MWK	+/R	MWK/T	R/T	+/MR	+/WK
1–2	2–0	1–0	2–1	2–2	3–2

390. +/MTG × +/MR

+/+	+/MR	+/MTG	MR/MTG
6–5	9–10	9–7	6–7

1116

1850. +/YO × MR/MTG

+/MR	+/MTG	MR/YO	MTG/YO	+/MRTG
14–19	20–18	17–17	25–10	0–1

TABLE IV.—Pedigrees.

(Explanations in text.)

$$+/+ \times +/+$$

1 $\left(\cdot721\right)$ 41–50

2 $\left(\genfrac{}{}{0pt}{}{354}{1106}\right)$ 11–15

3 $\left(\ 2\ \right)$ 6– 5

$$\overline{58\text{–}70}$$

4 $\left(\genfrac{}{}{0pt}{}{974}{1031}\right)$ $+/K \times +/+$
   10–10, 3–5

5 $\left(\genfrac{}{}{0pt}{}{1545}{674}\right)$ $+/MG \times +/+$
   2–1, 3–3

6 $\left(\ 366\ \right)$ $+/ZK \times +/+$
   12–21, 18–14

7 $\left(_{\text{H.}}\ \genfrac{}{}{0pt}{}{202}{('18)}\right)$ $MR/K \times +/+$
   15–13, 14–26

8 $\left(\ 650\ \right)$ $HZ/RK \times +/+$
   7–9, 4–7

9 $\left(\genfrac{}{}{0pt}{}{958}{5027}\right)$ $MRG/BZK \times +/+$
   2–5, 2–1

$MRT/YWK \times +/+$

10 $\left(\genfrac{}{}{0pt}{}{1031}{304}\right)$ 4–5, 3–1

11 $\left(1031\right)$ 1–1, 0–1

$$\overline{5\text{–}6,\ 3\text{–}2}$$

12 $\left(\genfrac{}{}{0pt}{}{743}{5329}\right)$ $W/K \times +/+$
   4–3, 2–5

13 $\left(\genfrac{}{}{0pt}{}{1926}{1281}\right)$ $YWK/T \times +/+$
   58–45, 49–41

14 $\left(\genfrac{}{}{0pt}{}{1366}{5342}\right)$ $YZ/T \times +/+$
   1–3, 0–1

15 $\left(\genfrac{}{}{0pt}{}{369}{1246}\right)$ $HZ/G \times +/+$
   11–17, 12–9

$$H/H \times H/H$$

16 $\left(g\left\{{}^{H.~('11)}_{T.~('11)}\right.\right)$ 0– 0– 8

17 $\left({}^{16}_{g.~T.~('11)}\right)$ 0– 0–16

18 $\left({}^{17}\right)$ 4–16– 0 $(+/M~0\text{–}1?)$

19 $\left({}^{18}\right)$ 5– 4– 0 (g.)

20 $\left({}^{373}\right)$ 10– 7– 5

$$\overline{19\text{–}27\text{–}29~(+/M~0\text{–}1?)}$$

21 $\left({}^{g.T.('11)}_{287}\right)$ $+/R \times M/M$

0–0–24, 0–0–23

22 $\left({}^{400}\right)$ $G/G \times M/M$

11–14–12

23 $\left({}^{411}\right)$ $K/K \times M/M$

44–45–7

24 $\left({}^{5007}_{5107}\right)$ $T/K \times M/M$

$$M/M \times M/M$$

25 $\left(g.~{}^{535}\right)$ 25–29–52

26 $\left({}^{25}\right)$ 92–81–31 (g.)

27 $\left({}^{411}\right)$ 15–15– 7

28 $\left({}^{26}\right)$ 73–106   (g.)

29 $\left({}^{26}\right)$ 6– 9–24 (g.)

30 $\left({}^{29}\right)$ 7– 3– 1 (g.)

31 $\left({}^{43}\right)$ 26–38

32 $\left({}^{30}\right)$ 40–52   (g.)

33 $\left({}^{32}\right)$ 57–62   (g.)

34 $\left({}^{33}\right)$ 2– 1   (g.)

35 $\left({}^{33}\right)$ 7– 8   (g.)

36 $\left({}^{35}\right)$ 27–31

37 $\left({}^{35}\right)$ 6– 5   (g.)

38 $\left({}^{35}\right)$ 61–44   (g.)

39 $\left({}^{37}\right)$ 28–31   (g.)

40 $\left({}^{36}\right)$ 15–20   (g.)

41 $\left({}^{40}\right)$ 1– 1

$$\overline{488\text{–}536\text{–}115}$$

42 $\left({}^{g.T.('11)}_{287}\right)$ $M/K \times M/M$

0–0–13, 0–0–13

43 $\left({}^{399}_{29}\right)$ $M/G \times M/M$

2–9, 4–6–1

44 (380) M/R × M/M
17–10, 11–18

45 (1309/411) M/T × M/M
10–8–4, 11–10–4

46 (gs. 251/43) R/R × M/M
48–53

R/K × M/M
47 (668/g. 535) 34–38–15, 24–34–17
48 (5045/40) 4– 2,   2– 2
_____
38–40–15, 26–36–17

49 (555/5107) RK/RK × M/M
65–49

50 (H ('18)) +/W × M/M
10–10, 11–9

51 (gs. 1263/5335) Z/G × M/M
22–34, 18–23

Z/RK × M/M
52 (145/5111) 13– 8, 16–17
53 (145/5111) 15–15, 18–24
_____
28–23, 34–41

54 (g.T.('11)/292) G/G × Y/Y
0–0–27

T/G × Y/Y
55 (525/568) 7– 8,   4– 5
56 (525/568) 18–16, 18–14
_____
25–24, 22–19

T/K × Y/Y
57 (528/441) 10–9–1, 7–10
58 (g. 531/5119) 0–0,   3– 1
_____
10–9–1, 10–11

R/K × Y/Y
59 (g. 494/5347) 8–2,   5–6
60 (5045/5060) 2–2,   5–1
_____
10–4, 10–7

61 ($\frac{\text{g.509}}{5847}$) W/G $\times$ Y/Y
1–1, 2–0

62 ($\frac{1044}{78}$) W/RK $\times$ Y/Y
6–6, 3–5

63 (g.T.('11)) Y/K $\times$ Y/Y
0–0, 1–0

64 ($\frac{133}{5344}$) W/W $\times$ Y/Y
49–56

65 (463) YK/T $\times$ Y/Y
2–5, 3–2

66 (568) Y/O $\times$ Y/Y
16–7, 11–9

67 ($\frac{115}{72}$) Y/R $\times$ Y/Y
3–8–1, 2–8

68 (449) Y/T $\times$ Y/Y
0–0–10, 2–1-16

69 ($\frac{584}{448}$) YT/R $\times$ Y/Y
1–0, 1–1

Y/Y $\times$ Y/Y
70 (458) 0– 1
71 (433) 6– 3
72 (71) 15–17–11
73 (72) 1– 2– 3
74 (72) 0– 0– 4
75 (72) 1– 2– 3
76 (75) 2– 3
77 (568) 21–26
78 (442) 5– 7
          _____
          51–61–21

79 (466 ·) Y/YK $\times$ Y/Y
0–0–22, 0–0–26

80 ($\frac{580}{442}$) Z/K $\times$ Y/Y
12–9, 14–1

81 ($\frac{180}{470}$) G/G $\times$ O/O
9–5–4

82 (479) O/G × O/O
            15–16, 9–14

83 ($^{196}_{1153}$) M/K × O/O
            1–7, 8–6

            O/O × O/O
84 ($^{475}_{482}$) 4– 7–31
85 (84) 2– 3   (g.)
86 (84) 5– 8   (g.)
87 (86) $\underline{57–44– 1 \ (g.)}$
            68–62–32

88 ($^{g.\,\{^{784}_{787}}}_{5353}$) Y/T × O/O
            1–2, 1–1

            YZ/T × O/O
89 ($^{916}_{5351}$) 1–1, 1–0
90 ($^{246}_{g.\,88}$) $\underline{4–6, \ 4–5}$
            5–7, 5–5

91 (494) K/K × R/R
            33–24

92 (g.T. ('11)) +/R × R/R
            +/R, R/R 0–0–11

            R/R × R/R
93 (375) 17–23– 4
94 (93)   4– 4   (g.)
95 (618) 17–18–44
96 (107) 13–12
97 (96) $\underline{28–29}$
            79–86–48

98 ($^{29}_{383}$) M/M × R/R
            4–1

            M/K × R/R
99 ($^{411}_{5049}$) 3–14–4, 6– 7– 5, R/R,+/R 0–2, MK/R 0–1(co. ♂?)
100 ($^{502}_{592}$) 6– 3–3, 4– 3– 6,
101 ($^{48}_{5358}$) $\underline{8– 7 \qquad 4– 4}$
            17–24–7, 14–14–11, R/R,+/R 0–2, MK/R 0–1(co. ♂?)

102 ($^{560}_{g.\,386}$) M/RK × R/R
            0–2, 3–3

103 ($\frac{545}{380}$)   MR/K × R/R
     25–33, 30–30

     Y/K × R/R

104 ($\frac{459}{94}$)   1– 4–11,   2– 1–7
105 ($\frac{80}{5126}$)   3– 1,   1– 3
106 ($\frac{80}{5126}$)   7– 8,   14– 6
     ———————————
     11–13–11, 17–10–7

     YK/R × R/R

107 ($\frac{5045}{5127}$)   4– 3,   1– 4
108 ($\frac{962}{618}$)   28–25–20, 27–27–9 (R/K 0–1?)
     ———————————————————
     32–28–20, 28–31–9 (R/K 0–1?)

     YK/T × R/R

109 ($\frac{g. 624}{612}$)   4– 6,   2–10
110 ($\frac{167}{614}$)   16–12, 16–11
     ———————————
     20–18, 18–21

111 ($\frac{g. 624}{612}$)   YK/YT × R/R
     20–22, 22–30

112 ($\frac{742}{5377}$)   YK/W × R/R
     28–13, 29–25

113 ($^{g.}\{^{434}_{501}$)   Y/O × R/R
     0–6–17, 1–5–15

     Y/R × R/R

114 ($\frac{728}{590}$)   5– 6   2– 6– 2
115 ($\frac{728}{590}$)   30–32   30–23
116 ($\frac{426}{618}$)   19–37–18, 23–37–13
117 ($\frac{728}{597}$)   1– 1– 2,   0– 3– 6
118 (115)   11– 7–11, 11– 7–12
     ———————————————
     66–83–31, 66–76–33

     YT/R × R/R

119 (594)   5– 6,   2– 4
120 ($\frac{1256}{5034}$)   16–14, 18–14
     ———————————
     21–20, 20–18

121 ($\frac{584}{g. 122}$)   YT/YT × R/R
     21–26–18

122 ($\frac{447}{94}$) Y/YT $\times$ R/R
14–11, 12–9

YZ/K $\times$ R/R
123 ($\frac{916}{499}$) 8– 7,   7– 7
124 ($\frac{916}{5127}$) 4– 7, 12– 4
125 ($\frac{1187}{5376}$) 8– 3,   7– 5
20–17, 26–16

YZ/T $\times$ R/R
126 ($\frac{916}{5127}$) 12–11, 15– 5
127 ($^{gs.}\frac{722}{5063}$) 15–15, 17–18
27–26, 32–23

M/RK $\times$ W/W
128 ($\frac{262}{138}$) 0–1, 1–1
129 ($\frac{53}{5360}$) 4–4, 5–4
4–5, 6–5

W/W $\times$ W/W
130 (g.H.('16)) 13– 17
131 (509) 19– 11
132 (131) 30– 23
133 (131) 51– 51
134 (131) 72– 89 (g.)
135 (131) 32– 49 (g.)
136 (132)   1– 3
137 (132)   3– 1 (g.)
138 (136)   2– 6
223–250

139 ($\frac{1950}{5380}$) +/YRK $\times$ W/W
1–0, 2–2

140 ($^{g.}\frac{494}{5359}$) R/K $\times$ W/W
0–0, 0–1

141 ($\frac{5007}{5382}$) M/K $\times$ Z/Z
1–2, 2–1

142 ($\frac{375}{441}$) M/M $\times$ Z/Z
46–47

143 ($\frac{162}{5133}$) RK/T $\times$ Z/Z
10–8, 12–4

144 ($\frac{5048}{5385}$) YK/T $\times$ Z/Z
                4–5, 3–1

145 ($^{g.\ 640}_{442}$) Y/RK $\times$ Z/Z
                4–3, 4–2

146 ($\frac{1259}{5363}$) YT/RK $\times$ Z/Z
                4–10, 7–9

147 (g. 524) Z/T $\times$ Z/Z
                14–18, 9–10

148 (5027) +/MRK $\times$ Z/Z
                1–4, 3–4

149 ($\frac{958}{5027}$) MRG/B $\times$ Z/Z
                18–15, 20–10

150 ($\frac{1074}{332}$) MZ/R $\times$ T/T
                7–5, 6–5

151 (397) M/T $\times$ T/T
                18–31, 18–20

152 (472) O/O $\times$ T/T
                3–2–30

                T/T $\times$ T/T
153 (528) 6– 8
154 (153) 3– 5
155 (154) 21– 23– 8 (g.)
156 (397) 54– 73–40
157 (156)   1– 2– 4 (g.)
158 (157)   0– 3–21 (g.)
159 (525)   3– 2
                ‾‾‾‾‾‾‾‾‾‾‾‾
                88–116–73

160 ($\frac{5043}{5350}$) YK/K $\times$ T/T
                2–1, 0-0

161 ($\frac{5045}{532}$) YK/R $\times$ T/T
                6–10, 5–6

                Y/RK $\times$ T/T
162 ($^{gs.\ 640}_{5134}$) 1–2, 2–1
163 ($^{gs.\ 640}_{5350}$) 3–1, 1–1
                ‾‾‾‾‾‾‾‾‾‾‾‾
                4–3, 3–2

164 ($\frac{463}{447}$) YK/T $\times$ T/T
2–2–1, 5–0–5

Y/R $\times$ T/T
165 ($\frac{431}{155}$) 1– 0–10, 1– 2–4
166 (g. $\frac{431}{451}$) 21–23 28–23
_____
22–23–10, 29–25–4

167 ($\frac{629}{451}$) Y/YK $\times$ T/T
40–33, 35–49

168 ($\frac{238}{5351}$) YZ/K $\times$ T/T
2–2, 2–0

169 ($\frac{245}{5366}$) YZ/RK $\times$ T/T
24–17, 22–17

170 ($\frac{721}{400}$) +/YZ $\times$ G/G
11–14, 12–13

O/O $\times$ G/G
171 ($\frac{476}{525}$) 3– 5
172 (477) 15–11
_____
18–16

173 ($\frac{152}{185}$) O/T $\times$ G/G
2–2, 1–2

174 (g. $\{^{442}_{461}$ ${400}$) YT/O $\times$ G/G
31–30, 38–23

Z/G $\times$ G/G
175 ($\frac{573}{571}$) 2–3, 4– 4
176 ($\frac{693}{5363}$) 0–0, 1– 9
_____
2–3, 5–13

177 (474) O/G $\times$ G/G
14–13, 11–8

M/G $\times$ G/G
178 ($\frac{399}{185}$) 2–2, 0– 4
179 (400) 12–5, 6– 8
_____
14–7, 6–12

$$\text{G/G} \times \text{G/G}$$

180 (177)	29– 40– 47	
181 (180)	22– 23– 43	(g.)
182 (180)	19– 15	(g.)
183 ($\frac{181}{5136}$)	2– 1– 33	
184 (181)	3– 2– 47	(g.)
185 (181)	23– 39– 45	(g.)
186 ($\frac{475}{181}$)	0– 1– 10	
187 (183)	5– 12– 5	(g.)

103–133–230

188 ($\frac{1226}{5075}$) +/W × K/K
1–1, 1–0

189 (411) K/K × K/K
5–4

190 (5010) T/K × K/K
4–9, 6–4

$$\text{M/K} \times \text{K/K}$$

191 (192)	19–17–13,	26–20–18
192 $\left(\substack{\text{gs.} \{ \text{H. ('14)} \\ 462 \} \\ 352} \right)$	27–32– 4,	28–26– 2
193 ($\substack{\cdot \, 502 \\ 191}$)	3– 1– 4,	2– 4– 2
194 ($\frac{196}{5301}$)	17– 8	17–11
195 ($\frac{196}{5300}$)	13–10	7– 7

79–68–21, 80–68–22

$$\text{M/M} \times \text{K/K}$$

196 ($\frac{380}{5298}$)	·12–16
197 ($\frac{44}{5069}$)	0– 3
198 ($\frac{560}{5343}$)	27–28

39–47

199 ($\frac{48}{5358}$) M/R × K/K
9–7, 3–10

200 (543) MR/MR × K/K
4–6

201 ($\frac{163}{5248}$) Y/T × K/K
22–13, 19–13, (+/K, K/K 1–0?)

MR/Z × K/K

202 ($\frac{389}{5232}$) 16–15, 22–18

203 ($\frac{389}{5232}$) 14– 7, 12–15

30–22, 34–33

M/T × K/K

204 ($\frac{395}{5016}$) 1–0, 1–0

205 ($\frac{5034}{5269}$) 5–9, 9–8

6–9, 10–8

206 (549) MR/MR × K/K

19–19

207 ($\frac{594}{5301}$) R/R × K/K

49–39

208 ($\frac{531}{5343}$) T/T × K/K

8–6

W/K × K/K

209 $\left(g. \begin{Bmatrix} 540 \\ 722 \\ 5137 \end{Bmatrix} \right)$ 14–15, 8–22

210 ($\frac{509}{5137}$) 2– 1, 1– 2

16–16, 9–24

W/W × K/K

211 ($\frac{135}{5176}$) 3– 2

212 ($\frac{514}{5347}$) 7– 8

213 ($\frac{136}{5336}$) 5– 8

15–18

214 (459) Y/K × K/K

5–3–4, 9–6–5

Y/O × K/K

215 ($\frac{568}{5299}$) 13–26, 11–22

216 ($\frac{66}{5309}$) 3– 5, 6– 6

16–31, 17–28

217 $\left(g. \begin{Bmatrix} 482 \\ 601 \\ 231 \end{Bmatrix} \right)$ YT/O × K/K

11–17, 9–12, (T/K 2–1?)

218 ($\frac{602}{231}$) YT/YT × K/K

61–63

219 ($\frac{450}{529}$) Y/T × K/K
1–3–31, 2–1–26

220 ($^{H.}_{5358}$ ('18)) Y/W × K/K
4–3, 3–4

221 ($\frac{894}{5161}$) Y/Z × K/K
3–3, 3–0

+/YZ × K/K
222 ($\frac{721}{231}$) 23–21, 25–31, (Z/K 0–1?)
223 ($^{U.}_{5285}$ ('19)) 6– 3,   1– 7
‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
29–24, 26–38, (Z/K 0–1?)

224 ($\frac{353}{540}$) YZ/K × K/K
13–12, 6–13

YZ/T × K/K
225 ($\frac{1759}{5249}$) 5– 5,   2– 2
226 ($\frac{916}{5252}$) 12–18, 16–18
227 ($\frac{1279}{5279}$) 4– 4,   3– 4
‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
21–27, 21–24

M/W × K/K
228 ($^{G.}_{511}$ 508) 40–36, 48–36
229 ($\frac{681}{5277}$) 20– 6,   4–11
‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
60–42, 52–47

230 ($\frac{51}{5236}$) M/Z × K/K
3–4, 4–3

O/K × K/K
231 (482) 14–18, 13–11
232 ($\frac{1276}{5268}$) 2– 1,   1– 2
‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
16–19, 14–13

Z/T × K/K
233 ($\frac{524}{5137}$) 6– 6, 10– 9
234 ($\frac{518}{5193}$) 11–23,   5–11
‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
17–29, 15–20

235 ($\frac{524}{5137}$) Z/Z × K/K
4–1

236 ($\frac{1947}{5392}$) WG/T × MR/MR
38–32, 42–39

237 ($\frac{1267}{5040}$) RK/G × MZ/MZ
3–4, 2–0

238 (581) YZ/K × YZ/YZ
0–0, 2–2

YZ/YZ × YZ/YZ (♂ or ♀ +/YZ)

239 (443) 41–44
240 (239) $\underline{2- 5}$
43–49

K/K × YZ/YZ

241 ($\frac{517}{5382}$) 22–25
242 ($\frac{581}{5382}$) $\underline{12- 5}$
34–30

T/K × YZ/YZ

243 ($\frac{234}{5320}$) 1–1, 4–1
244 ($\frac{5007}{5381}$) $\underline{2-1,\ 3-0}$
3–2, 7–1

245 ($\frac{560}{240}$) M/RK × YZ/YZ
5–4, 2–2

246 ($\frac{88}{5319}$) O/T × YZ/YZ
6–11, 5–6–1

247 ($\frac{499}{5320}$) R/K × YZ/YZ
7–6, 9–9

RK/T × YZ/YZ

248 ($\frac{163}{5319}$) 1– 1,   0– 0
249 ($\frac{1205}{644}$) $\underline{29-28,\ 28-32}$ (g.)
30–29, 28–32

250 ($\frac{509}{575}$) W/K × YZ/YZ
3–2, 2–1

251 (592) YT/R × YT/YT
9–7–7, 12–12–10

252 (586) YT/YT × YT/YT
18–17

253 ($\frac{590}{252}$) R/R × YT/YT
38–31

254 ($\frac{587}{5079}$) R/R × YK/YK
69–83–22

255 ($_{gs.}\{^{832}_{^{722}_{5023}}$) R/T × YK/YK
28–22, 16–22 (T/K 1–0?)

256 ($_{gs.}\{^{1362}_{^{722}_{5023}}$) W/T × YK/YK
22–26, 28–28

YK/YK × YK/YK
257 (612) 17– 17
258 (257) 70– 58 (g.)
259 ($\frac{617}{5081}$) 32– 15
260 (257) 12– 11– 7
261 (259) 15– 29–17
146–130–24

262 ($\frac{51}{5324}$) M/Z × RK/RK
7–6, 7–7

263 ($\frac{1079}{5404}$) MZT/RK × RK/RK
2–0, 1–3

264 (5049) R/T × RK/RK
13–18, 13–17

265 ($\frac{1255}{644}$) YT/K × RK/RK
1–1, 2–2

266 ($\frac{1947}{5392}$) +/RK × WG/WG
11–6, 7–4

267 ($\frac{1863}{5410}$) +/MRT × WG/WG
1–1, 2–0

268 ($\frac{1397}{5410}$) +/ZK × MRG/MRG
5–1, 6–6

269 ($\frac{144}{5098}$) Z/T × MRK/MRK
7–5, 12–6

270 ($_{g.}\{^{1731}_{^{942}_{365}}$) YW/G × MRK/MRK
10–17, 16–10

271 ($\frac{986}{5326}$) WG/T × MRK/MRK
11–16, 16–12

272 ($\frac{1036}{5394}$) T/G × MRK/MRK
1–0, 3–7

273 ($\frac{1211}{5099}$) +/MZT × YRK/YRK
0–0, 3–6

274 ($\frac{1067}{1246}$) +/T × YWK/YWK
4–16, 10–19

275 (362   ) +/W × +/H
2–3, 3–6, 3–4, 2–3

276 (362   ) H/W × +/H
+/H, H/H 2–7, +/W 0–1, H/W 1–2

277 (958   ) +/ZK × +/B
11–11, 12–13, 17–18, 22–21

MRG/ZK × +/B
278 (958   ) 26–22, 23–17, 23–22, 19–17
279 (958   ) 19–18, 18–14, 8–12, 16– 6
280 (958   ) 21– 9, 9–13, 14–13, 16–13
66–49, 50–44, 45–47, 51–36

281 ($_{\text{H. ('21)}}^{1353}$) ZK/G × +/B
10–10, 9–11, 5–8, 10–6

282 ($\frac{1483}{958}$) +/MWG × +/B
4–11, 11–13, 11–7, 8–13

283 ($\frac{1711}{958}$) +/YOG × +/B
4–7, 5–12, 6–15, 7–9

284 (958   ) MRG/ZK × +/B
10–11, 11–16, 18–15, 15–10

285 ($\frac{1774}{958}$) +/YRK × +/B
26–17, 16–18, 13–26, 9–20

286 ($_{\text{H. ('16)}}^{482}$) K/K × +/M
1–8, 3–8

$$+/M \times +/M$$

287 (T. ('11))   1– 1, +/M, M/M   3– 6
288 (H. ('18))   22–14, +/M, M/M 21–25
289 (H. ('14))   20–19, +/M, M/M 33–26
_____
                43–34, +/M, M/M 57–57

290 (H. $\frac{107}{}$ ('18))   R/R $\times$ +/M
                11–18, 12–10

291 (H. ('18))   +/ZK $\times$ +/M
                9–4, 7–3, 6–5, 4–13

292 (T. ('11))   +/Y $\times$ +/Y (g.)
                1–1, +/Y, Y/Y 4–6

293 (781)   +/K $\times$ +/O
                6–7, 12–7, 4–7, 7–9

294 (1451)   +/MWG $\times$ +/O
                4–1, 6–5, 3–6, 3–4

295 ($\frac{1507}{752}$)   +/MZK $\times$ +/O
                12–14, 14–11, 14–13, 10–11

296 ($\frac{1554}{986}$)   MRG/Z $\times$ +/O
                14–11, 9–20, 14–21, 17–13

297 (g. $\left\{ \begin{matrix} \frac{393}{1362} \\ \text{H. ('18)} \end{matrix} \right.$)   MZ/G $\times$ +/O
                2–0, 2–0, 3–4, 2–0

                MZT/YRK $\times$ +/O
298 ($\frac{1211}{1152}$)   3– 8,   3– 3,   6– 8,   7– 5
299 ($\frac{1211}{760}$)   9– 9, 14–13,   8–10, 12–12
_____
                12–17, 17–16, 14–18, 19–17

300 ($\frac{1283}{329}$)   YZK/O $\times$ +/O
                19–17, 17–13, +/O, O/O, 27–21

301 ($\frac{368}{761}$)   HZ/G $\times$ +/O
                6–11, 13–11, 9–8, 12–8

302 ($\frac{369}{761}$)   HZ/ZK $\times$ +/O
                9–12, 7–7, 8–9, 11–8

$+/MZT \times +/R$

303 $\left(\begin{smallmatrix} 1211 \\ 1281 \end{smallmatrix}\right)$ 14–13, 17–22, 10–10, 10–21

304 $\left(\begin{smallmatrix} 1211 \\ 1507 \end{smallmatrix}\right)$ 3– 6, 3– 7, 5– 6, 5– 3

17–19, 20–29, 15–16, 15–24

305 $\left(\begin{smallmatrix} 1151 \\ 1281 \end{smallmatrix}\right)$ ZK/O $\times$ +/R

0–0, 0–1, 0–0, 1–1

306 $\left(\begin{smallmatrix} 832 \\ \text{H. ('18)} \end{smallmatrix}\right)$ T/K $\times$ +/W

8–7, 8–7, 7–7, 7–11

307 $\left(\begin{smallmatrix} 51 \\ \text{H. ('18)} \end{smallmatrix}\right)$ M/G $\times$ +/W

6–10, 12–15, 15–14, 15–13

308 $\left(\begin{smallmatrix} 269 \\ 1227 \end{smallmatrix}\right)$ MRK/T $\times$ +/W

1–4, 2–0, 1–1, 1–2

309 $\left(\begin{smallmatrix} 1046 \end{smallmatrix}\right)$ MRK/W $\times$ +/W

26–29, 36–26, +/W, W/W, 71–73

310 $\left(\begin{smallmatrix} 1601 \\ 335 \end{smallmatrix}\right)$ MRK/G $\times$ +/W

8–12, 11–15, 11–10, 17–6

311 $\left(\begin{smallmatrix} 1920 \\ 335 \end{smallmatrix}\right)$ +/MRT $\times$ +/W

8–16, 14–9, 10–8, 8–13

312 $\left(\begin{smallmatrix} 743 \end{smallmatrix}\right)$ +/W $\times$ +/W

1–3, +/W, W/W, 7–5

313 $\left(\begin{smallmatrix} 1731 \\ 1592 \end{smallmatrix}\right)$ YRK/G $\times$ +/W

5–6, 3–3, 4–5, 3–2

314 $\left(\begin{smallmatrix} 1049 \\ 356 \end{smallmatrix}\right)$ +/T $\times$ +/W

5–3, 3–3, 5–9, 1–3

315 $\left(\begin{smallmatrix} 309 \\ 737 \end{smallmatrix}\right)$ +/MRK $\times$ +/Z

0–0, 0–3, 1–0, 1–0

316 $\left(\begin{smallmatrix} 519 \end{smallmatrix}\right)$ +/Z $\times$ +/Z

1–4, +/Z, Z/Z, 9–15

317 $\left(\begin{smallmatrix} 993 \\ 315 \end{smallmatrix}\right)$ MO/G $\times$ +/Z

4–5, 3–8, 5–6, 6–3

318 $\left(\begin{smallmatrix} 1336 \\ 1517 \end{smallmatrix}\right)$ MR/O $\times$ +/Z

3–3, 4–5, 4–3, 3–3

319 ($\frac{1601}{315}$) MRK/G × +/Z
         13–13, 5–19, 12–14, 13–12

320 ($\frac{269}{1517}$) MRK/T × +/Z
         0–1, 2–1, 0–0, 0–0

321 ($\frac{707}{1749}$) YO/T × +/Z
         1–0, 1–1, 1–1, 3–0

322 ($\frac{958}{1588}$) B/MRG × +/Z
         7–5, 5–6, 16–5, 10–10

323 (g.T.('11)) M/K × +/T
         0–0–31, 0–0–34, 0–0–32, 0–0–34

         +/MRK × +/T
324 ($\frac{309}{766}$) 1–0, 0–1, 1–0, 3–1
325 ($\frac{719}{766}$) 0–0, 0–3, 0–1, 1–0
         ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
         1–0, 0–4, 1–1, 4–1

         MRK/O × +/T
326 ($\frac{1926}{807}$) 0– 1,   0– 0,   3–0,   1–1
327 ($\frac{1576}{760}$) 4–10, 13–12,   7–7,   9–5
         ‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
         4–11, 13–12, 10–7, 10–6

328 (719) MRK/YW × +/T
         3–1, 0–0, 3–1, 1–0

329 ($\frac{1715}{1762}$) RK/O × +/T
         2–2, 2–4, 1–5, 3–4

330 ($\frac{1394}{1043}$) MR/ZK × +/T (g.)
         1–4, 2–5, 1–1, 0–0

331 (g. $\{{}^{683}_{1362}$ H.('18)) MZ/K × +/T
         10–4, 7–2, 1–6, 2–5

332 ($\frac{1521}{325}$) MZ/T × +/T
         1–1, 2–5, +/T, T/T 1–6

333 (717) +/RK × +/T
         3–2, 6–5, 0–3, 2–3

334 (g. H.('16) 505) R/RK × +/T
         4–2, ·R/T, RK/T 11–7, +/RK 6–7

335 ($\frac{865}{1573}$) YRK/W × +/T
5–6, 2–5, 6–3, 5–1

336 ($\frac{717}{1310}$) YW/RK × +/T
14–9, 13–8, 13–14, 10–10

337 ($\frac{1711}{1826}$) YOG/W × +/T
14–16, 20–17, 17–18, 16–24

338 (14) +/YZ × +/T
3–8, 6–2, 4–8, 9–13

YZ/RK × +/T
339 (g.{ $\frac{248}{\frac{916}{6344}}$) 11– 2,   5– 9, 2–3,   3– 5
340 (g.{ $\frac{644}{1362}$ H. ('18)}) 12–12, 15–10, 7–5, 14–14
_____
23–14, 20–19, 9–8, 17–19

341 (g. T.('11)) +/O × +/G
0–0–13, 0–0–14, 0–0–9, 0–0–10

342 ($\frac{870}{1396}$) MO/K × +/G
4–1, 3–4, 4–4, 5–5

343 ($\frac{674}{1646}$) MW/O × +/G
3–1, 2–6, 0–1, 2–4

344 ($\frac{883}{1283}$) YO/K × +/G
1–4, 2–2, 1–2, 3–4

345 ($\frac{1053}{723}$) MRK/T × +/G
5–3, 3–1, 2–0, 2–2

+/YZ × +/G
346 (S. ('21) $\frac{368}{}$) 34–29, 45–31, 40–26, 36–47
347 ($\frac{354}{1796}$) 2– 3, 3– 1, 0– 1, 3– 1
_____
36–32, 48–32, 40–27, 39–48

348 (1833) +/G × +/G
1–4, +/G, G/G 10–6

349 (1833) +/YZK × +/G
2–14, 8–6, 6–8, 6–7

350 ($\frac{1121}{1262}$) MT/Z × +/G
2–2, 0–2, 4–1, 2–1

351 $\left(\begin{smallmatrix} 676 \\ 683 \end{smallmatrix}\right)$ +/+ × +/K
     3–3, 4–5

352 $\left(\text{g.}\begin{smallmatrix} \text{H. ('14)} \\ \text{g. 462} \end{smallmatrix}\right)$ +/K × +/K
     15–11–2, +/K, K/K 34–40–8

353 $\left(\begin{smallmatrix} 721 \\ 286 \end{smallmatrix}\right)$ +/YZ × +/K
     3–2, 3–2, 2–3, 6–1 (+/Z 0–1?)

354 $\left(\begin{smallmatrix} \text{S. ('21)} \\ 1395 \end{smallmatrix}\right)$ +/YZ × +/K
     15–9, 16–11, 9–14, 8–6 (Z/K 0–4?)

355 $\left(\begin{smallmatrix} 752 \\ 356 \end{smallmatrix}\right)$ YG/W × +/K
     3–3, 4–5, 1–2, 4–3

356 (188) W/K × +/K
     5–3, 3–1, +/K, K/K, 4–1

H/O × H/O
357 (779) H/H 1– 0,   H/O, O/O   1– 2
358 (779)   4– 3– 7,   6–12–22
359 (373)   3– 9– 5,   29–30– 9
     _____
     H/H 8–12–12, H/O, O/O, 36–44–31

H/W × H/W (♂ or ♀ +/H or +/W)
360 (g.H.('16)) 6– 6–2,   1– 0,   2– 0–2, (+/+ 1–0?)
361 (g.H.('16)) 5– 4   11–10,   5– 4
362 (g.H.('16)) 4– 7   4– 1,   2– 4   (g.)
363 (361) 3– 2   2– 5,   1– 3
364 (362) 3– 3   0– 5,   3– 2
     _____
     21–22–2, 18–21, 13–13–2, (+/+ 1–0?)

365 $\left(\begin{smallmatrix} 649 \\ 1409 \end{smallmatrix}\right)$ +/HZ × +/HZ (H mod. in both ♂ and ♀)
     +/+ 7–17, +/HZ, HZ/HZ, 34–47

+/ZK × +/HZ
366 (656) 2–11, 4–5, 8–3, 3–5
367 (656) 0– 1, 1–2, 1–1, 2–1
     _____
     2–12, 5–7, 9–4, 5–6

368 $\left(\begin{smallmatrix} 801 \\ \text{gs.S.('20)} \end{smallmatrix}\right)$ Z/G × +/HZ
     5–1, 3–6, 4–2, 2–3

369 $\left(\begin{smallmatrix} 919 \\ \text{gs.S.('20)} \end{smallmatrix}\right)$ ZK/G × +/HZ (Same ♀ as in 368)
     6–14, 4–11, 12–14, 8–11, +/Z 2–2, HZ/Z 1–0

H/G × H/G
370 (779) 5-0-2, 3- 5-2, 2-2-1
371 (779) 1-4,   4- 9,   5-3
372 (370) 0-0-3, 2- 1-2, 0-0-2
_____
                    6-4-5, 9-15-4, 7-5-3

373 ($^{z.}$ $\frac{357}{372}$) H/O × H/G
                    5-5, 5-5, 12-4, 3-5

374 (818) M/G × M/R
                    1-0, 0-0, 1-1, 0-0

M/R × M/R
375 (21   ) 4- 2,   5- 5,   3- 3
376 (375) 4- 5,   1- 4,   1- 5 (g.)
377 (375) 0- 0,   6-11,   2- 0
378 (963) 2- 4,   6- 4,   5- 4
379 (818) 0- 1-1,   0- 0,   0- 1-3
380 (98   ) 2- 5,   8- 3,   1- 4
381 (46   ) 6- 4,   9-16,   4- 7
382 (46   ) 6- 3,   19-18,   5- 6 (g.)
_____
                    24-24-1, 54-61, 21-30-3

R/K X M/R
383 (100) 1– 2–2, 0– 1,   0– 0,   2– 1–2, MR/K 1–1–2
384 (383) 0– 0,   1– 0,   1– 0,   0– 0
385 (99) 11–12–7, 11–11–15, 16–10–13, 14–13–6,   1–0–1
───
        12–14–9, 12–12–15, 17–10–13, 16–14–8, MR/K 2–1–3

386 (380) R/R × M/R
        15–17, 17–21

387 (537) M/MR × M/MR
        10–19, M/MR, MR/MR, 46–39

388 ($\frac{633}{380}$) R/T × M/MR
        M/R, MR/R 31–31, 17–19, 17–25

389 ($\frac{580}{537}$) Z/K × M/MR
        17–9, 23–20, 16–13, 14–24

390 ($\frac{1561}{1591}$) +/MTG × +/MR
        6–5, 9–10, 9–7, 6–7

391 (g.H.('16)) M/W × M/W
        11–16, 25–22, 15–11

392 (391) W/W X M/W
        15–16, 13–12

393 (51) M/G × M/Z
        5–0, 2–7, 8–8, 6–2, MZ/G 1–1, +/G 3–0
                (Two proved M/MZ, Matings 394 and 823)

394 ($\frac{695}{393}$) K/G × M/MZ
        4–5, 9–1, 2–4, 2–2

        M/K × M/T
395 ($\frac{196}{630}$) 3– 6, 2– 6, 1– 1, 0– 3
396 (1309) 11–11, 12–15, 22–12, 14–12
        ─────────────────────────────────────
        14–17, 14–21, 23–13, 14–15

397 (1309) M/T × M/T
        22–34–2, 42–43–10, 24–27–3

398 ($\frac{805}{347}$) T/G × M/G
        0–0, 2–1, 2–0, 0–0

M/G × M/G

399 (773)   3– 2–11,   9– 8–22,   0– 4–13,

400 (399)   9–13,   16–20,   7–11,

401 (400)   4–` 4,   8– 9,   9– 5,

402 (400)   12–18,   34–21,   14–20, $(+/+ \ 1\text{–}0?)$

            28–37–11, 67–58–22, 30–40–13, $(+/+ \ 1\text{–}0?)$

403 ($\frac{384}{400}$) M/K × M/G

        2–6, 4–3, 3–5, 8–6, +/K 1–0

404 ($\frac{781}{400}$) M/O × M/G

        10–14, 12–16, 20–12, 15–13, MG/O 1–1, +/O 1–2

M/K × M/K

405 (g.T. ('11))   0– 0– 8,   0– 0–33,   0– 0–16

406 (42)   1– 5,   4– 7,   4– 2

407 (42)   0– 0– 2,   0– 0– 1,   0– 0– 3

408 (192)   0– 0–12,   0– 2–22,   0– 0–12

409 (191)   14– 13,   51– 46,   32– 34

410 (23)   2– 4– 7,   6– 7–16,   1– 3– 6

411 (g. $\left\{ \begin{smallmatrix} \text{H. ('14)} \\ \text{g. 462} \end{smallmatrix} \right\}$) 16– 22,   38– 32– 1,   17– 23– 2

412 (411)   3– 2,   6– 4– 1,   1– 2– 1

413 (g. $\left\{ \begin{smallmatrix} 189 \\ 192 \end{smallmatrix} \right\}$) 0– 0– 7,   4– 2– 6,   0– 0– 9

414 ($\frac{384}{822}$)   5– 7,   11– 11,   1– 1

415 (414)   2– 6,   10– 8,   3– 4   (g.)

416 (196)   12– 12,   28– 27,   10– 12

417 (196)   7– 12,   13– 26,   11– 17

418 (196)   2– 2,   15– 12,   5– 6

419 (198)   24– 16,   33– 41,   25– 15

420 (198)   7– 6,   16– 16,   11– 3   (g.)

        95–107–36, 235–241–80, 121–122–49

421 ($\frac{607}{192}$) YK/R × M/K

        M/YK, YK/K, YK/MK 4–5–3, 3–3–2, 4–0–7

Y/O × Y/O

422 (gs. $\left\{ \begin{smallmatrix} 482 \\ 601 \end{smallmatrix} \right\}$) 1–0,   8– 7,   0–2

423 (g. $\left\{ \begin{smallmatrix} 434 \\ 605 \end{smallmatrix} \right\}$) 3–1–4,   5– 4–2, 3–0–4

        4–1–4, 13–11–2, 3–2–4

424 (gs. $\frac{786}{468}$) YT/O × Y/O

        4–1, 3–1, 1–2, 4–3

425 ($\frac{115}{608}$) Y/R × YR/R
Y/YR, Y/R 5–9–1, 3–3–2

426 (614) R/R × Y/R
25–20, 29–34

427 (104) R/K × Y/R
0–1, 0–4–3, 0–2–4, 0–4, +/K 0–1

428 ($\frac{631}{116}$) RK/T × Y/R
4–2, 2–4, 1–2, 1–1

429 (728) R/T × Y/R
4–2–4, 5–2–3, 0–4–1, 3–2–1

430 (67) Y/Y × Y/R
7–4–8, 11–5–10

Y/R × Y/R

431 (104) 15–22, 47–48, 20–20
432 (g. 431) 2– 0, 1– 1, 2– 2
433 (g. 431) 3– 7, 7– 4, 4– 5
434 (115) 3– 2–3, 4–10–15, 0– 6– 9
435 (115) 0– 0, 0– 2, 0– 0
436 (115) 0– 3–5, 12–11–12, 3– 7– 1
437 (1183) 0– 0, 4– 7, 3– 4
_____
23–34–8, 75–83–27, 32–44–10

438 ($_{\text{g.H.('13)}}^{104}$) Y/R × Y/YR
6–15–3, Y/YR, Y/R, YR/R 31–20–1

Y/Z × Y/Z

439 (g.{T.(11) / U.('11)}) 0– 0–19, 0– 0–38, 0– 0–18
440 (g.{T.('11) / U.('11)}) 0– 0–27, 0– 0–61, 0– 0–30
441 (439) 0– 1, 0– 0, 0– 1
442 (894) 14–10, 27–19, 11–12
_____
14–11–46, 27–19–99, 11–13–48

+/YZ × +/YZ

443 (g.H.('16)) 3–0–1, +/YZ, YZ/YZ, 7– 6,   +/Z 0–1
444 (721) 2–5,   15–14, +/Y 1–1,   1–0
445 (14) 1–2,   4– 6,
_____
6–7–1, +/YZ, YZ/YZ, 26–26, +/Y 1–1, +/Z 1–1

446 ($\frac{524}{239}$) Z/T × +/YZ
4–0, 0–2, 1–3, 1–3, Z/Z 1–0

$$Y/T \times Y/T$$

447 (57) 1–1–1, 17– 6,   5– 6,   Y/YT 1–0
448 (g. 463) 4–3,   9– 8–4, 3– 6–2,
449 (5006) 0–1–1, 2– 0,   0– 0,   0–1
——————————————————————————————————
5–5–2, 28–14–4, 8–12–2, Y/YT 1–1

450 (463) Y/K × Y/T
3–4, 13–9, 7–16, 9–12–3, +/K 1–0, YT/K 0–3–1, Y/YT 0–1

451 (454) YT/T × Y/T
0–4–1, 0–0–3, 5–4, 3–3

452 (785) YT/O × YT/O
6–8, 19–23, 4–10

453 (g. 786⁄601) YT/O × Y/YT
1–0, 2–1, 1–0, 0–2

454 (450) Y/T + Y/YT
0–0–32, 0–0–35, 0–0–34, 0–0–35

455 (449) Y/T × Y/YT
Y/Y 0–0–9, YT/T 0–1–10, Y/YT, Y/T 2–2–7

456 (463) T/K × Y/K
2–0, 0–0, 0–0, 1–0, YK/T 1–0

457 (5012) R/K × Y/K
4–7, 8–8, 8–4, 3–7

Y/K × Y/K
458 (g.T. ('11)) 0–0– 6,   0– 0–13, 0– 0– 7
459 (57) 1–1–12, 11–15–16, 5– 6–11
460 (459) 4–6,   8– 6,   2– 6
——————————————————————————————————
5–7–18, 19–21–29, 7–12–18

461 (918⁄219) YK/R × Y/K
Y/YK, YK/K, 7–11, 9–5, 1–7, +/R 0–1

462 (g. 463) T/K × YK/K
7–15–9, 6–10–6, 11–23–21, 12–11–8

463 (57) Y/T × Y/K
0–0–3, 1–4–7, 4–1–9, 1–2–4, YK/T 1–0 (+/K 1–0?)

464 (g. 431⁄629) R/R × Y/YK
12–8, 11–7

465 (466) Y/Y × Y/YK
             5-0-7, 2-1-2

             Y/YK × Y/YK
466 (g. 463) 8- 8-4, Y/YK, YK/YK 42- 40-9
467 (629) 6-20,   13- 31
468 (629) 13- 9,   37- 44
             27-37-4, Y/YK, YK/YK 92-115-9

469 (g.{H. ('14)}{g. 462}) +/YK × +/YK
             15-8-9, +/YK, YK/YK, 53-41-24, +/Y 3-0-1, +/K 4-2-1

470 (1209) O/R × O/R
             6-10, 21-25, 14-16

             O/T × O/T
471 (1182) 2-8-0, 3- 5,   2-6
472 (1182) 1-1-6, 3- 8-5, 2-1-3
             3-9-6, 6-13-5, 4-7-3

473 (g.{784}{787}) Y/O × O/T
             0-2, 0-2, 0-2, 0-1

             O/G × O/G
474 (373) 4- 6-1, 5- 8-2, 6- 7-1
475 (81 .) 6- 0-3, 11-15-7, 2-10-4
476 (173) 7- 7,   17-18,   7- 7
477 (171) 5- 0,   7- 6,   3- 4   (g.)
478 (172) 0- 0,   4- 2,   0- 0
479 (341) 1- 0,   2- 1,   0- 0
             23-13-4, 46-50-9, 18-28-⁻

480 (1758)(1137) YRK/O × O/G
             3-2, 1-1, 1-1, 0-1

481 (543)(231) MR/K × O/K
             9-13, 9-10, 6-6, 5-7

             O/K × O/K
482 (767) 1-1-3, 3- 3-5, 3-1-2
483 (231) 1-2-0, 4- 8-0, 2-0
484 (232) 0-0,   2- 3,
             2-3-3, 9-14-5, 5-1-2

485 (912) R/K × R/T
              13–20, 5–11, 8–9, 12–13

486 (589/5049) R/R × R/T
              12–11–6, 21–10–2

              R/T × R/T
487 (1313) 3–1– 1,   5– 4– 4,   2– 4–2
488 (110) 0–0– 5,   0– 0– 8,   0– 0–4
489 (487) 10–7– 8, 27–29–13,   8– 9–3
              ─────────────────────────────
              13–8–14, 32–33–25, 10–13–9

              R/R × R/K
490 (608) 2– 2,   2–0
491 (1197) 3–13,   8–9
              ──────────────
              5–15, 10–9

              R/K × R/K
492 (104) 17–11–3, 28–27–14, 7– 9–12
493 (699) 1– 3,   10–15,   9– 4
494 (207) 2– 5,   2– 0,   2– 3
495 (207) 1– 1,   6– 3,   4– 1
496 (g. 207) 3– 7,   7– 6,   4– 5
497 (g. 207) 1– 0,   2– 0,   0– 3
498 (5022) 9–11,   10–18,   10–13
499 (g. 494) 9– 4,   7–13,   6– 8   (g.)
              ─────────────────────────────
              43–42–3, 72–82–14, 42–46–12

500 (5012) Y/K × R/K
              2–1, 2–1, 3–4, 2–1

501 (538) MR/R × R/K
              5–11, 14–4–1, 6–7–4, 3–5–6

502 (99) M/R × R/K
              10–13–23, 18–15–12, 12–17–14, 10–10–10

503 (1878/1200) +/MZT × R/RK
              0–1, 2–0, 2–0, 1–0

              R/RK × R/RK
504 (264) 4– 3–14, R/RK, RK/RK,· 21– 15–29
505 (504) 30–28– 8,   102–136–28 (g.)
              ───
              34–31–22, R/RK, RK/RK, 123–151–57

506 ($\frac{717}{681}$) YW/RK $\times$ +/RK
      13–22, 18–17, +/RK, RK/RK, 27–32

507 ($\frac{269}{1761}$) MRK/T $\times$ W/T
      1–1, 3–6, 4–8, 4–0

508 ($\frac{391}{926}$) M/W $\times$ W/K
      1–0, 4–3, 1–4, 1–6

509 (926) W/G $\times$ W/K
      10–4, 9–6, 5–6, 9–11

      W/K $\times$ W/K
510 (926)   0– 0,   0– 1,   0– 0
511 ($\frac{509}{510}$)   8–11, 10–11,   6– 9
512 (g. $\left\{\frac{540}{722}\right.$) 10– 9,   9–17,   4– 3
513 (511)   4– 2, 10– 7,   5– 6
514 (512)   7– 3, 12–17,   6–12
515 (209) 11– 6, 21–19, 10–13
516 (212)   2– 1,   1– 3,   0– 1
      42–32, 63–75, 31–44

517 (235) Z/K $\times$ Z/K
      10–10, 14–21, 5–8

518 (746) T/K $\times$ Z/K
      6–12, 10–9, 10–8, 8–12

      +/K $\times$ Z/K
519 (724) 9–10, +/K, K/K, 13–10, Z/K 5–7
520 (519) 0– 0,   1– 2,
      9–10, +/K, K/K, 14–12, Z/K 5–7

521 (366) +/ZK $\times$ +/ZK
      +/+ 13–13, +/ZK, ZK/ZK, 50–41

522 ($_{\text{g.H.('18)}}$892) MR/Z $\times$ +/ZK
      1–1, 2–1, 2–0, 0–7

523 ($\frac{694}{522}$) MG/T $\times$ Z/ZK
      11–7, 2–2, 7–4, 3–8

524 (569) Z/T $\times$ Z/T
      13–12, 12–23, 5–10

525 (173) T/G $\times$ T/G
      20–12, 34–28, 15–12

526 (463) YK/T × T/K
            8–6, 7–6, 4–1, 7–8

527 (234) Z/K × T/K
            8–3, 6–5, 5–8, 3–6

            T/K × T/K
528 (323) 1– 5,   3– 3,   4– 2
529 (g. 463) 2– 3,   1– 2,   1– 1
530 (219) 0– 3,   4– 1,   1– 0
531 (5010) 4– 0,   3– 2,   2– 2
532 (208) 12–10, 26–19, 12–10
            19–21, 37–27, 20–15

533 (822) K/G × K/G
            10–9, K/G, G/G, 28–35

534 (1690) YRK/HZ × HZ/O
            21–11, 11–12, 20–13, 18–20

            M/YK × M/YK
535 (g. {H. ('14) / g. 462}) 17–16, M/YK, YK/YK   48–50
536 (g. {H. ('14) / g. 462}) 6–18,   36–48
            23–34, M/YK, YK/YK 84–98

537 (560/551) M/M × MR/K (g.)
            7–8, 4–4, M/R, 1–0

538 (426/668) R/R × MR/K
            19–25–19, 11–20–11, MK/R 0–1–2, R/R 1–0

            K/K × MR/K
539 (231/542) 5– 3–1,   3–3
540 (543) 13–14–0,   8–5, MK/K 1–0
            18–17–1, 11–8, MK/K 1–0 .

MR/K × MR/K

541 (501)	0– 4,	0– 1,	1– 4			
542 (501)	0– 0,	1– 1–2,	2– 1–1			
543 (383)	6– 1,	6– 5–2,	6– 7–1	R/K	0–0–1	
544 (543)	3– 4,	7– 8,	8– 4			
545 (543)	9–10,	25–34	9–12			MK/K 0–2
546 (539)	3– 2,	22–13	16– 6			
547 (558)	4– 0,	9– 6	0– 1			0–1
548 (557)	0– 1,	0– 0	0– 1			
549 (545)	3– 6,	11– 8	4– 8			
550 (200)	2–10,	6– 2	4–11	1–0		
551 (549)	0– 1,	6– 3	2– 1			
552 (550)	0– 0,	3– 0	0– 0			

30–39, 96–81–4, 52–56–2, R/K 1–0–1, MK/K 0–3

M/RK × M/RK

553 (g. {gs. 434/855, H. ('16)}) 15–25, 41–36, 10–17
554 (1356) 3– 3, 9– 5, 6– 3
555 (560) 10–13, 22–21, 12– 6
556 (555) 7– 9, 13–20, 10– 9

35–50, 85–82, 38–35

MR/MR × MR/K

557 (543) 9–11, 9– 8
558 (543) 7– 8, 6–12 (g.)

16–19, 15–20

559 (g. {U. ('16), H. ('16)}) M/K × M/RK
11–8, 10–10, 6–10, 5–11, +/K 1–1

560 (33/630) M/M × M/RK
40–46, 50–33

M/T × M/RK

561 (1356) 0–1, 0– 4, 2–1, 2–3
562 (1356) 4–4, 3–10, 3–2, 2–2

4–5, 3–14, 5–3, 4–5

563 (553) RK/RK × M/RK
25–19, 24–31

564 (1637/1561) MZT/RK × +/MTG
17–12, 17–17, 7–7, 12–8

565 ($\frac{1564}{1069}$) MRT/YZ × +/MTG
15–20, 11–12, 15–9, 12–17

566 ($\frac{1467}{1561}$) MZK/R × +/MTG
13–10, 8–11, 15–13, 15–12, M/R 2–0

567 ($\frac{634}{568}$) RK/T × Y/OK
2–5, 1–1, 3–2, 3–1, O/T 2–0

568 (786) Y/O × Y/OK
5–11, 6–10, 15–7, 4–7, Y/YK 1–0

YZ/T × YZ/T
569 (722) 17–19, 25–40, 10–10, YT/T 0–1, Z/T 3–2
570 (569) 5– 8, 7–13, 1– 4,
22–27, 32–53, 11–14, YT/T 0–1, Z/T 3–2

YZ/G × YZ/G
571 (170) 28–35, 43– 66, 26–22, YG/G 1–1, Z/G 1–1,
572 (170) 16–22, 41– 38, 11–15, (Y/Y 1–0?)
573 (170) 14–16–7, 31– 27–12, 3–19–4, 0–1–1, 2–0
58–73–7, 115–131–12, 50–56–4, YG/G 1–2–1, Z/G 3–1, (Y/Y 1–0?)

YZ/K × YZ/G
574 (929) 11–13, 11– 8, 15–15, 6–11, Z/K 1–0
575 ($\frac{724}{170}$) 16–17, 20–19, 25–20, 18–15
27–30, 31–27, 40–35, 24–26, Z/K 1–0

576 ($\frac{540}{725}$) K/K × YZ/K
15–13, 13–12, YK/K 1–2, Z/K 1–0

YZ/K × YZ/K
577 (725) 8– 5, 11– 13, 7–11, Z/K 0–1
578 (724) 3– 7, 7– 9, 5– 5,
579 (5023) 10– 8, 9– 21, 9– 6, 1–1
580 ($\frac{579}{5019}$) 18–25, 45– 51, 29–23, 3–2 YK/K 2–2
581 (5019) 7– 4, 9– 14, 5– 2, 0–1 (g.)
582 (242) 1– 0, 1– 2, 1– 0, (g.)
47–49, 82–110, 56–47, Z/K 4–4, YK/K 2–3

583 ($\frac{519}{5023}$) Z/K × YZ/K
0–3, 0–1, 1–0, 1–0

YT/R × YT/R

584 (122)   3– 2,   4– 9,   3– 3
585 (121)   0– 0– 8,   0– 0–24,   0– 0–11
586 (121)   20–12,   30– 49,   21–20
587 (121)   4– 4,   5– 8,   4– 5
588 (918)   3– 3,   4– 2,   2– 1   YR/R 0 1
589 (918)   6– 9,   6– 8,   4– 3
590 (586)   4– 7,   16– 8,   5– 7
591 (590)   9–12– 3,   19– 12– 4,   7–10– 3
592 (1199)   3– 1,   4– 5– 5,   1– 3– 1
593 (600)   0– 0– 3,   1– 2–21,   0– 1– 8
594 (gs. 251)   12– 6,   24– 42,   13–12
595 (594)   0– 0,   0– 0,   0– 1
           64–56–14, 113–145–54, 60–66–23, YR/R 0–1

YK/R × YT/R

596 (918)   1– 1,   0– 2,   0– 2,   0– 5,   Y/YK 2–1
597 (111)   9–10, 11–13,   9–10,   4–14,   R/T 0–1
598 (254⁄961)   27–15, 12–18–1, 12–23–2, 13–13–2,
           37–26, 23–33–1, 21–35–2, 17–32–2, Y/YK 2–1 R/T 0–1

599 (g. 431⁄121)   Y/R × YT/R
           5–7, 7–5, 6–6, 2–2

600 (592)   YT/YT × YT/R
           9–10–10, 14–12–14

601 (455⁄600)   Y/YT × YT/R
           2–2–6, 0–0–4, 3–4–1, 1–3–7, T/T 0–0–1

YT/YT × YT/YT

602 (601) 6– 8
603 (601) 2– 2
604 (602) 0– 3
           8–13

605 (1209)   YK/O × YK/O
           7–9–5, 11–19–18, 10–8–4

R/R × YK/R

606 ($\frac{485}{5050}$) 9–18,   9–10,

607 (614) 25–11– 3, 10–14–14, R/K 0–0–2

608 ($\frac{614}{254}$) 33–42,   39–29,   2–4   YR/R 0–2

609 ($\frac{618}{254}$) 16–17–50, 21–12–48,   4–1–1

83–88–53, 79–65–62, R/K 6–5–3, YR/R 0–2

610 (110) R/T × YK/R
0–0–9, 0–0–5, 0–0–5, 0–0–3, YR/T 0–0–1

611 ($\frac{1209}{1304}$) YK/O × YK/R
0–3–4, 0–2–1, 1–4–4, 0–1–4

YK/R × YK/R

612 (918) 25–14,   37– 65,   18–20

613 (918)   6– 2,   13– 14,   4– 5

614 (812) 26–39,   54– 58,   16–24,   R/K 2–0, YR/R 1–2

615 (612) 10– 7,   34– 38,   10–15,   0–1

616 (612)   0– 3,   4– 3,   0– 1

617 (918)   6– 1,   9– 13,   2– 4

618 (963)   5– 2,   14– 7,   6– 9

619 (617)   3– 0,   2– 0,   0– 0

620 (254) 13–10– 6, 15– 18– 7,   8– 9–4,   0–1

621 (110)   0– 0– 6,   0– 0–18,   0– 0–3,   0–0–1

94–78–12, 182–216–25, 64–87–7, R/K 2–2, YR/R 1–2–1

622 ($\frac{644}{255}$) YZ/YZ × YK/R
44–37, 26–34

623 (879) YK/Z × YK/Z
12–6, 17–26, 4–5

YK/T × YK/T

624 (164) 12–21,   20–33,   13–11,   T/K 1–2

625 (164)   3– 3–12, 7– 8–40, 10– 1–13,   0–0–4, YT/T 0–1

15–24–12, 27–41–40, 23–12–13, T/K 1–2–4, YT/T 0–1

626 (625) YK/YK × YK/T
0–0–8, 0–0–5

YT/K × YT/K

627 (218) 1– 4,   2– 3, 1– 2, YK/K 0–2

628 (786) 8–16, 21–29, 8– 9,   1–0 T/K 5–1

9–20, 23–32, 9–11, YK/K 1–2 T/K 5–1

629 (466) Y/YK × YK/YK or
               YK/YK × Y/YK
               26–28

630 (g. gs.{434/405} H.('16)) M/RK × RK/T
               15–12, 8–12, 11–20, 21–12

               RK/T × RK/T
631 (264) 18–18–13,   30– 35–38, 12–16–15
632 (631) 15–13,   45– 47,   15–19   (g.)
633 (334) 22–16,   28– 28,   12–24,   RT/T 1–0
634 (g. gs.{434/405} H.('16)) 21– 6,   30– 34,   15–10
               ───
               76–53–13, 133–144–38, 54–69–15, RT/T 1–0

635 (5053) B/MRK × B/MRK
               B/MRK 0–1

636 (1046/1043) MRK/T × MRK/T
               2–3, 9–11, 2–2

637 (271) MRK/WG × MRK/T
               17–16, 15–18, 12–16, 12–15, RK/WG 2–3, WG/K 1–0, MT/WG 2–1

638 (733/1394) YT/RK × MR/ZK
               0–2, 2–3, 2–1, 4–5

639 (503/1926) MZT/R × YRK/O
               5–5, 1–4, 3–6, 8–3

640 (567) YK/RK × YK/RK
               0–0, 2–7, 2–2

641 (1731) YRK/G × YRK/G
               6–2, 4–3, 1–4, YG/G 0–1, RK/G 1–1

642 (1046/506) MRK/T × YW/RK
               8–6, 10–8, 7–8, 5–12

               YZ/RK × YZ/RK
643 (245) 2– 7, 11–15,   3–6
644 (248) 9– 9, 18–33, 12–3
               ──────────────────────
               11–16, 29–48, 15–9

645 (1258/644) YT/R × YZ/RK
               2–2, 1–1, 1–6, 3–0, R/Z 0–1

646 ($\frac{612}{373}$) YK/R × H/O
14–7–2, 2–10–11, 5–7–1, 8–8–1

647 ($\frac{1416}{953}$) +/B × +/HR
11–14, 16–13, 15–8, 12–20, +/R 1–0, H/B 0–2, **+/H 0–1**

648 ($\frac{957}{953}$) BWG/O × +/HR
15–18, 12–11, 8–18, 12–29, H/O 0–1, H/BWG 0–1

+/RK × +/HZ
649 (650) 1– 2,   2– 2,   2– 4,   3– 3
650 ($\frac{1914}{15}$) 8– 6, 10– 8,   8–10,   7– 9
651 (650) 7– 8,   8– 5,   8– 5,   5– 8
652 (1409) 4– 4,   4– 7,   6– 8,   6– 3
20–20, 24–22, 24–27, 21–23

653 ($\frac{951}{366}$) +/G × +/HZ
12–13, 12–14, 7–13, 15–10

654 ($\frac{1726}{946}$) YRK/O × +/HZ
5–4, 3–6, 8–2, 4–4

655 ($\frac{\text{g.H.('21)}}{943}$) M/Z × +/HG
4–7, 4–2, 6–9, 4–5, Z/G 0–1

+/+ × HZ/ZK
656 ($\frac{1282}{369}$) 13–14, 11–14
657 ($\frac{1282}{369}$) 18–29, 31–17
658 ($\frac{1282}{369}$) 3– 5,   4– 4
34–48, 46–35

+/O × HZ/ZK
659 ($\frac{761}{369}$) 0– 1, 0–0, 0–0, 0–0
660 ($\frac{1058}{366}$) 11–10, 7–6, 2–5, 5–4
11–11, 7–6, 2–5, 5–4

+/R × HZ/ZK
661 ($\frac{1591}{366}$) 9– 7,   7– 9, 13– 7, 14–10
662 ($\frac{1561}{367}$) 25–27, 26–25, 14–18, 27–15, R/Z 2–0, +/Z 0–1
34–34, 33–34, 27–25, 41–25, R/Z 2–0, +/Z 0–1

663 (369) +/G × HZ/ZK
3–1, 1–0, 0–2, 4–2

MRG/ZK × B/O

664 ($\frac{958}{1327}$) 6– 3,   5– 3,   4– 2,   7– 7, +/MRG 0–2

665 ($\frac{958}{1327}$) 42–48, 36–54, 42–35, 37–46,   2–1, BO/ZK 2–0, MRG/BO 4–4, +/ZK 1–2

48–51, 41–57, 46–37, 44–53, +/MRG 2–3, BO/ZK 2–0, MRG/BO 4–4, +/ZK 1–2

K/G × M/R

666 ($\frac{822}{}$) 7– 4, 10–4, 4–2, 6–6, +/K 1–0

667 ($\frac{822}{}$) 2– 6, 4–3, 1–6, 9–2,   1–0, +/G 0–1, MR/K 0–1, MR/G 2–0

9–10, 14–7, 5–8, 15–8, +/K 2–0, +/G 0–1, MR/K 0–1, MR/G 2–0

668 ($\frac{485}{963}$) T/K × M/R

1–5, 3–7, 5–2, 6–4, +/T 0–2, +/K 1–2, MR/K 1–1

669 ($\frac{673}{}$) W/T × M/R

9–7, 11–7, 10–12, 8–5, MR/T 0–1, +/T 1–0, +/W 1–2

670 ($\frac{1044}{716}$) +/RK × M/W

1–1, 1–0, 2–2, 0–0, +/RK 1–0

671 ($\frac{83}{508}$) O/K × M/W

4–4, 5–5, 6–5, 7–8

672 ($\frac{124}{871}$) R/K × M/W

6–6, 8–5, 5–6, 7–3

673 ($\frac{161}{716}$) R/T × M/W

12–4, 6–4, 8–2, 9–3, +/T 1–0

674 ($\frac{750}{968}$) +/O × +/MW
0–2, 2–1, 2–4, 1–5

675 ($\frac{1743}{968}$) R/G × +/MW
1–1, 0–0, 1–1, 1–1

+/RK × M/Z
676 ($\frac{1044}{51}$) 5–3, 7– 4, 5–4, 3–1, +/MZ, 1–2, +/+ 1–1, +/RK 0–1, MZ/RK 1–1
677 ($\frac{679}{704}$) 4–2, 2– 6, 2–4, 1–4,   1–1   1–1
9–5, 9–10, 7–8, 4–5, +/MZ, 2–3, +/+ 1–1, +/RK 1–2, MZ/RK 1–1

678 ($\frac{1187}{51}$) R/K × M/Z
5–2, 1–3, 3–1, 4–6, MZ/K 1–0

RK/T × M/Z
679 ($\frac{162}{53}$) 6–10,   7–3,   4– 6,   4– 7, MZ/RK 0–2, +/RK 1–1, +/T 0–1
680 ($\frac{162}{52}$) 6– 4, 12–4, 17–10, 8–15,   0–1,   3–0,   0–2, MZ/T 1–0
12–14, 19–7, 21–16, 12–22, MZ/RK 0–3, +/RK 4–1, +/T 0–3, MZ/T 1–0

681 ($\frac{1362}{51}$) W/RK × M/Z
9–9, 13–4, 13–10, 9–8, +/RK 2–3, MZ/RK 0–1

682 ($\frac{58}{141}$) Y/K × M/Z
5–5, 10–13, 4–8, 10–9

T/K × M/Z
683 ($\frac{832}{51}$) 5–13,   9– 5, 5–11,   7–7, MZ/K 1–1, +/K 1–2, MZ/T 0–1, +/T 0–1
684 ($\frac{226}{53}$) 6– 6,   6– 9, 3– 7,   4–2,   2–1   1–0
11–19, 15–14, 8–18, 11–9, MZ/K 3–2, +/K 2–2, MZ/T 0–1, +/T 0–1

685 $\left(\begin{smallmatrix}1278\\676\end{smallmatrix}\right)$ T/K $\times$ +/MZ
6–4, 4–4, 3–0, 1–2, M/K 1–2, M/T 1–1

686 $\left(\begin{smallmatrix}1715\\1504\end{smallmatrix}\right)$ RK/O $\times$ +/MZ
1–0, 0–2, 0–1, 1–1

687 $\left(\begin{smallmatrix}1227\\1520\end{smallmatrix}\right)$ YT/RK $\times$ +/MZ
1–0, 0–2, 1–1, 2–0, M/RK 0–1, RK/Z 2–0

688 $\left(\text{g.}\left\{\begin{smallmatrix}248\\51\\183\end{smallmatrix}\right.\right)$ YZ/RK $\times$ M/T
10–7, 3–5, 11–2, 10–8

Z/K $\times$ M/T

689 $\left(\begin{smallmatrix}825\\851\end{smallmatrix}\right)$ 9– 6, 10– 9, 5– 8, 6– 6, +/Z 1–0, MT/Z 1–0, +/K 0–2

690 $\left(\begin{smallmatrix}202\\683\end{smallmatrix}\right)$ 5– 8, 16–12, 9–13, 12– 7

14–14, 26–21, 14–21, 18–13, +/Z 1–0, MT/Z 1–0, +/K 0–2

691 $\left(\begin{smallmatrix}1527\\986\end{smallmatrix}\right)$ +/W $\times$ +/MT
0–5, 1–2, 3–0, 2–0, +/M 0–2, +/T 0–1, M/W 2–2

692 $\left(\begin{smallmatrix}1657\\350\end{smallmatrix}\right)$ R/ZK $\times$ +/MT
7–1, 5–3, 5–3, 9–7, R/T 1–0

693 $\left(\begin{smallmatrix}825\\393\end{smallmatrix}\right)$ R/Z $\times$ M/G
6–2, 9–6, 3–0, 5–6, +/R 2–2, +/Z 1–0, MG/R 2–0, MG/Z 1–2

694 $\left(\begin{smallmatrix}1310\\393\end{smallmatrix}\right)$ W/T $\times$ M/G
9–13, 2–8, 10–9, 8–8, +/W 1–2, +/T 1–2, MG/T 1–1, MG/W 0–1

695 ($\frac{202}{51}$) Z/K × M/G
0–0, 0–1, 1–1, 1–1, +/K 1–0

696 (671) O/W × M/K
17–20, 26–14, 18–13, 5–18

R/R × M/K
697 ($\frac{594}{196}$) 9–17, 13– 4
698 ($\frac{594}{196}$) 12–18, 14–22, MK/R 1–1
699 ($\frac{384}{822}$) 16–10, 11–16
37–45, 38–42, MK/R 1–1

R/T × M/K
700 ($\frac{489}{191}$) 0–1–7,   0– 0–8, 0– 0–5,   0– 4–6
701 ($\frac{126}{230}$) 5–4,   10–13,   6–13,   10– 8,   MK/R 3–0, +/T 1–0
5–5–7, 10–13–8, 6–13–5, 10–12–6, MK/R 3–0, +/T 1–0

702 (871) R/W × M/K
5–4, 6–0, 4–1, 5–7, +/W 0–1

703 ($\frac{1310}{825}$) W/T × M/K
3–3, 3–0, 6–1, 3–0

Z/T × M/K
704 ($^{g,\{}\frac{51}{143}_{910}$) 24–17, 11–12, 16–17, 22–18, MK/T 0–1, +/T 1–0
705 (908) 3– 4,   5– 2,   3– 1,   5– 2   +/Z 1–0
27–21, 16–14, 19–18, 27–20, MK/T 0–1, +/T 1–0, +/Z 1–0

706 ($\frac{234}{88}$) Z/K × Y/O
4–5, 0–2, 2–4, 0–5

707 ($\frac{888}{754}$) ZK/T × Y/O
10–14, 10–15, 16–19, 12–13, +/T 1–0, YO/ZK 2–0, YO/T 1–0

708 ($\frac{1229}{1133}$) W/G × +/YO
22–24, 22–15, 37–15, 24–15, O/G 4–5, O/W 4–0, Y/G 6–5, Y/W 3–0

709 ($\frac{951}{1690}$) +/HG × +/YO
4–8, 10–6, 9–4, 4–4, HG/Y 2–0, +/Y 1–2, HG/O 0–1, +/O 1–1

710 ($\frac{958}{1168}$) MRG/B × +/YO
6–7, 6–6, 5–5, 6–7, Y/B 0–1, B/O 1–0

+/MZT × +/YO
711 (1853) 1–0, 0–0, 0–0, 0–0, MZT/O 0–1
712 (1852) 2–0, 0–0, 4–0, 1–0,   0–1, +/O 0–1, +/Y 0–1
3–0, 0–0, 4–0, 1–0, MZT/O 0–2, +/O 0–1, +/Y 0–1

713 ($\frac{893}{730}$) T/K × Y/R
14–13, 11–13, 13–13, 18–13, YR/K 2–3, +/T 0–1, YR/T 5–1

714 ($_{g.}\{\frac{825}{^{916}_{n348}}$) Z/K × Y/R
5–11, 9–7, 10–6, 11–9

715 ($\frac{234}{64}$) T/K × Y/W
2–5, 1–3, 2–5, 4–1

716 ($\frac{24}{743}$) M/T × Y/W
  1–0, 0–2, 1–1, 0–0

717 ($\frac{163}{61}$) RK/T × Y/W
  4–10, 6–13, 5–10, 7–4, +/RK 2–1, +/T 1–2, YW/RK 1–0

718 ($\frac{855}{1214}$) O/T × Y/W
  12–14, 9–24, 17–13, 9–18, +/O 3–2, YW/O 2–2, +/T 1–1, YW/T 2–1

MRK/T × +/YW

719 ($\frac{1046}{506}$) 4– 7, 6– 8, 4–4, 3– 6, MRK/Y 1–0, MRK/W 0–1, W/T 0–1
720 ($\frac{1046}{506}$) 6– 6, 11– 4, 6–5, 13–11
  10–13, 17–12, 10–9, 16–17, MRK/Y 1–0, MRK/W 0–1, W/T 0–1

721 (H. ('16)) +/+ × +/YZ
  13–18, 17–19, +/Z 1–0

722 ($\frac{\text{g.H.('16)}}{721}$) W/T × +/YZ
  9–9, 15–15, 8–9, 15–16, +/Z 2–3, Z/T 2–2, Y/T 1–1

723 (1262) T/G × +/YZ
  0–0, 0–4, 3–2, 3–4, Y/T 3–0

724 ($\frac{543}{721}$) K/K × +/YZ
  12–20, 17–17, Y/K 2–1, Z/K 3–1

725 ($\frac{231}{721}$) O/K × +/YZ
  5–8, 9–9, 6–10, 11–4, O/Z 1–0, Z/K 0–1, Y/K 2–0

726 ($\frac{642}{1750}$) RK/T $\times$ +/YZ
 6–5, 2–2, 2–3, 0–2

727 ($\frac{1005}{1262}$) R/RK $\times$ +/YZ
 5–3, 3–5, 6–4, 5–5, Y/R 2–1, Y/RK 1–0, RK/Z 0–1

728 ($\frac{612}{812}$) R/R $\times$ Y/T
 22–13, 18–9, YT/R 2–2, +/R 3–1

W/RK $\times$ Y/T

729 ($\frac{1205}{915}$) 21–17, 7–20, 22–15, 13–19, +/W 2–4, YT/W 2–0, +/RK 4–0, YT/RK 3–2

730 (1205) $\underline{8–21, \quad 7–\ 9, \quad 6–22, \ 16–\ 8, \qquad 1–1, \qquad 1–2, \qquad 2–1, \qquad 0–1,\ (Y/R\ 0–1?)}$
 29–38, 14–29, 28–37, 29–27, +/W 3–5, YT/W 3–2, +/RK 6–1, YT/RK 3–3, (Y/R 0–1?)

731 ($\frac{1256}{1364}$) YT/R $\times$ Y/T
 28–26, 26–28, 25–18, 26–15, +/R 3–1, YT/R 3–4, YT/YT 1–0

732 ($\frac{234}{716}$) Z/K $\times$ Y/T
 9–2, 8–5, 5–4, 3–2, YT/Z 0–2, +/Z 0–1

733 ($\frac{1322}{1205}$) Z/RK $\times$ Y/T
 1–3, 1–1, 4–2, 3–4, YT/RK 1–1

734 ($\frac{503}{1922}$) +/RK $\times$ +/YT
 0–1, 0–3, 0–0, 0–0, +/Y 0–1

735 (1780) RK/G $\times$ +/YT
 2–3, 5–5, 2–3, 4–6, Y/RK 1–0, RK/T 0–1, T/G 0–2

736 ($\frac{1731}{1923}$) W/G × +/YT
5–9, 10–6, 5–3, 6–10, W/T 2–0, Y/G 1–1, T/G 0–2

737 (1259) Z/RK × +/YT
13–10, 11–13, 8–11, 10–10, Y/Z 2–0, Z/T 1–1, RK/T 2–0

738 ($\frac{1677}{1169}$) O/W × +/YG
2–1, 3–6, 0–1, 1–4

739 (g. $\frac{386}{5012}$) R/R × Y/K
0–0, 0–0, +/R 1–0

R/T × Y/K
740 (g. $\{\frac{499}{153}{872}$) 11–12, 10–15, 6–17, 17–10, YK/R 1–0, YK/T 1–4, +/R 1–1, +/T 0–2
741 ($\frac{126}{886}$) 17–26, 17–15, 9–12, 8– 9, 0–2, 2–3, 0–4, 1–2
28–38, 27–30, 15–29, 25–19, YK/R 1–2, YK/T 3–7, +/R 1–5, +/T 1–4

742 ($\frac{673}{826}$) R/W × Y/K
9–11, 12–7, 7–19, 8–5, YK/R 0–1, YK/W 1–2, +/R 2–1

743 ($\frac{133}{787}$) W/W × Y/K
1–7, 1–1, YK/W 0–1, +/W 1–1

W/T × Y/K
744 ($\frac{1362}{60}$) 1–5, 4– 6, 2–3, 3–5, +/W 0–2, YK/W 0–1, +/T 1–0, YK/T 1–0
745 ($\frac{810}{826}$) 4–2, 1– 4, 0–2, 1–1, 0–1, 0–1, 0–1
5–7, 5–10, 2–5, 4–6, +/W 0–3, YK/W 0–2, +/T 1–0, YK/T 1–1

Z/T × Y/K

746 ($\frac{524}{215}$)   0–0, 0– 1, 1– 2,   3– 3

747 ($\frac{1002}{885}$)   13–7, 6–10, 5–11,   10– 9, +/Z 2–2, YK/Z 0–1, +/T 0–1, YK/T 1–1

13–7, 6–11, 6–13,   13–12, +/Z 2–2, YK/Z 0–1, +/T 0–1, YK/T 1–1

748 (1310)   +/T × +/YK

9–7, 7–8, 12–10, 10–9

749 ($\frac{180}{470}$)   G/G × O/R

0–1, 0–3

750 ($\frac{1490}{1590}$)   +/MR × O/W

5–2, 4–3, 10–4, 7–4

751 ($\frac{1171}{1323}$)   YG/R × O/W

6–7, 1–1, 4–3, 4–0

752 ($\frac{1201}{1597}$)   +/YG × O/W

0–1, 1–0, 1–2, 1–0

753 ($\frac{993}{1676}$)   MR/T × O/Z

19–17, 14–13, 11–15, 22–10

754 ($\frac{715}{1322}$)   Y/T × O/Z

13–7, 10–10, 11–6, 8–10

+/ZK × +/OT

755 ($\frac{1836}{1951}$)   12– 8, 10–20,   9– 4, 14–16, ZK/T 1–0

756 (1951)   6–12,   5–12,   7– 9,   4– 8,   +/O 0–1

18–20, 15–32, 16–13, 18–24, ZK/T 1–0, +/O 0–1

+/YZK × +/OT

757 (1271)   14–19, 20–23, 21–16, 23–20

758 (1951)   2– 1,   4– 3,   4– 2,   6– 0

16–20, 24–26, 25–18, 29–20

759 ($\frac{674}{1442}$)   +/MW × O/T

1–0, 0–1, 3–1, 1–1

760 ($\frac{1520}{1336}$)   +/MZ × O/T

24–16, 27–17, 21–27, 22–21

761 ($\frac{1907}{1565}$)   +/WG × O/T

12–11, 13–12, 19–12, 17–13, +/WG 1–0, +/+ 0–1

762 ($\frac{1961}{809}$)   +/YRK × O/T

6–9, 4–3, 9–12, 7–4

763 ($\frac{1780}{993}$) RK/G × O/T
    6–5, 5–2, 5–4, 6–4

764 ($\frac{355}{1023}$) YG/K × O/T
    1–3, 4–3, 5–5, 2–3

765 ($\frac{1170}{753}$) YG/RK × O/T
    1–2, 1–5, 0–1, 0–1

766 ($\frac{1097}{754}$) +/ZK × O/T
    3–4, 2–7, 1–5, 5–3

767 ($\frac{385}{1182}$) M/K × O/T
    4–3–5, 4–5–4, 7–7–4, 5–4–3

768 ($\frac{807}{1336}$) MZK/R × O/T
    11–9, 6–11, 4–7, 6–10; MZK/OT 0–1

769 ($\frac{679}{90}$) MZ/RK × O/T
    17–9, 8–8, 7–8, 12–9

770 ($\frac{727}{1336}$) YZ/RK × O/T
    8–13, 8–11, 17–10, 13–13, YZ/OT 1–0, +/YZ 0–1

771 ($\frac{976}{1927}$) Z/G × +/OT
    0–2, 1–0, 1–0, 1–2

772 ($\frac{1211}{1299}$) +/MZT × O/G
    8–11, 2–6, 13–2, 7–10

773 ($\frac{413}{81}$) M/K × O/G
    4–4, 3–8, 1–4, 4–4

774 ($\frac{1396}{998}$) MRT/ZK × O/G
    7–4, 2–3, 3–6, 4–6

775 ($\frac{5052}{1345}$) MT/W × O/G
    0–0, 1–3, 3–0, 2–4

776 ($\frac{1676}{993}$) MT/YRK × O/G
    5–3, 0–2, 2–3, 3–6

777 ($\frac{51}{478}$) M/Z × O/G
    8–3, 2–5, 9–4, 3–6

778 ($\frac{1211}{993}$) MZT/YRK × O/G
    6–8, 4–2, 4–12, 6–8

779 ($\frac{19}{82}$) H/H × O/G
7–4, 3–5–2

780 ($_{g.}\frac{5043}{477}$) YK/K × O/G
2–5, 2–6, 3–3, 0–4

781 ($^{H.}\frac{('16)}{482}$) +/M × O/K
10–10–4, 5–10–1, 6–8–3, 8–4–1

+/MZ × O/K
782 ($\frac{1518}{5018}$) 7– 5, 3–10, 7–13, 2–2
783 ($\frac{1518}{5018}$) 7– 8, 9–10, 6– 7, 5–6, MZ/OK 1–0, +/MZ 1–0
14–13, 12–20, 13–20, 7–8, MZ/OK 1–0, +/MZ 1–0

784 ($\frac{159}{215}$) T/T × O/K
6–8, 5–7

785 ($\frac{602}{231}$) YT/YT × O/K
36–50, 44–61

786 ($\frac{601}{482}$) Y/YT × O/K
4–3–1, 2–2–2, 6–4–1, 3–7, Y/OK 0–2 (T/K 0–0–1?)

787 ($\frac{77}{215}$) Y/Y × O/K
13–12, 9–12

788 ($\frac{885}{1276}$) Y/Z × O/K
18–14, 13–27, 22–14, 15–9

789 ($\frac{443}{217}$) +/YZ × O/K
19–18, 14–13, 16–16, 13–18, +/OK 0–1

M/T × R/W
790 (673) 3– 2, 0– 1, 1– 4, 2– 1
791 (673) 26–25, 30–28, 30–24, 24–26
29–27, 30–29, 31–28, 26–27

792 ($\frac{1205}{871}$) Y/T × R/W
6–4, 2–3, 6–2, 9–3

793 ($\frac{393}{897}$) ×/G × R/Z
1–1, 0–0, 1–0, 0–0

T/K × R/Z
794 ($\frac{814}{897}$) 10–11, 7– 7, 7– 9, 7–13
795 ($\frac{201}{678}$) 6– 7, 7– 4, 7–15, 6– 9
16–18, 14–11, 14–24, 13–22

796 ($\frac{679}{5042}$) M/T × R/Z
12–14, 13–12, 20–12, 10–12

797 ($\frac{1276}{825}$) O/K × R/Z
14–23, 16–17, 17–23, 21–15

798 ($\frac{201}{885}$) Y/K × R/Z
15–13, 17–22, 21–19, 19–27

YK/T × R/Z
799 ($\frac{1279}{884}$) 10–12, 14–13, 19–13, 12– 8
800 ($\frac{256}{1253}$) $\underline{5\text{–}13,\ 12\text{– }5,\ \ 9\text{–}16,\ \ 5\text{–}11}$
15–25, 26–18, 28–29, 17–19

801 ($\frac{708}{1136}$) YO/G × R/Z
9–3, 3–1, 4–0, 5–2

802 ($\frac{192}{487}$) M/K × R/T
24–23–12, 17–20–9, 22–29–12, 27–19–8

+/MZK × R/T
803 ($\frac{1655}{1828}$ ·) 8–3, 1–5, 2–3, 5– 6
804 ($\frac{1927}{1124}$) $\underline{7\text{–}2,\ 1\text{–}4,\ 7\text{–}4,\ 10\text{– }4,\ +/RT\ 1\text{–}0,\ MZK/RT\ 0\text{–}1}$
15–5, 2–9, 9–7, 15–10, +/RT 1–0, MZK/RT 0–1

805 (818) G/T × R/T
0–1, 2–0, 0–1, 0–0

806 ($\frac{535}{5050}$) M/YK × R/T
8–15, 11–12, 16–20, 14–14, (MK/T 0–1?)

807 ($\frac{1488}{1656}$) +/MZK × R/T
4–3, 2–4, 7–3, 3–2, +/+ 1–0

808 ($\frac{291}{831}$) M/ZK × R/T
17–11, 22–24, 27–18, 29–21, M/RT 1–0, +/M 0–1

809 ($\frac{768}{1743}$) MZK/O × R/T
10–12, 13–10, 7–11, 16–14

810 ($\frac{212}{916}$) W/K × R/T
2–6, 3–6, 0–7, 3–6

811 ($\frac{80}{127}$) Y/K × R/T
0–0, 0–1, 0–1, 1–2

812 ($\frac{466}{165}$) Y/YK × R/T
0–1, 0–2, 3–6, 0–3

813 ($^{1749}_{731}$) +/YZK × R/T
4–1, 1–0, 1–2, 1–0

YZ/K × R/T

814 (916) 3– 2,   3– 5,   6– 3,   6– 5
815 ($^{916}_{161}$) 6–14,   8– 5,   7–17,   9– 6
9–16, 11–10, 13–20, 15–11

816 ($^{g.H.('16)}_{1257}$) Y/ZK × R/T
9–8, 14–12, 7–11, 10–14

817 ($^{1074}_{1743}$) +/MZ × R/G
1–1, 0–3, 0–2, 2–0

818 ($^{767}_{749}$) M/T × R/G
1–4–6, 4–3–2, 0–3–3, 3–2–3

819 ($^{53}_{5001}$) M/Z × R/G
5–14, 10–9, 10–7, 17–5

820 ($^{639}_{1743}$) MZT/O × R/G
10–21, 15–22, 28–25, 18–12

821 ($^{676}_{814}$) +/MZ × R/K
1–10, 1–4, 3–3, 3–5

822 ($^{399}_{383}$) M/G × R/K
6–7, 5–7, 7–5, 4–8, M/RK 1–0

823 ($^{393}_{124}$) M/MZ × R/K
15–11, 8–11, 9–8, 9–14

824 ($^{689}_{1364}$) MT/Z × R/K
8–10, 13–10, 14–9, 7–9, Z/RK 1–0

825 ($_{gs.}{}^{51}_{640}$) M/Z × R/K
9–4, 7–5, 3–4, 9–5, M/RK 3–0

Y/T × R/K

826 ($^{716}_{499}$) 8– 3,   8–12,   4– 2,   5– 3, +/Y 0–1, Y/RK 1–0
827 ($^{g.\ 163}_{1279}$) 5– 6,   5– 3,   4– 4,   3– 3
828 ($^{717}_{810}$) 17–24, 15–16, 21–21, 18– 8,   0–1
30–33, 28–31, 29–27, 26–14, +/Y 0–2, Y/RK 1–0

Y/W × R/K

829 ($\frac{62}{810}$) 37–22, 27–23, 27–20, 13–23
830 ($\frac{1205}{871}$) 13–10, 23–10, 19–16, 13–14

50–32, 50–33, 46–36, 26–37

YZ/T × R/K

831 ($\frac{1188}{105}$) 11– 8, 15– 8, 8– 6, 7– 5
832 ($^{gs.\{\frac{732}{1033}}_{5045}}$) 0– 1, 0– 0, 1– 0, 3– 0
833 (1279) 2– 4, 2– 3, 6– 3, 4– 3
834 (1279) 6–10, 7– 7, 8– 7, 12– 7

19–23, 24–18, 23–16, 26–15

Z/T × R/K

835 ($\frac{1002}{811}$) 2-2, 4-8, 4-2, 5-11, Z/RK 0-1, RK/T 1-0
836 (897) 1-0, 0-1, 0-0, 0- 1

3-2, 4-9, 4-2, 5-12, Z/RK 0-1, RK/T 1-0

837 (1713) +/YW × +/RK
1-1, 1-1, 1-0, 2-1

838 ($\frac{1121}{1784}$) MT/Z × +/RK
10–10, 11–13, 6–8, 6–14

839 ($\frac{51}{1044}$) M/Z × +/RK
3–4, 4–2, 4–2, 1–2

840 ($\frac{752}{727}$) YG/W × +/RK
11–14, 4–6, 4–7, 8–8

841 (1672) YO/T × +/RK
4–1, 2–3, 0–0, 1–1

842 ($\frac{1805}{649}$) +/YWT × +/RK
10–6, 15–15, 16–17, 14–16

+/HZ × +/RK

843 ($\frac{366}{1880}$) 17–13, 19–14, 17–10, 17–17
844 ($\frac{366}{1880}$) 10– 9, 13–13, 15–10, 11–18, HZ/R 0–1
845 ($\frac{366}{650}$) 2– 1, 2– 2, 4– 3, 2– 1
846 ($\frac{649}{1409}$) 8– 5, 7– 7, 6– 7, 9– 9
847 (650) 12–10, 13–15, 15– 8, 12– 5
848 (650) 9– 8, 4–11, 1– 7, 4– 4

58–46, 58–62, 58–45, 55–54, HZ/R 0–1

849 ($\frac{1143}{564}$) YOT/ZK × +/RK
20–13, 14–15, 25–13, 18–22

850 ($\frac{813}{1592}$) +/R × W/T
4–3, 3–4, 4–6, 5–10

             M/G × W/T
851 ($\frac{51}{1362}$) 5–4, 5– 8, 8– 6, 10– 9
852 ($\frac{51}{1362}$) 4–1, 4– 4, 0– 4, 2– 2
             9–5, 9–12; 8–10, 12–11

             M/RK × W/T
853 ($\frac{52}{673}$) 4– 6, 10–10, 10–11, 8– 7
854 ($\frac{52}{673}$) 15–16, 16–17, 13–13, 18–19
             19–22, 26–27, 23–24, 26–26

             MR/O × W/T
855 ($\frac{1336}{1592}$) 4– 6, 4– 1, 1– 4, 6– 2
856 ($\frac{1336}{1593}$) 15–22, 11–22, 16–11, 11–17
             19–28, 15–23, 17–15, 17–19

857 ($\frac{1725}{1762}$) YRK/O × W/T
2–0, 2–0, 1–5, 0–1

858 ($\frac{5027}{1351}$) +/MRK × +/WT
16–13, 9–16, 20–12, 15–11

859 ($\frac{1324}{866}$) O/T × +/WG
24–22, 20–17, 20–19, 22–12, W/T 2–0

860 (1913) +/MRK × +/WG
0–0, 1–0, 2–2, 2–1

861 ($\frac{1854}{1914}$) YO/R × +/WG
7–12, 3–5, 1–5, 6–6

862 ($\frac{1926}{1297}$) MRK/T × W/G
12–14, 18–7, 10–12, 13–17

863 ($\frac{1041}{852}$) MR/T × W/G
23–16, 16–18, 19–21, 19–13, +/MR 1-0, WG/T 1-0

864 ($\frac{1725}{1297}$) YRK/O × W/G
2–5, 4–5, 2–1, 4–4

865 ($\frac{1950}{694}$) YRK/T × W/G
13–18, 14–11, 14–13, 14–13

866 ($\frac{1490}{1049}$) +/MR × +/WG
    2–4, 5–4, 3–4, 3–7, +/W 1–0, MR/G 1–0

867 (1328) MRT/O × +/WG
    4–3, 8–3, 1–2, 3–1

868 ($\frac{1863}{1210}$) +/MRT × +/WG
    4–6, 6–2, 5–3, 1–4

869 (671) M/O × W/K
    3–1, 2–1, 1–1, 2–1

870 ($\frac{993}{356}$) MO/G × W/K
    1–1, 3–0, 0–0, 0–0

871 ($\frac{48}{212}$) M/R × W/K
    6–6, 8–7, 11–12, 9–8

872 ($\frac{88}{211}$) Y/O × W/K
    1–3, 0–1, 1–0, 0–0

873 ($_{g.}\{\frac{77}{742}$) Y/Y × W/K
    7–5, 8–4

    +/MRK × Z/T
874 ($\frac{1045}{893}$) 4–1, 4–4, 3–1, 4–1
875 ($\frac{1573}{1137}$) 1–0, 0–0, 0–0, 1–1
    5–1, 4–4, 3–1, 5–2

    R/K × Z/T
876 ($\frac{871}{897}$) 9– 5, 11– 4, 8– 8, 10– 9
877 ($\frac{871}{908}$) 8–11, 16–15, 14– 8, 11–11, +/R 1–0
    17–16, 27–19, 22–16, 21–20, +/R 1–0

878 ($\frac{1305}{799}$) YG/R × Z/T
    4–3, 5–5, 6–7, 5–3

879 ($_{g.}\{\frac{1312}{163}$) YK/G × Z/T
    12–13, 8–8, 8–12, 4–7

880 (1554) +/MRG × Z/T
    4–6, 5–3, 3–1, 4–4

881 ($\frac{230}{897}$) M/K × Z/T
    13–22, 5–11, 12–11, 8–8

882 ($\frac{1351}{1539}$) YG/R × +/ZT
    7–9, 4–8, 4–5, 4–6

883 ($\frac{321}{1121}$) +/YO × Z/K
    6–8, 13–4, 7–18, 7–6

    Y/R × Z/K
884 ($\frac{59}{234}$) 2– 5,   1– 8,   1– 5,   3– 5
885 ($\frac{59}{141}$) 2– 1,   3– 4,   5– 7,   2– 2   ·
886 ($\frac{59}{234}$) 2– 5,   5–11,   4– 4,   4– 6
887 ($\frac{826}{678}$) 9–10, 13–12, 10– 4, 17– 6, +/Y 0–1
                    15–21, 22–35, 20–20, 26–19, +/Y 0–1

888 ($\frac{1002}{\text{g.H.('18)}}$) MR/T × +/ZK
    8–14, 16–15, 19–14, 13–15

889 ($\frac{\text{S.('21)}}{369}$) +/Y × +/ZK
    ·   5–10, 12–3, 5–5, 9–4

890 (990) +/OT × +/ZK
    4–8, 3–2, 8–5, 5–2

891 ($\frac{993}{1120}$) MO/G × Z/K
    3–4, 0–3, 1–3, 7–4, MO/ZK 1–0

    MR/T × Z/K
892 (1102) 5–6, 3– 7, 4– 8,   8–6   ·
893 ($\frac{1102}{527}$) 3–2, 4– 6, 5– 7,   6–2
                    8–8, 7–13, 9–15, 14–8

894 ($\frac{77}{574}$) Y/Y × Z/K
    2–1, 0–0

    M/T × Z/K
895 ($\frac{673}{678}$)   6– 6, 5– 7,   7– 5,   6– 5
896 ($\frac{910}{1188}$)   6– 4, 4– 8,   7– 7,   6– 8
                    12–10, 9–15, 14–12, 12–13

    R/T × Z/K
897 ($\frac{161}{234}$) 15–10,   9–21, 16–16, 15–11
898 ($\frac{126}{230}$) 1– 0,   1– 3,   2– 2,   0– 3
899 ($\frac{1257}{527}$) 3– 3,   1– 7,   4–10,   6– 6
900 ($\frac{1075}{1080}$) 3– 1,   3– 1,   2– 1,   3– 2
                    22–14, 14–32, 24–29, 24–22

901 ($\frac{1584}{1464}$) +/MRT × +/ZK
    4–3, 4–5, 3–3, 8–4

$$B/MRG \times +/ZK$$

902 ($_{958}$) 10–11, 10– 8, 3–12, 7–10
903 ($_{1885}^{958}$) 12–14, 16–12, 9–11, 11–13
22–25, 26–20, 12–23, 18–23

904 ($_{5007}^{537}$) M/MR × T/K
9–4, 11–11, 9–8, 12–8

905 ($_{1257}^{825}$) M/R × T/K
2–4, 4–6, 7–5, 3–5

906 ($_{897}^{871}$) M/W × T/K
1–5, 4–1, 4–3, 2–4

907 ($_{234}^{716}$) M/Y × T/K
1–0, 2–0, 1–5, 3–5

$$M/Z \times T/K$$

908 ($_{234}^{51}$) 2– 2, 6– 4, 4– 5, 2– 3
909 ($_{234}^{51}$) 14–10, 13– 7, 9–13, 18–17
910 ($_{234}^{51}$) 7– 6, 8– 8, 6– 7, 8– 5
911 ($_{225}^{51}$) 3– 7, 5– 2, 5– 9, 3– 3
26–25, 32–21, 24–34, 31–28

912 ($^{g.}$ $_{462}^{122}$) R/R × T/K
0–1–1, 1–0–1

913 ($_{897}^{871}$) R/W × T/K
16–9, 15–7, 17–14, 18–19

914 ($_{701}^{5042}$) R/Z × T/K
6–6, 12–13, 7–12, 13–13

915 ($_{234}^{80}$) Y/Z × T/K
8–4, 4–3, 9–10, 5–10

$$YZ/R \times T/K$$

916 ($_{1249}^{5045}$) 7–6, 5–6, 3–3, 4–4
917 ($_{532}^{1277}$) 0–0, 0–0, 1–2, 0–0
7–6, 5–6, 4–5, 4–4

918 ($_{624}^{492}$) R/R × YK/YT
11–16–23, 11– 8–17

919 ($_{1776}^{1169}$) O/ZK × T/G
6–12, 9–12, 12–8, 13–7

920 ($\frac{1357}{1670}$) MO/RK × T/G
     5–4, 6–6, 14–5, 9–9

921 ($\frac{1190}{5034}$) YR/K × T/G
     18–19, 19–18, 11–14, 15–19

922 ($\frac{506}{694}$) YW/RK × T/G
     12–9, 13–13, 16–12, 18–16

923 ($\frac{644}{5034}$) YZ/RK × T/G
     20–29, 26–23, 39–24, 19–30

924 (822) M/R × G/K
     1–4, 1–5, 3–5, 1–2, (MR/K 0–1?)

925 ($\frac{750}{1274}$) MR/W × G/K
     1–1, 3–7, 6–6, 6–6

926 ($^{\text{g.H.('16)}}_{822}$) M/W × G/K
     7–6, 10–6, 9–8, 11–11

927 ($\frac{52}{695}$) M/Z.× G/K
     18–14, 15–20, 8–19, 23–14

928 ($\frac{727}{1274}$) Y/R × G/K
     7–7, 2–8, 2–9, 6–3

929 ($\frac{721}{822}$) +/YZ × G/K
     6–10, 9–7, 5–5, 5–5

       +/MTG × HR/Z
930 ($\frac{1114}{952}$) 19–16, 25–16, 10–15, 18–19, +/R 1–0
931 ($\frac{1114}{952}$) 35–21, 32–20, 28–27, 27–25,   0–1, +/HZ 1–1, HZ/MTG 0–1
       54–37, 57–36, 38–42, 45–44, +/R 1–1, +/HZ 1–1, HZ/MTG 0–1

       +/K × HZ/R
932 ($\frac{1564}{936}$) 5–11, 5–5, 3–5, 8–5, +/Z 2–0, +/HR 5–3, HR/K 3–0, Z/K 1–3
933 ($\frac{1581}{949}$) 0– 1, 0–0, 1–1, 0–0
       5–12, 5–5, 4–6, 8–5, +/Z 2–0, +/HR 5–3, HR/K 3–0, Z/K 1–3

934 ($\frac{755}{951}$) +/+ × HZ/R
     30–23, 37–27, +/HR 10–13, +/Z 17–13

+/R × HZ/O

935 (1351/654) 23–18, 19–27, 25–23, 29–26, +/Z 9–11, R/Z 6–6, HO/R 1–4, +/HO 2–2

936 (1561/1690) 13– 7, 18–17, 8–10, 17–16, 3– 8, 4–3, 5–3, 6–6

36–25, 37–44, 33–33, 46–42, +/Z 12–19, R/Z 10–9, HO/R 6–7, +/HO 8–8

937 (15/302) +/G × HZ/O

0–1, 1–4, 2–1, 0–2, +/HO 0–1

+/K × HZ/T

938 (1564/1936) 3– 4, 7– 9, 8–10, 10– 6, +/K 0–1, HZT/K 0–1, Z/K 1–0

939 (1564/1936) 17– 9, 12–12, 12–24, 21–18, +/HZT 1–0, +/Z 1–0

940 (1564/1936) 2– 7, 2– 2, 2– 2, 6– 4

941 (1564/1936) 23–19, 22–24, 14–29, 17–24, 0–1, 0–1, 2–0, 2–0, +/HT 1–0

45–39, 43–47, 36–65, 54–52, +/K 0–2, HZT/K 0–2, Z/K 1–0, +/HZT 3–0, +/Z 3–0, +/HT 1–0

942 (1840/1936) +/RK × HZ/T

16–12, 10–10, 12–4, 16–14, +/RK 3–0, Z/RK 1–0

+/+ × HZ/G

943 (1099/368) 19–33, 24–18, +/Z 8–2, +/HG 3–6

944 (1067/368) 5– 8, 6–13, 1–1, 2–0

945 (1282/368) 11–10, 10–12, 5–1, 2–1

946 (1067/369) 7– 1, 0– 1

947 (1072/369) 0– 1, 1– 0

42–53, 41–44, +/Z 14–4, +/HG 7–7

948 ($\frac{761}{369}$) +/O × HZ/G
4–4, 5–6, 5–3, 2–3, +/Z 0–1

949 ($\frac{804}{369}$) +/R × HZ/G
3–2, 1–1, 1–4, 3–0, +/Z 1–1

950 ($\frac{1522}{953}$) +/O × HG/Z
22–28, 23–6, 15–12, 17–20, +/HZ 4–2, +/G 0–1, HZ/O 3–2, O/G 3–6, O/ZG 1–3,
+/H 1–2, +/ZG 1–2, H/O 0–1

951 ($\frac{1540}{655}$) +/R × HG/Z
2–7, 9–7, 8–5, 4–6, +/H 0–1, +/G 1–0, HZ/R 0–1, +/ZG 1–0, R/ZG 0–1

+/Z × HG/R

952	(951)	7–11,	6–11,	7– 9,	13– 4,	+/HR 8– 3,	Z/G 10– 7,	HR/Z 2– 4,	+/G 3– 1		
953	(951)	22–20,	16–20,	17–20,	19–12,	9–11,	6–10,	5– 1,	15– 9		
954	(951)	14–14,	21–13,	20–15,	21–16,	10– 3,	6– 3,	11–11,	5–10,	+/RG 1–0	

43–45, 43–44, 44–44, 53–32, +/HR 27–17, Z/G 22–20, HR/Z 18–16, +/G 23–20, +/RG 1–0

YO/R × B/WG

955	($\frac{1146}{1327}$)	16–18,	14–10,	14–17,	16–20,	+/YO 0–1,	BWG/YO 0–1,	BWG/R 1–1,	+/R 1–1
956	($\frac{1146}{1327}$)	36–35,	36–30,	38–32,	33–27,	3–6,	1–4,	8–7,	3–2

52–53, 50–40, 52–49, 49–47, +/YO 3–7, BWG/YO 1–5, BWG/R 9–8, +/R 4–3

957 (1327) MRK/O × B/WG
32–34, 21–40, 44–34, 43–33, +/O 3–3, +/MRK 3–3, BWG/O 3–5, MRK/BWG 1–3

958 ($\frac{1555}{281}$) +/MRG × B/ZK
10–12, 9–17, 12–14, 20–8, +/+ 1–2, +/MRG 0–1, MRG/BZK 0–1

959 ($\frac{1696}{277}$) YOG/T × B/ZK
0–0, 1–0, 1–0, 1–0

960 (688) RK/T × M/YZ
34–27, 27–31, 37–32, 39–35, MZ/RK 2–1, Y/RK 1–1, Y/T 1–0

961 ($\frac{587}{1309}$) R/R × M/YT
35–48–3, 45–58–6

R/R × M/YK
962 ($\frac{589}{535}$) 30–27, 24–33
963 (g. $\begin{Bmatrix} 612 \\ \text{H. ('14)} \\ \text{g. 462} \end{Bmatrix}$) 21–29, 26–27
‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
51–56, 50–60

964 ($\frac{1019}{971}$) +/T × MO/W
7–9, 7–10, 6–9, 10–10, O/T 0–1

RK/T × MO/W
965 ($\frac{1672}{1444}$) 8–15, 8– 9, 7– 7, 10–13, O/T 1–0
966 (1444) 2– 2, 3– 1, 3– 4, 3– 3
‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾
10–17, 11–10, 10–11, 13–16, O/T 1–0

967 ($\frac{736}{674}$) +/G × MW/O
0–3, 1–2, 0–1, 0–2, W/G 0–3

$+/T \times MW/O$

968 $\left(\begin{smallmatrix} 1762 \\ 1597 \end{smallmatrix} \right)$ 1-2, 3-3, 2-2, 2-4, $+/MO$ 2-2, MO/T 1-1, W/T 0-1

969 $\left(\begin{smallmatrix} 1020 \\ 674 \end{smallmatrix} \right)$ 1-1, 2-3, 1-2, 0-0,   1-0,   0-3,   1-1, $+/W$ 0-1, $(+/MWO$ 1-0?)

                  2-3, 5-6, 3-4, 2-4, $+/MO$ 3-2, MO/T 1-4, W/T 1-2, $+/W$ 0-1, $(+/MWO$ 1-0?)

970 $\left(\begin{smallmatrix} 1076 \\ 674 \end{smallmatrix} \right)$ R/T $\times$ MW/O

                  4-2, 4-3, 2-2, 2-5, R/W 1-1, W/T 1-1, MO/T 1-0

971 $\left(\begin{smallmatrix} 311 \\ 998 \end{smallmatrix} \right)$ $+/W \times MO/G$

                  2-1, 1-1, 4-4, 1-2, $+/O$ 0-1, MG/W 1-1, $+/MG$ 1-0

972 $\left(\begin{smallmatrix} 1228 \\ 993 \end{smallmatrix} \right)$ RK/T $\times$ MO/G

                  6-6, 7-3, 7-4, 6-2, RK/O 4-0, O/T 0-2, MG/RK 0-2, MG/T 0-1

973 $\left(\begin{smallmatrix} 862 \\ 1038 \end{smallmatrix} \right)$ W/T $\times$ MG/O

                  1-9, 4-5, 7-7, 6-5, MO/T 1-1, MO/W 1-1, W/G 1-1

974 $\left(\begin{smallmatrix} 866 \\ 891 \end{smallmatrix} \right)$ $+/WG \times MO/K$

                  14-13, 19-14, 10-13, 15-12, WG/O 1-0, $+/MK$ 1-0

975 $\left(\begin{smallmatrix} 838 \\ 891 \end{smallmatrix} \right)$ $+/Z \times MO/K$

                  7-4, 2-3, 4-2, 5-6, MK/Z 0-1

976 $\left(\begin{smallmatrix} 1670 \\ 891 \end{smallmatrix} \right)$ G/T $\times$ MO/Z

                  11-14, 11-11, 10-11, 6-6

977 $\left(\begin{smallmatrix} 1274 \\ 760 \end{smallmatrix} \right)$ K/T $\times$ MZ/O

                  13-6, 3-7, 6-8, 9-13, MO/K 0-2, Z/K 1-4, MO/T 1-1, Z/T 2-4

978 ($\frac{1005}{782}$) R/RK × MZ/O
0–1, 0–0, 1–0, 0–0, Z/RK 0–1, R/Z 1–0

RK/T × MZ/O
979 ($\frac{1223}{760}$) 5–6, 5–12, 10–6, 7–6, MO/RK 3–5, Z/RK 1–2, MO/T 2–2, Z/T 2–1
980 ($\frac{1521}{1517}$) 0–0, 0– 0, 0– 1, 0–0
5–6, 5–12, 10–7, 7–6, MO/RK 3–5, Z/RK 1–2, MO/T 2–2, Z/T 2–1

981 ($\frac{4}{1444}$) +/K × MO/T
10–6, 5–10, 3–9, 9–6, +/+ 0–1

982 (1450) R/WG × MO/T
7–3, 6–7, 3–10, 5–9, MOT/R 2–0, +/WG 0–1, MT/R 0–1

983 (1448) Z/WG × MO/T
15–12, 12–10, 11–12, 15–10, O/Z 1–1, MT/Z 1–1, MT/WG 1–0, MOT/WG 1–0

984 ($\frac{919}{964}$) ZK/G × MO/T
20–14, 14–7, 4–14, 14–11, O/ZK 1–0, MT/ZK 0–1, O/G 0–1, +/ZK 0–1, (+/T 1–0?)

985 (1651) R/ZK × MT/O
3–2, 4–2, 1–0, 4–1, MO/ZK 0–1, R/T 1–0

986 ($\frac{866}{1676}$) +/WG × MT/O
6–13, 18–16, 7–14, 8–17, +/MO 2–2, +/T 2–3, MO/WG 1–2, WG/T 2–1

987 (1617) R/WG × MT/O
24–25, 13–21, 15–25, 20–20, R/T 8-4, MO/R 3-2, WG/T 4-3, MO/WG 5-4
988 (1615) 1– 0,   0– 1,   1– 1,   0– 0,   0–1
25–25, 13–22, 16–26, 20–20, R/T 8-5, MO/R 3-2, WG/T 4-3, MO/WG 5-4

989 ($^{976}_{1651}$) Z/G × MT/O
0–1, 0–1, 0–0, 2–2, Z/T 1–0

990 (1927) +/ZK × +/MOT
0–0, 0–0, 0–1, 0–0 +/OT 1–0

991 ($^{1527}_{1927}$) W/K × +/MOT
0–1, 0–1, 0–0, 1–0

992 ($^{976}_{1927}$) Z/G × +/MOT
0–0, 0–1, 0–0, 0–0

993 ($^{865}_{1503}$) G/T × MR/O
0–2, 2–2, 2–3, 1–3, MO/G 2–1, R/G 1–0, MO/T 0–1

994 ($^{1601}_{1336}$) W/G × MR/O
3–1, 1–3, 0–1, 1–0, R/W 0–1

995 ($^{1907}_{1024}$) WG/T × MR/O
5–2, 2–4, 5–0, 1–5, R/T 0–2, MO/T 3–2

996 ($^{862}_{750}$) W/T × MR/O
5–6, 13–6, 3–7, 9–4, R/T 2–3, R/W 2–6, MO/W 2–0

997 ($\frac{975}{753}$) Z/K × MR/O
1–0, 0–3, 0–0, 1–1, R/Z 0–1

998 ($\frac{1346}{1336}$) ZK/G × MR/O
6–12, 5–18, 6–7, 11–13, R/ZK 2–3, MO/ZK 2–3, MO/G 3–3, R/G 1–1

999 ($\frac{13}{1023}$) +/T × MR/W
4–2, 5–3, 4–5, 4–1, +/R 0–1

1000 ($\frac{862}{856}$) G/T × MR/W
16–15, 17–19, 23–26, 24–15, R/G 1–0, MW/G 0–1, MW/T 0–1

1001 ($\frac{1038}{1023}$) O/G × MR/W
10–5, 8–11, 5–6, 10–9, MW/O 1–0

K/T × MR/Z
1002 ($\frac{234}{389}$) 11–12, 9–7, 6–12, 9–7, R/T 1–1
1003 (892) 2– 1, 3–0, 2– 1, 1–1

13–13, 12–7, 8–13, 10–8, R/T 1–1

1004 ($\frac{1576}{318}$) O/T × MR/Z
1–5, 6–4, 3–7, 1–6, MZ/O 1–3, MZ/T 0–1, O/R 2–1, R/T 3–0

1005 ($\frac{1370}{823}$) +/RK × MZ/R
19–21, 33–30, 30–30, 17–21, +/MR 4–9, +/Z 7–2, MR/RK 5–5, Z/RK 6–3

1006 ($\frac{1357}{1076}$) T/G × MZ/R
5–3, 6–3, 4–3, 2–4, MR/G 0–1, MR/T 1–1

1007 ($\frac{1576}{1074}$) O/T × MZ/R
     14–8, 9–6, 8–4, 6–6, MR/T 0–1

1008 ($\frac{1479}{1547}$) WG/K × +/MRT
     18–12, 21–14, 11–17, 19–18, M/WG 1–0, MR/WG 0–1, M/K 2–0, RT/K 3–0, RT/WG 0–1

     ZK/G × +/MRT

1009 ($\frac{919}{1579}$) 14–20, 19–24, 16–16, 21–15, ZK/T 1–0, MR/ZK 0–1, M/G 1–1, RT/G 0–3
1010 ($\frac{1706}{1585}$) $\underline{\text{ 1– 0,   1– 0,   2– 1,   1– 4 }}$
     15–20, 20–24, 18–17, 22–19, ZK/T 1–0, MR/ZK 0–1, M/G 1–1, RT/G 0–3

     +/WG × +/MRT

1011 ($\frac{1948}{1955}$) 7–5, 10– 6, 10–13, 12–13, RT/WG 1–0
1012 ($\frac{1864}{1585}$) $\underline{\text{0–1,   1– 5,   0– 3,   0– 1,}}$
     7–6, 11–11, 10–16, 12–14, RT/WG 1–0

     +/ZK × +/MRT

1013 ($\frac{369}{11}$) 5–1, 3–4, 2–3, 2–4
1014 ($\frac{889}{1526}$) $\underline{\text{0–2, 3–3, 3–2, 6–4, +/T 1–0}}$
     5–3, 6–7, 5–5, 8–8, +/T 1–0

1015 (1955) +/YWK × +/MRT
     2–1, 2–2, 3–0, 2–2

1016 ($\frac{1157}{1955}$) O/ZK × +/MRT
     21–31, 18–24, 34–29, 14–23, M/O 0–2, RT/ZK 0–1

1017 ($\frac{1951}{1526}$) +/YZK × +/MRT
        3–7, 4–6, 8–3, 3–5, +/RT 1–0

1018 ($\frac{1561}{1486}$) +/MTG × MR/T
        2–4, 3–4, 4–4, 2–2

1019 ($\frac{1594}{1481}$) +/W × MR/T
        16–8, 10–10, 10–7, 5–7, R/W 0–1

1020 ($\frac{866}{993}$) +/WG × MR/T
        4–7, 4–7, 5–10, 6–10, +/RT 0–1 (Double co.?)

1021 ($\frac{\text{g.H.('18)}}{1041}$) +/ZK × MR/T
        1–3, 0–3, 0–1, 0–2, MT/ZK 0–1, MRT/ZK 0–1

1022 ($\frac{1274}{993}$) G/K × MR/T
        9–7, 13–11, 12–10, 10–11, MT/K 1–0

1023 ($\frac{1725}{993}$) O/W × MR/T
        1–2, 2–2, 1–4, 0–1

1024 ($\frac{1440}{856}$) WG/O × MR/T
        6–3, 1–3, 7–3, 4–3

1025 (1002) Z/K × MR/T
        17–16, 8–15, 9–16, 9–6

1026 ($\frac{919}{1508}$) ZK/G × MR/T
        8–12, 8–15, 2–10, 4–7, M/ZK 1–0 (Double co.?)

1027 ($\frac{1281}{1121}$) +/+ × MT/R
   7–6, 16–11, +/MR 0–3, +/T 3–0

1028 (1651) O/ZK × MT/R
   25–17, 12–24, 28–16, 22–18, O/T 2–0, MR/O 3–3, ZK/T 3–4, MR/ZK 2–3

1029 (1617) O/WG × MT/R
   20–29, 25–15, 20–28, 15–17, MR/O 1–2, O/T 2–2, WG/T 0–3, MR/WG 4–1

1030 ($\frac{1527}{1528}$) +/W × +/MRT
   1–1, 4–0, 4–1, 1–4, +/RT 1–0

1031 ($\frac{13}{311}$) +/YWK × +/MRT
   24–11, 33–24, 18–28, 34–18, +/M 0–2, +/T 0–1

1032 ($\frac{958}{1885}$) +/B × +/MRG
   7–7, 9–8, 13–13, 7–8

1033 ($\frac{1143}{1965}$) +/YOT × +/MRG
   15–10, 10–5, 10–16, 11–10, +/G 0–1, MR/YOT 0–1

1034 ($\frac{1614}{268}$) O/WT × +/MRG
   1–0, 1–4, 1–1, 0–1

1035 ($\frac{708}{1000}$) +/W × MR/G
   2–5, 1–6, 5–4, 6–2, +/MG 1–2, +/R 2–1, MG/W 1–5, R/W 0–1

K/T × MR/G

1036 ($\frac{1274}{993}$) 0– 2, 2– 8, 4–5, 4–2, MG/T 0–2, R/T 0–1

1037 ($\frac{1274}{1398}$) 4– 9, 2– 8, 6–4, 3–4,   2–3,   2–5, MG/K 0–4, R/K 1–4

                  4–11, 4–16, 10–9, 7–6, MG/T 2–5, R/T 2–6, MG/K 0–4, R/K 1–4

1038 ($\frac{1576}{993}$) O/T × MR/G

            7–0, 5–6, 6–3, 4–5, MG/O 0–2, O/R 1–0, MG/T 2–0, R/T 1–0

1039 ($\frac{753}{1000}$) Z/T × MR/G

            1–5, 4–4, 0–4, 3–2, R/Z 0–1, R/T 2–1

1040 ($\frac{1091}{1554}$) Z/T × +/MRG

            4–7, 3–3, 1–1, 4–7, Z/G 0–2, RG/T 1–1, T/G 1–1

Z/T × MR/K

1041 (1002) 4– 5, 4– 3, 8–5, 0–1

1042 (893) 5– 5, 3– 8, 2–2, 5–5, MK/T 1–0, R/T 1–5

            9–10, 7–11, 10–7, 5–6, MK/T 1–0, R/T 1–5

1043 $\left(^{\text{g.}}\left\{ ^{1362}_{\text{H. ('18)}} \right\}_{262} \right)$ +/T × M/RK

              4–7, 5–6, 11–3, 10–7, +/T 0–2, +/MRK 1–0, MRK/T 1–1, +/+ 0–1

1044 ($\frac{743}{49}$) +/W × M/RK

            0–3, 2–3, 1–0, 2–1

1045 (839) +/Z × M/RK

            8–9, 5–7, 7–7, 9–6, +/MRK 2–0, MRK/Z 0–1, +/Z 1–3

1046 ($\frac{673}{262}$) W/T × M/RK
    5–6, 10–7, 7–6, 4–7, MRK/W 2–0, MRK/T 3–0, +/W 2–3, +/T 4–1

1047 (679) Z/T × M/RK
    2–5, 5–7, 5–2, 4–2, MRK/Z 1–2, +/Z 0–1, MRK/T 1–0, +/T 1–0, RK/RK 0–1

1048 ($\frac{507}{308}$) T/T × +/MRK
    38–21, 27–39, M/T 7–4, RK/T 3–3

1049 ($\frac{863}{309}$) WG/T × +/MRK
    5–7, 2–5, 1–1, 3–8

    W/T × +/MRK
1050 ($\frac{865}{719}$) 1–0, 0–2, 1–1, 1–0
1051 ($\frac{1762}{325}$) 1–1, 2–2, 2–0, 0–1, RK/T 1–0, M/W 1–1, RK/W 1–0, M/T 0–1
    2–1, 2–4, 3–1, 1–1, RK/T 1–0, M/W 1–1, RK/W 1–0, M/T 0–1

1052 (720) YW/T × +/MRK
    2–4, 10–6, 2–6, 6–4

1053 ($\frac{321}{1517}$) Z/T × +/MRK
    7–9, 3–10, 6–5, 8–4, RK/T 0–1, RK/Z 1–0, M/T 2–1, M/Z 1–4

1054 ($\frac{1351}{5027}$) +/WT × +/MRK
    30–26, 26–28, 25–25, 32–21, WT/K 0-1

1055 (1913) +/WG × +/MRK
    0–1, 0–0, 0–0, 1-1, RK/WG 0–1

1056 ($\frac{1632}{1914}$) +/T ×$^{?}$ +/MRK

   11–16, 12–7, 14–9, 11–8, +/K 1–0, RK/T 0–2, M/T 1–0

1057 ($\frac{337}{858}$) YOG/T × +/MRK

   21–10, 19–16, 18–20, 23–15, RK/T 1–0

1058 ($\frac{1614}{1914}$) O/WT × +/MRK

   14–8, 11–5, 8–5, 8–5

1059 ($\frac{1131}{968}$) O/RK × MW/T

   8–8, 4–7, 7–9, 8–8

   +/RK × MW/T

1060 ($\frac{1602}{1359}$) 6– 6, 6– 5, 6– 5, 9– 4, MT/RK 1–0

1061 ($\frac{1602}{759}$) 26–18, 12–11, 28–17, 22–22,   0–1, +/W 0–1, W/RK 4–0, MWT/RK 1–0

   32–24, 18–16, 34–22, 31–26, MT/RK 1–1, +/W 0–1, W/RK 4–0, MWT/RK 1–0

1062 ($\frac{762}{343}$) +/O × MW/G

   10–9, 7–11, 5–8, 4–5, +/MG 1–4, +/W 2–3, O/W 3–2

1063 ($\frac{727}{1601}$) +/R × MW/G

   0–0, 1–0, 0–0, 1–0

1064 ($\frac{762}{1607}$) YRK/O × +/MWG

   11–10, 20–11, 21–9, 11–18, M/O 1–0

1065 ($\frac{782}{1607}$) YRK/T × +/MWG

   6–15, 12–12, 13–14, 8–14

$+/\mathrm{T} \times +/\mathrm{MWG}$

1066 (1067) 2– 2,   0– 1,   1– 2,   2– 3

1067 (1607) 4– 9, 10–12, 14–11,   9–10, +/WG 0–1

6–11, 10–13, 15–13, 11–13, +/WG 0–1

1068 (1969) $+/\mathrm{YRK} \times +/\mathrm{MWG}$

0–1, 0–3, 2–2, 1–2

1069 ($^{1561}_{1068}$) $+/\mathrm{MTG} \times +/\mathrm{MWG}$

1–2, 1–3, 1–2, 1–1, MTG/G 1–0

1070 ($^{1143}_{1548}$) $+/\mathrm{YOT} \times \mathrm{MG/W}$

16–14, 15–19, 12–18, 14–17, MW/YOT 0–1

1071 ($^{1342}_{1072}$) $\mathrm{O/R} \times +/\mathrm{MWK}$

2–4, 2–1, 4–3, 9–3, O/K 1–0

1072 ($^{762}_{1628}$) $+/\mathrm{T} \times +/\mathrm{MWK}$

3–4, 2–2, 2–1, 4–4, +/WK 0–2

1073 ($^{760}_{332}$) $+/\mathrm{O} \times \mathrm{MZ/T}$

10–15, 14–9, 11–16, 10–12, MZT/O 1–1, MT/O 0–1

1074 ($^{813}_{1521}$) $+/\mathrm{R} \times \mathrm{MZ/T}$

1–1, 1–0, 2–2, 3–2, +/Z 0–1

1075 ($\frac{1743}{760}$)
R/G × MZ/T
0– 3, 3– 3, 1– 1, 0–0

1076 ($\frac{1743}{980}$)
8– 8, 8–10, 6– 9, 9–8, +/G 1–0
8–11, 11–13, 7–10, 9–8, +/G 1–0

1077 ($\frac{5031}{150}$) R/K × MZ/T
1–0, 1–3, 1–1, 1–3, Z/K 1–0

1078 ($\frac{1780}{332}$) RK/G × MZ/T
7–5, 3–7, 3–1, 5–6

1079 ($\frac{644}{683}$) RK/RK × MZ/T
28–33, 32–30, MZT/RK 3–2, Z/RK 2–0, +/RK 1–1, MT/RK 0–1

1080 ($\frac{1274}{1121}$) G/K × MT/Z
0–0, 0–0, 0–0, 0–2, K/T 0–1

1081 (1637) O/RK × +/MZT
33–32, 29–25, 31–27, 34–23, O/ZT 2–0, O/T 0–1, M/O 0–1

1082 ($\frac{650}{1637}$) +/RK × +/MZT
33–20, 17–17, 27–23, 14–16, +/ZT 0–1, +/M 2–0, M/RK 1–0, RK/T 0–1, RK/ZT 1–0, +/T 1–0,
(+/ZK 0–1?)

1083 (1852) +/YO × +/MZT
1–3, 0–0, 0–2, 0–0

1084 ($\frac{974}{1645}$) +/K × +/MZT
1–2, 0–1, 2–0, 0–0

1085 ($\frac{1281}{1211}$) +/R × +/MZT
    3–8, 4–12, 8–8, 11–12

1086 ($\frac{1743}{1211}$) R/G × +/MZT
    17–22, 17–19, 23–8, 8–10, MZ/R 2–0, MZ/G 1–0, M/R 0–1, M/G 1–1, ZT/G 1–0, R/ZT 0–1

1087 ($\frac{1157}{1084}$) O/G × +/MZT
    5–4, 3–5, 2–7, 1–1, O/ZT 2–1, M/O 1–0, M/G 1–1, ZT/G 1–0

1088 ($\frac{1177}{1647}$) YO/RK × +/MZT
    9–9, 12–10, 10–15, 15–9

1089 ($\frac{1780}{1211}$) RK/G × +/MZT
    6–7, 9–12, 10–12, 4–2, M/RK 1–0

1090 ($\frac{1672}{1006}$) +/RK × MZ/G
    17–16, 16–14, 15–22, 20–16, +/MG 0–3, +/Z 3–3, MG/RK 0–3, RK/Z 5–3

    +/T × MZ/G
1091 ($^{U.}_{1076}$ $^{('20)}$) 2–1, 1–2, 0–2, 3–0, +/MG 0–1, Z/T 1–1
1092 ($\frac{1655}{1078}$) 3–0, 2–0, 0–1, 0–0,   0–1,   MG/T 0–1
    5–1, 3–2, 0–3, 3–0, +/MG 0–2, Z/T 1–1, MG/T 0–1

1093 ($\frac{1123}{1006}$) +/R × MZ/G
    6–11, 9–5, 4–13, 6–7, +/MG 2–1, +/Z 2–4, MG/R 1–1, R/Z 2–1

1094 ($\frac{856}{1076}$) O/T × MZ/G
    6–5, 1–2, 2–2, 2–0, O/Z 0–1, MG/T 1–0

1095 ($\frac{1171}{5040}$) O/R × MZ/K
    10–2, 4–4, 8–5, 1–2, M/O 1–0, MK/O 0–1, MK/R 2–0, MZK/R 0–2

1096 ($\frac{5034}{683}$) R/G × MZ/K
    17–20, 21–19, 19–15, 28–15, +/R 0–1, MK/R 1–0, R/Z 2–0, MK/G 0–1, MZK/G 1–0

1097 ($\frac{1371}{291}$) +/RK × M/ZK
    11–13, 8–15, 5–4, 11–9, +/+ 1–0

1098 ($\frac{126}{\text{g.H.('18)}}$) R/T × M/ZK
    7–14, 7–16, 14–4, 6–9, MZK/T 0–1

1099 (1654) +/T × +/MZK·
    12–15, 8–12, 5–8, 15–7

    R/T × +/MZK
1100 ($\frac{1074}{1507}$) 17–32, 13–24, 27–17, 13–18, ZK/T 1–0, M/T 0–1, T/K 1–0
1101 ($\frac{150}{1655}$) 0– 0,   0– 0,   0– 1,   0– 1,   R/ZK 1–0
    17–32, 13–24, 27–18, 13–19, ZK/T 1–0, M/T 0–1, T/K 1–0, R/ZK 1–0

1102 ($\frac{919}{1506}$) O/T × +/MZK
    14–14, 9–9, 13–16, 21–10, ZK/T 1–0

1103 ($\frac{1245}{1508}$) +/T × +/MZK
    0–1, 0–1, 0–0, 0–0

1104 ($\frac{\text{S. ('21)}}{1099}$) +/G × +/MZK
    1–0, 3–4, 1–0, 2–3

1105 ($\frac{771}{1927}$) OT/G $\times$ +/MZK
  6–8, 10–9, 7–4, 10–10, M/OT 2–2, OT/ZK 0–2, M/G 4–1, ZK/G 2–1

  +/R $\times$ +/MZK
1106 (1506) 2–1, 1–4, 0–4, 1–2
1107 (1506) 3–2, 6–2, 5–3, 2–3
  5–3, 7–6, 5–7, 3–5

1108 ($\frac{1323}{1670}$) O/W $\times$ MG/T
  6–4, 6–3, 7–5, 4–2, W/G 1–0, MT/O 0–1

1109 ($\frac{1398}{1036}$) O/ZK $\times$ MG/T
  0–1, 1–0, 0–3, 0–1

1110 ($\frac{1950}{694}$) +/YRK $\times$ MG/T
  9–5, 5–11, 11–9, 11–8

1111 ($\frac{1330}{\text{U. ('21)}}$) +/O $\times$ MG/T
  14–15, 12–6, 11–14, 10–11, +/MT 0–1, O/G 1–2, MT/O 0–3

1112 ($\frac{303}{350}$) +/R $\times$ MT/G
  3–2, 2–1, 6–3, 4–4, +/MG 1–0, MG/R 0–1, R/T 1–0

1113 ($\frac{1826}{1561}$) +/YZK $\times$ +/MTG
  12–16, 16–18, 17–19, 8–9, +/M 0–1, +/TG 1–0

1114 ($\frac{1724}{1561}$) +/W $\times$ +/MTG
  26–18, 32–21, 22–21, 22–25

$$+/\text{YO} \times +/\text{MTG}$$

1115 ($\begin{smallmatrix}1692\\1119\end{smallmatrix}$) 7– 5,   8– 3,   6– 7,   6– 5,   +/M 3–1

1116 ($\begin{smallmatrix}1168\\1561\end{smallmatrix}$) 13– 9,   5– 7,   5– 5, 12– 6

20–14, 13–10, 11–12, 18–11, +/M 3–1

1117 ($\begin{smallmatrix}1943\\1119\end{smallmatrix}$) +/YWG × +/MTG
34–34, 44–35, 34–33, 42–29, +/TG 1–4, +/M 2–2

1118 ($\begin{smallmatrix}1696\\1273\end{smallmatrix}$) +/YW × +/MTG
15–26, 13–12, 22–22, 14–19, +/M 4–9, +/TG 2–5

1119 ($\begin{smallmatrix}1475\\1561\end{smallmatrix}$) +/MR × +/MTG
10–11, 14–13, 17–17, 15–10, +/TG 1–2, +/M 3–0

1120 ($\begin{smallmatrix}1217\\824\end{smallmatrix}$) +/Z × MT/K
0–1, 0–2, 1–0, 0–2

1121 (824) R/Z × MT/K
0–1, 0–0, 3–1, 0–1

1122 ($\begin{smallmatrix}951\\1146\end{smallmatrix}$) +/ZG × YO/R
15–20, 10–15, 15–11, 16–18, YR/ZG 0–1, O/ZG 1–0

1123 ($\begin{smallmatrix}708\\1136\end{smallmatrix}$) +/W × YO/R
5–13, 9–3, 5–9, 6–7

1124 ($\begin{smallmatrix}1594\\1136\end{smallmatrix}$) W/T × YO/R
4–11, 5–13, 5–7, 8–13, O/W 0–1, O/T 0–1

1125 ($\frac{1552}{1124}$) +/G × YO/W
    10–12, 8–6, 9–12, 8–7, +/O 1–0, O/G 1–0, +/YW 1–0

1126 ($\frac{1546}{1123}$) +/MRT × YO/W
    9–16, 9–7, 25–15, 6–19, +/YW 0–3, +/O 0–4, MRT/YW 1–3, MRT/O 2–2

1127 ($\frac{1091}{1124}$) G/T × YO/W
    2–3, 1–1, 2–1, 3–1

    RK/T × YO/W
1128 ($\frac{1673}{1123}$) 1–3,   8–5, 8– 9, 16–4, YW/RK 1–1, O/RK 1–0, YW/T 1–0
1129 ($\frac{1673}{1123}$) 1–5,   2–1, 0– 4,   4–3,   O/T 1–0
    2–8, 10–6, 8–13, 20–7, YW/RK 1–1, O/RK 1–0, YW/T 1–0, O/T 1–0

1130 ($\frac{813}{1715}$) +/R × YW/O
    8–5, 9–6, 5–6, 8–11, YO/R 0–1

1131 ($\frac{1211}{1715}$) RK/RK × YW/O
    6–5, 4–7

1132 ($\frac{1715}{1926}$) RK/T × YW/O
    4–1, 0–2, 2–0, 1–3, YO/RK 0–1

1133 ($\frac{1262}{321}$) +/G × YO/Z
    0–1, 0–1, 2–0, 0–0

1134 ($\frac{1274}{883}$) K/T × YO/Z
    6–9, 5–5, 5–11, 7–4, O/K 1–0, O/T 1–0; YZ/T 2–0

1135 ($\frac{1384}{883}$) RK/T × YO/Z
2–9, 5–2, 2–9, 4–5

1136 ($\frac{768}{883}$) R/T × YO/Z
13–15, 5–13, 18–17, 8–10, O/R 1–1, O/T 1–0, YZ/T 1–0

G/T × YZ/O
1137 ($\frac{879}{90}$) 14–15, 12–13, 9–14, 7–8, Z/T 0–2
1138 ($\frac{863}{1758}$) 2– 3, 2– 1, 3– 4, 5–0,   YO/T 0–1
16–18, 14–14, 12–18, 12–8, Z/T 0–2 YO/T 0–1

1139 ($\frac{1279}{246}$) K/T × YZ/O
1–1, 4–3, 2–2, 4–4

1140 ($\frac{1324}{1264}$) RK/T × YZ/O
8–6, 5–3, 2–3, 6–4, YO/RK 0–1

1141 ($\frac{126}{246}$) R/T × YZ/O
4–7, 10–7, 2–4, 9–4

1142 ($\frac{1235}{1854}$) +/+ × YO/T
21–10, 16–9, +/O 2–1, +/YT 1–5

1143 ($\frac{958}{1839}$) +/ZK × Y/OT
18–16, 27–24, 18–20, 23–20, +/YOT 3–0, YOT/ZK 3–2, +/O 2–0, YT/ZK 0–1, O/ZK 1–0

MRK/Z $\times$ Y/OT

1144 ($\frac{5027}{1839}$) 9–13, 13– 9, 12–15, 19–19

1145 ($\frac{5027}{1839}$) <u>10–13, 12– 6,   7– 8,   4– 7, +/Z 0–1</u>

19–26, 25–15, 19–23, 23–26, +/Z 0–1

1146 ($\frac{1614}{1855}$) R/WG $\times$ YO/T

9–3, 3–7, 7–2, 6–7, YOT/WG 1–0, YOT/R 0–1

1147 ($\frac{1907}{1124}$) +/WG $\times$ YO/T

1–3, 1–3, 4–2, 1–1, YT/WG 1–0

1148 ($\frac{1554}{1673}$) MRG/Z $\times$ YO/T

4–7, 7–6, 7–6, 12–9, MRG/O 0–1, MRG/YT 1–0, YT/Z 0–1

1149 (1129) RK/W $\times$ YO/T

0–0, 1–0, 0–0, 0–0

1150 ($\frac{919}{1177}$) ZK/G $\times$ YO/T

6–4, 4–2, 5–6, 2–8, O/ZK 1–0, YT/ZK 0–1, YT/G 1–1

+/ZK $\times$ YT/O

1151 ($\frac{1490}{1789}$) 1–2, 0–3, 0–2, 3–1

1152 ($\frac{1490}{1789}$) <u>0–0, 0–1, 0–0, 0–0</u>

1–2, 0–4, 0–2, 3–1

$O/G \times YT/O$

1153 ($\frac{174}{785}$) 13–24, 10–26, 22–15, 28–24

1154 ($\frac{1153}{}$) 1– 2, 2– 4, 4– 4, 3– 4, O/OT 1–0

14–26, 12–30, 26–19, 31–28, O/OT 1–0

1155 ($\frac{993}{1299}$) R/G $\times$ YT/O

10–10, 9–9, 7–10, 4–4, YO/R 0–1

1156 ($\frac{509}{1153}$) W/K $\times$ YT/O

3–2, 4–3, 1–1, 1–2

1157 (1345) ZK/G $\times$ YT/O

4–2, 5–5, 2–1, 1–2

1158 ($\frac{564}{337}$) MZT/MTG $\times$ +/YOG

0–5, 4–5, 1–4, 5–4, MZT/OG 0–1, MZT/Y 0–1

1159 ($\frac{1069}{337}$) MTG/G $\times$ +/YOG

36–33, 28–32, 26–40, 33–38, Y/G 5–3, MTG/Y 7–7, OG/G 2–1, MTG/OG 3–3

1160 ($\frac{902}{1696}$) +/B $\times$ +/YOG

24–26, 23–21, 34–18, 32–31, B/G 0–1, B/OG 1–0, +/OG 1–0

1161 ($\frac{1417}{1696}$) B/W $\times$ +/YOG

10–16, 20–18, 20–24, 18–22, Y/W 0–1, B/OG 1–0

1162 ($\frac{1804}{337}$) R/WT $\times$ +/YOG

23–19, 24–14, 10–19, 15–11, Y/R 3–3, Y/WT 3–1, OG/WT 2–1, R/OG 3–4

1163 ($\frac{}{337}$) +/W × +/YOG

  14–8, 9–11, 11–9, 13–14, +/Y 3–1, W/OG 1–2, +/OG 1–3, Y/W 3–3

  +/WT × +/YOG

1164 ($\frac{1805}{337}$) 6–11, 7– 8, 4– 8, 7– 5, +/Y 1–1, OG/WT 0–1

1165 ($\frac{10F4}{337}$) 14–19, 14–11, 12–13, 15–12, 4–0, 1–2, +/OG 0–5, Y/WT 0–5

1166 ($\frac{1054}{337}$) 12– 5, 12– 8, 11– 5, 12–15, 2–1, 0–2, 0–3, 1–0, (MOG/WT 0-1?)

1167 ($\frac{1804}{337}$) 11–12, 12–12, 11–12, 9– 6, 1–2, 1–0, 1–1

  43–47, 45–39, 38–38, 43–38, +/Y 7–2, OG/WT 2–7, +/OG 1–8, Y/WT 2–6, (MOG/WT 0-1?)

1168 ($\frac{1836}{1706}$) +/ZK × YO/G

  3–3, 2–7, 4–2, 6–6

1169 ($\frac{1396}{1264}$) +/ZK × YG/O

  9–8, 9–8, 8–6, 11–8, +/YO 0–1, YO/ZK 1–0

1170 ($\frac{1224}{752}$) RK/T × YG/O

  17–6, 12–5, 10–8, 6–5

1171 ($\frac{1074}{752}$) R/T × YG/O

  25–29, 23–25, 26–19, 23–26, Y/R 0–1, YO/R 1–0, R/G 3–0, R/OG 1–0, YO/T 0–3, T/G 2-0

1172 ($\frac{964}{1340}$) W/T × YG/O

  11–4, 8–6, 7–2, 1–2, YO/W 0–1, OG/T 0–1

1173 ($\frac{1375}{1862}$) R/WT × YG/O

  6–13, 4–7, 4–4, 7–5, YO/R 1–1, R/G 0–1, WT/G 0--2

1174 (1862) MRT/W × YG/O
    2–0, 0–2, 0–1, 0–0, MRT/YO 0–1

1175 ($\frac{919}{1340}$) ZK/T × YG/O
    17–19, 16–17, 12–11, 16–27, YO/ZK 0–1, OG/ZK 1–0, YO/T 0–2

1176 ($\frac{919}{1125}$) ZK/T × YO/G
    29–13, 20–14, 9–22, 16–10, +/ZK 1–0, O/ZK 1–0, YG/T 0–1, O/T 0–1

1177 ($\frac{1605}{708}$) RK/T × YO/G
    2–2, 1–1, 1–1, 2–1, O/T 0–1

1178 ($\frac{803}{1125}$) MZK/T × YO/G
    13–9, 7–9, 9–11, 10–11

1179 (1127) W/T × YO/G
    2–1, 2–3, 2–0, 3–0, YG/W 1–0

1180 ($\frac{1743}{883}$) R/G × YO/K
    3–1, 5–0, 3–2, 1–3, YK/R 1–0, O/R 1–0, YOK/G 1–0

1181 ($\frac{116}{605}$) R/R × YK/O
    29–25–17, 19–22–9

1182 ($\frac{487}{1209}$) T/T × YK/O
    10–12–18, 13–14–11

1183 ($\frac{\text{gs. }251}{786}$) R/R × Y/OK
    17–24, 18–24, YK/R 1–1, YOK/R 1–0

1184 ($\frac{1274}{1130}$) K/T × YW/R
   15–23, 17–22, 13–14, 16–20, YR/T 0–1, W/K 1–0

1185 ($\frac{\text{g.H.('18)}}{1242}$) +/+ × YW/R
   7–8, 2–6

1186 ($\frac{1310}{1254}$) +/T × YZ/R
   12–8, 11–13, 9–17, 17–15, +/Z 2–0, YR/T 1–0

K/T × YZ/R
1187 ($\frac{532}{5045}$) 1– 1,　1– 0,　0– 1,　0– 0
1188 ($\frac{234}{127}$) 7– 8,　8–12,　10– 5,　9– 8, Z/K 0–1, YR/K 0–1 (g.)
1189 (1278) 5– 6,　10– 5,　8– 6,　6– 1,　　　　　　　　　Z/T 1–0
1190 ($\frac{814}{247}$) 15–11,　9–10,　14– 8,　9–14,　　1–1,　　　1–1,　　　1–0
1191 ($\frac{1254}{247}$) 21– 7,　13–10,　11–17,　13–12,　　0–2,　　　　　　　1–1
1192 ($\frac{814}{1253}$) 3– 1,　2– 4,　3– 5,　6– 1
1193 (831) 5– 3,　2– 7,　8– 8,　4– 7,　　　　　　0–1,
1194 ($\frac{701}{1258}$) 4– 7,　1– 4,　3– 5,　1– 2,　　　　　　1–0
   61–44, 46–52, 57–55, 48–45, Z/K 1–4, YR/K 2–3,　Z/T 3–1

1195 ($\frac{1097}{1203}$) +/ZK × YR/T
   18–30, 20–14, 23–30, 23–23, +/R 2–2, +/YT 5–1, R/ZK 5–1, YT/ZK 3–3

1196 ($\frac{470}{592}$) O/O × YT/R
   0–3–4, 0–7–4

1197 ($\frac{104}{122}$) R/K × YT/R
   YT/R, YT/K, 0–0–12, R/R 3–0–8, R/K 0–2–9

R/R × YT/R

1198 (1199) 2– 3,   4– 2–1

1199 (589/961) 49–50, 47–39

51–53, 51–41–1

1200 (644/1255) RK/RK × YT/R
20–8, 28–16, RK/T 1–0, R/R 0–1, (YRT/YRT 0–1?)

1201 (888/1306) +/T × YG/R
17–17, 10–10, 6–7, 9–8, +/RG 0–1

1202 (850/1171) +/W × YG/R
5–7, 11–11, 10–10, 13–10, +/RG 2–0, W/G 1–0

1203 (683/1188) Z/T × YR/K
0–1, 1–1, 0–1, 1–3, YK/Z 0–1, R/Z 1–0

1204 (12/gs. 640) +/W × Y/RK
1–2, 1–2, 2–4, 1–4

1205 (1362/gs. 640) W/T × Y/RK
6–7, 6–13, 9–12, 8–9, T/K, 1–0

1206 (893/1364) Z/T × Y/RK
20–18, 8–9, 17–14, 24–20, +/Z 0–1, YRK/T 2–0

1207 (800) Z/T × YK/R
27-18, 14-12, 20-24, 16-16, +/Z 1-0, Z/K 0-2, Z/RK 0-2, Y/Z 1-1, K/T 1-1, RK/T 0-1, YR/T 1-4

1208 ($\frac{373}{612}$) O/G $\times$ YK/R
15–20, 21–22, 18–20, 21–9

1209 ($\frac{474}{1313}$) O/O $\times$ YK/R
22–22, 13–15, O/K 0–1

1210 ($\frac{1479}{1795}$) +/WG $\times$ +/YRK
0–0, 2–6, 0–11, 3–7, +/Y 1–1, RK/WG 1–0

1211 ($\frac{263}{1761}$) MZT/RK $\times$ +/YRK
7–9, 6–7, 9–3, 5–4, RK/RK 1–0

W/T $\times$ +/YRK
1212 ($\frac{729}{1950}$) 2–3, 8– 6, 6– 8, 5– 7, RK/T 0–1
1213 ($\frac{730}{1950}$) 2–2, 6– 8, 3– 4, 9– 9
1214 ($\frac{1725}{1762}$) 3–2, 1– 1, 1– 0, 1– 2, Y/W 0–1
7–7, 15–15, 10–12, 15–18, RK/T 0–1, Y/W 0–1

Z/T $\times$ +/YRK
1215 ($\frac{1311}{1950}$) 3–5, 6–5, 4–1, 4–10, RK/Z 1–0
1216 ($\frac{896}{1950}$) 0–0, 0–0, 1–0, 1– 1
1217 ($\frac{1311}{1950}$) 1–0, 0–0, 1–0, 0– 0
4–5, 6–5, 6–1, 5–11, RK/Z 1–0

1218 ($\frac{368}{1938}$) HZ/Z $\times$ +/YRK
4–7, 3–4, 5–0, 8–4, HZ/Y 1–0, Y/Z 2–0, Z/RK 0–1

1219 (1944) O/WG × +/YRK
3–4, 0–2, 0–0, 1–1, Y/O 0–2

1220 ($\frac{402}{722}$) G/G × YZ/W
36–40, 37–53, YW/G 4–9, Z/G 2–6

1221 ($\frac{1564}{1805}$) +/K × +/YWT
23–22, 23–20, 22–18, 20–18, +/WT 0–2, WT/K 0–1, Y/K 1–3, +/Y 3–0

+/RK × YW/T

1222 ($\frac{729}{1242}$) 4–6, 7–8, 9– 6, 6– 9, YT/RK 1–1, W/RK 2–0, +/W 1–0, +/YT 2–1
1223 ($\frac{1783}{719}$) 1–0, 1–0, 1– 5, 4– 1,   1–1,
5–6, 8–8, 10–11, 10–10, YT/RK 2–2, W/RK 2–0, +/W 1–0, +/YT 2–1

O/RK × YW/T

1224 ($\frac{1789}{719}$) 2–4, 2–0, 4–4, 1–2
1225 (1715) 1–1, 1–1, 1–1, 2–0, YT/O 1–0
3–5, 3–1, 5–5, 3–2, YT/O 1–0

+/RK × YT/W

1226 ($\frac{717}{1310}$) 14– 8, 8–11, 6– 5, 9–10
1227 ($\frac{336}{730}$) 24–24, 28–22, 17–25, 21–27, +/T 1–2, +/YW 0–1, RK/T 0–1,   YW/RK 0–4
1228 ($\frac{1372}{5047}$) 6–12, 11– 9, 9–10, 9–23,   1–3,   1–3,   1–1–1,
44–44, 47–42, 32–40, 39–60, +/T 2–5, +/YW 1–4, RK/T 1–2–1, YW/RK 0–4

1229 ($\frac{1346}{1920}$) O/G ×YT/W
7–4, 11–3, 6–7, 6–3, YW/G 1–2, YW/O 1–0, O/T 1–0

$O/RK \times YT/W$

1230 ($\frac{1715}{1784}$) 8– 8, 15–15, 8– 9, 9– 9, YW/RK 3–1, RK/T 1–1, O/T 1–2, YW/O 1–1

1231 ($\frac{1715}{1784}$) 6– 5, 10– 3, 4–11, 4–10, 2–1

14–13, 25–18, 12–20, 13–19, YW/RK 3–1, RK/T 1–1, O/T 3–3, YW/O 1–1

1232 ($\frac{1546}{738}$) +/MRT $\times$ YG/W

6–0, 0–3, 0–5, 1–3

1233 ($\frac{1380}{738}$) O/T $\times$ YG/W

17–3, 10–11, 6–6, 8–9, O/G 0–1, YW/O 1–1, G/T 0–1, YW/T 1–0

$+/T \times +/YWG$

1234 ($\frac{761}{1939}$) 5–2, 3–5, 2–1, 4–4, +/Y 1–0

1235 ($\frac{1067}{1939}$) 4–4, 4–3, 7–7, 9–4, WG/T 1–0

9–6, 7–8, 9–8, 13–8, +/Y 1–0, WG/T 1–0

1236 ($\frac{285}{1943}$) +/B $\times$ +/YWG

1–5, 4–8, 1–9, 5–7, +/Y 1–1, +/WG 1–0, B/Y 0–1

1237 ($\frac{1742}{11}$) R/T $\times$ +/YWK

11–4, 7–1, 4–2, 3–8, R/WK 2–0, Y/R 1–0, WK/T 1–0

1238 ($\frac{g.\ 1684}{1955}$) O/T $\times$ +/YWK

16–21, 26–29, 25–20, 24–29, Y/O 1–1, O/WK 1–1, WK/T 2–0

1239 ($\frac{986}{1184}$) +/T $\times$ YW/K

6–9, 9–17, 12–15, 14–16, YK/T 0–1, W/T 2–1

1240 ($\frac{813}{1308}$) +/R × YK/W

0–0, 2–1, 0–1, 2–0

1241 (1310) +/T × YK/W

22–23, 11–23, 15–10, 17–18, +/K 2–1, K/T 3–1, +/YW 2–1, YW/T 1–0

R/T × YK/W

1242 ($\frac{126}{256}$) 8–13, 13–12, 13–11, 16–10, R/K 0–3, YW/R 0–1, T/K 1–0, YW/T 0–1

1243 ($\frac{126}{1310}$) 7– 0,   5– 3,   6– 1,   2– 3,   2–0,   1–0

1244 ($\frac{791}{745}$) 4– 2,   1– 1,   1– 2,   1– 5,   0–1

19–15, 19–16, 20–14, 19–18, R/K 0–3, YW/R 0–1, T/K 3–1, YW/T 1–1

1245 ($\frac{1091}{1031}$) G/T × +/YWK

13–12, 11–15, 12–17, 11–10, Y/G 0–2, WK/T 1–1, WK/G 0–1

1246 (10) +/YWK × +/YWK

0–4, 6–5, +/WK 1–0

1247 (1955) +/MRT × +/YWK

2–10, 6–4, 6–9, 6–6, +/Y 0–1

1248 ($\frac{368}{1246}$) +/G × +/YWK

13–12, 7–5, 11–3, 7–6, +/Y 1–1, +/WK 1–0, Y/G 0–2

1249 ($\frac{511}{446}$) K/K × YZ/T

11–13, 9–8, YT/K 1–2, Z–K 1–1

1250 ($\frac{7}{815}$) +/MR $\times$ YZ/T
15–17, 11–9, 9–10, 8–11, +/Z 0–1, MR/Z 2–1, MR/YT 0–1, +/YT 1–1

1251 ($\frac{336}{688}$) +/RK $\times$ YZ/T
25–21, 30–25, 26–24, 22–30, +/YT 3–2, +/Z 2–1, YT/RK 2–0, Z/RK 3–2

1252 ($\frac{1517}{1262}$) O/RK $\times$ YZ/T
3–5, 1–3, 5–6, 4–7, Z/RK 1–1, YT/RK 0–2

R/K $\times$ YZ/T
1253 ($\frac{499}{916}$) 5– 2, 5– 3, 2– 5, 0– 2, R/Z 0–1
1254 (916) 1– 3, 2– 1, 0– 1, 1– 0
1255 (1188) 4–12, 5–10, 6– 7, 9–11,   1–2, YT/R 0–1, YT/K 1–0
1256 ($\frac{123}{1188}$) 11– 6, 18–11, 15– 8, 12–14,   1–3,   2–1,   Z/K 2–2
1257 ($\frac{499}{916}$) 1– 2, 4– 2, 1– 6, 3– 3,
22–25, 34–27, 24–27, 25–30, R/Z 2–6, YT/R 2–2, YT/K 1–0, Z/K 2–2

1258 ($\frac{96}{1279}$) R/R $\times$ YZ/T
11–10, 11–10, YT/R 1–0, R/Z 1–0

1259 ($\frac{1371}{732}$) +/RK $\times$ YT/Z
7–6, 4–3, 5–6, 4–7, +/T 0–3, YZ/RK 1–0, RK/T 0–2

1260 ($\frac{644}{732}$) YZ/RK $\times$ YT/Z
6-10, 5–11. 8–9, 12–9, RK/T 2–1, Z/Z 0–1

$+/T \times YZ/G$

1261 ($\frac{888}{1755}$) 2– 2, 2– 2, 2– 2, 0–1

1262 ($\frac{1311}{1137}$) 11–14, 15–12, 14– 9, 8–8

13–16, 17–14, 16–11, 8–9

1263 ($\frac{476}{170}$) G/G $\times$ YZ/G

31–25, 28–24, Z/G 0–1

1264 ($\frac{993}{723}$) O/T $\times$ YZ/G

15–14, 9–11, 7–12, 4–14, YG/O 0–1, YG/T 0–1, Z/T 1–0, O/Z 1–0

1265 ($\frac{871}{1276}$) R/K $\times$ YZ/G

26–19, 25–29, 25–27, 23–24, YG/R 0–1

RK/T $\times$ YZ/G

1266 ($\frac{1043}{1755}$) 1– 2, 5– 0, 1– 2, 1– 0

1267 ($\frac{1223}{723}$) 19–17, 17–16, 15–19, 19–14

20–19, 22–16, 16–21, 20–14

1268 ($\frac{1191}{1755}$) R/T $\times$ YZ/G

9–9, 5–3, 10–6, 3–6, YG/T 0–1

1269 ($\frac{525}{170}$) T/T $\times$ YZ/G

36–24, 27–25, YG/T 2–0, Y/T 1–0, ZG/T 0–1

$+/OT\zeta \times +/YZK$

1270 (1951) 0–0, 0–1, 1–1, 0–0
1271 (1951) 2–3, 6–3, 3–1, 3–4
_____
2–3, 6–4, 4–2, 3–4

1272 ($^{285}_{1564}$) +/B × YZ/K
13–9, 14–12, 9–14, 11–13, +/YK 3–1, B/Z 3–0, +/Z 1–0

1273 ($^{1561}_{1271}$) +/MTG × +/YZK
10–12, 5–9, 9–16, 10–9

1274 ($^{1262}_{223}$) T/G × YZ/K
10–7, 13–9, 8–10, 8–11, YK/T 1–0, Z/T 1–1

1275 ($^{5007}_{581}$) T/K × YZ/K
4–2, 1–2, 2–3, 4–6, Z/K 0–2, YK/K 1–0

1276 ($^{478}_{1249}$) O/G × YZ/K
2–0, 4–2, 3–2, 2–0, +/G 0–1, ZK/O 1–1, Y/G 0–1, Z/G 2–1, YK/G 1–1

1277 ($^{\text{gs. }386}_{580}$) R/R × YZ/K
1–0, 0–0

R/T × YZ/K
1278 (916) 4–3, 3–1, 1– 2, 4–0, R/Z 0–1
1279 ($^{161}_{238}$) 1–2, 5–5, 4– 8, 5–5,   Z/T 1–0, YK/T 1–1
_____
5–5, 8–6, 5–10, 9–5, R/Z 0–1, Z/T 1–0, YK/T 1–1

1280 (1305) R/G × YK/Z

    1–1, 0–3, 0–1, 0–2

1281 ($\genfrac{}{}{0pt}{}{1499}{1749}$) +/R × +/YZK

    6–7, 10–6, 8–10, 9–7, +/ZK 1–0, Y/R 1–0

1282 (1825) +/T × +/YZK

    20–9, 22–15, 16–17, 11–24, +/Y 3–1, +/ZK 1–4, Y/T 0–1, ZK/T 0–1

1283 ($\genfrac{}{}{0pt}{}{1346}{1281}$) O/G × +/YZK

    1–2, 4–2, 1–3, 0–1

1284 (1825) R/T × +/YZK

    3–5, 3–1, 2–5, 2–1

1285 ($\genfrac{}{}{0pt}{}{1955}{1282}$) +/MRT × +/YZK

    0–0, 0–1, 0–0, 0–1

1286 ($\genfrac{}{}{0pt}{}{985}{1282}$) O/R × +/YZK

    8–12, 8–7, 5–8, 10–6, Y/O 2–0

    O/T × +/YZK

1287 ($\genfrac{}{}{0pt}{}{1341}{1833}$) 22–29, 33–21, 25–43, 24–25, Y/T 0–1

1288 ($\genfrac{}{}{0pt}{}{1341}{1833}$) 14–15, 18–13, 10–21, 12–20,   O/ZK 2–2, Y/O 0–2

1289 ($\genfrac{}{}{0pt}{}{919}{1833}$) 11–14, 15–16, 9–11, 15–13,   1–1, ZK/T 3–0

    47–58, 66–50, 44–75, 51–58, Y/T 0–1, O/ZK 2–2, Y/O 1–3, ZK/T 3–0

+/G × +/YZK

1290 (1833) 2–3, 2–4, 2– 7, 7– 3, Y/G 1–0

1291 (368/1282) 8–4, 4–0, 3– 6, 4– 7,   0–1, +/ZK 0–1, ZK/G 0–1

10–7, 6–4, 5–13, 11–10, Y/G 1–1, +/ZK 0–1, ZK/G 0–1

+/T × +/YZK

1292 (803/1282) 17–22, 20–15, 21–23, 15–15, +/Y 2–2, +/ZK 2–2, Y/T 1–0, ZK/T 1–2

1293 (1147/1833) 4– 6, 8–11, 11– 6, 7– 9,   0–1

1294 (1282/1833) 4– 4, 1– 4, 2– 6, 3– 0,   0–1

1295 (1245/1833) 21– 5, 13–13, 7–10, 15–19,   0–2,   1–0

1296 (1282/1833) 1– 4, 2– 2, 0– 1, 1– 4

47–41, 44–45, 41–46, 41–47, +/Y 2–5, +/ZK 3–3, Y/T 1–0, ZK/T 1–2

1297 (1372/1789) +/W × YT/G

1–0, 0–0 2–0, 0–4

1298 (1171/1155) O/R × YT/G

2–3, 4–1, 4–5, 1–2

1299 (707/1789) O/ZK × YT/G

1–2, 0–2, 0–1, 2–2

1300 (850/1229) R/W × YT/G

1–3, 0–6, 4–2, 2–5, YG/R 1–0, W/T 1–0

O/R × YG/T

1301 ($\frac{1171}{1170}$) 13– 6, 15– 7, 6–10, 10–11, O/G 1–1, YT/O 0–2, R/G 1-2, YT/R 2–1

1302 (1171) 11– 4, 5– 8, 9–10, 8–10,   1–1,   0–1,   1–2

24–10, 20–15, 15–20, 18–21, O/G 2–2, YT/O 0–3, R/G 1-2. YT/R 3–3

1303 ($\frac{1657}{355}$) R/T × YG/K
1–1, 0–1, 0–1, 0–0, YK/T 0–1

1304 ($\frac{589}{1208}$) R/R × YK/G
22–24, 25–21, YG/R 0–1, R/K 1–1

R/Z × YK/G

1305 ($\frac{825}{1312}$) 11– 6, 7–5, 4– 7, 5–10, YG/R 1–0, R/K 1–0

1306 ($\frac{825}{1312}$) 9– 6, 3–4, 4– 6, 9– 6,   0–2,   1–0

20–12, 10–9, 8–13, 14–16, YG/R 1–2, R/K 2–0

+/W × YK/G

1307 ($\frac{\text{H. ('18)}}{780}$) 1–3, 2–2, 5–3, 3–2

1308 ($\frac{1226}{1280}$) 2–1, 3–1, 3–2, 0–0, YG/W 1–0

3–4, 5–3, 8–5, 3–2, YG/W 1–0

1309 ($\frac{\text{H. ('14)}}{\text{g. } 462}$) +/M × YK/T
+/YK, M/YK 9–7, +/T 4–4, M/T 8–7, M/K 3–0, M/YT, +/YT 0-2, +/K 1–0

1310 ($_{\text{gs.}\{^{12}_{^{722}_{6033}}}$) +/W × YK/T
6–8, 8–5, 9–11, 4–6, +/K 1–0, YT/W 0–1, +/YT 0–2, W/K 0-1

1311 $\left(\begin{smallmatrix} \text{g.H.('18)} \\ 256 \end{smallmatrix}\right)$ +/Z × YK/T
28–26, 15–21, 22–13, 17–23, +/K 7–5, +/YT 5–4, Z/K 4–2, YT/Z 4-2

1312 $\left(\begin{smallmatrix} 478 \\ 160 \end{smallmatrix}\right)$ O/G × YK/T
2–0, 1–3, 1–1, 1–3

1313 $\left(\begin{smallmatrix} \text{g.} & 431 \\ & 812 \end{smallmatrix}\right)$ R/R × YK/T
15– 8, 13–21, R/K 1–4, YT/R 5–6

R/W × YK/T
1314 $(\; 5048 \;)$ 13–17, 15–13, 18–15, 17–13, YT/R 2–1, YT/W 7–1, W/K   5–1, R/K 1–0
1315 $(\; 5048 \;)$ 22–37, 26–17, 28–36, 31–28,   3–5,   1–3,   5–2,   2–5
1316 $\left(\begin{smallmatrix} 669 \\ 740 \end{smallmatrix}\right)$ 2– 4, 3– 7, 5– 5, 12– 6
1317 $\left(\begin{smallmatrix} 5048 \\ 745 \end{smallmatrix}\right)$ 9– 5, 6– 4, 4– 7, 8– 2,   1–0,   2–0
46–63, 50–41, 55–63, 68–49, YT/R 5–6, YT/W 8–4, W/K 11–3, R/K 5–5

1318 $\left(\begin{smallmatrix} 885 \\ 1279 \end{smallmatrix}\right)$ R/Z × YK/T
5–8, 6–2, 5–4, 11–1, R/K 1–0, Z/K 0–1, YT/R 1–0, YT/Z 1–1

1319 $(\; 879 \;)$ Z/G × YK/T
11–4, 6–9, 8–4, 6–6, YT/G 2–2, Z/K 1–0, YT/Z 3–0

1320 $\left(\begin{smallmatrix} 1211 \\ 1715 \end{smallmatrix}\right)$ +/MZT × O/RK
1–1, 0–2, 1–4, 1–1

1321 $\left(\begin{smallmatrix} 866 \\ 1131 \end{smallmatrix}\right)$ +/WG × O/RK
0–3, 3–1, 7–1, 3–1

1322 ($\frac{51}{1362}$) M/Z × O/RK
    9–18, 18–11, 15–16, 13–13

1323 ($\frac{1601}{1715}$) W/G × O/RK
    · 15–14, 11–11, 12–14, 13–10

1324 ($\frac{1262}{1517}$) YZ/T × O/RK
    8–9, 5–9, 7–13, 7–5

1325 ($\frac{1260}{1758}$) YZ/Z × O/RK
    2–0, 0–4, 1–1, 0–4

1326 ($\frac{1767}{1375}$) +/YRK × O/WT
    2–5, 3–2, 3–3, 2–1

1327 ($\frac{5053}{1615}$) B/MRK × O/WG
    12–9, 15–6, 13–6, 8–9

1328 ($\frac{1031}{1481}$) +/MRT × O/WG
    1–3, 2–4, 2–1, 3–3

1329 ($\frac{1019}{1685}$) +/T × O/WG
    0–0, ·3–3, 0–0, 3–0

1330 ($\frac{1924}{986}$) +/YRK × O/WG
    2–5, 3–2, 7–5, 3–8, +/OG 1–0, YRK/OG 1–0

1331 ($\frac{1274}{1440}$) K/T × O/WG
    7–1, 0–2, 1–3, 1–1, W/K 0–1

1332 ($\frac{271}{1381}$) MRK/T × O/WG
        12–6, 6–4, 9–6, 4–5, MRK/W 1–0

1333 ($\frac{1739}{1381}$) YRK/T × O/WG
        25–23, 22–25, 23–22, 12–19

1334 (1526) +/MRT × O/ZK
        1–2, 3–2, 3–2, 1–3

        MR/T × O/ZK
1335 ($\frac{1481}{1169}$) 2– 4,   5– 2,   3– 3,   4– 1
1336 ($\frac{1499}{707}$) 4– 2,   1– 4,   2– 5,   4– 2
1337 ($\frac{236}{1526}$) 3– 4, 12– 4,   8– 3,   2– 6
1338 ($\frac{236}{1526}$) 1– 3,   2– 4,   7– 4,   2– 3, OK/T 0–1
        10–13, 20–14, 20–15, 12–12, OK/T 0–1

1339 ($\frac{1554}{1652}$) +/MRG × O/ZK
        28–28, 23–20, 27–13, 24–22, (O/RG 1–0?)

1340 ($\frac{1169}{1652}$) +/YG × O/ZK
        0–2, 0–1, 4–2, 1–2

1341 ($\frac{1076}{774}$) G/T × O/ZK
        9–5, 2–9, 2–8, 8–6

MT/R × O/ZK

1342 (1652) 10–13, 5–6–1,   9– 9, 13– 7
1343 (1652) 2– 0, 3–1,   0– 0,   4– 2
1344 (1651) 0– 1, 1–1,   2– 3,   3– 3
_____
12–14, 9–8–1, 11–12, 20–12

YT/G × O/ZK

1345 ($\begin{smallmatrix}1229\\1398\end{smallmatrix}$) 5–3, 1–5, 5–6, 9–2
1346 ($\begin{smallmatrix}1789\\707\end{smallmatrix}$) 2–6, 4–4, 2–1, 7–4
_____
7–9, 5–9, 7–7, 16–6

1347 ($\begin{smallmatrix}\text{S. ('21)}\\1157\end{smallmatrix}$) +/Y × O/ZK
           10–8, 7–6, 3–8, 5–8

1348 (1157) YT/G × O/ZK
           1–3, 2–3, 2–5, 3–3

1349 ($\begin{smallmatrix}1239\\771\end{smallmatrix}$) +/YW × OT/G
           1–1, 2–3, 1–1, 0–0

1350 ($\begin{smallmatrix}1833\\771\end{smallmatrix}$) +/YZK × OT/G
           8–10, 2–5, 13–12, 10–13

1351 ($\begin{smallmatrix}1836\\1375\end{smallmatrix}$) +/YG × R/WT
           4–7, 5–6, 3–4, 4–2

1352 ($\begin{smallmatrix}1226\\816\end{smallmatrix}$) +/YT × R/ZK
           4–3, 7–1, 4–3, 1–1

1353 ($_{1652}^{976}$) MO/G × R/ZK
6–3, 3–3, 1–5, 3–2

1354 ($_{1673}^{1451}$) +/MWG × RK/T
3–5, 15–9, 10–10, 4–11

1355 (1518) +/MZ × RK/T
16–18, 16–11, 18–13, 13–14

1356 $\left\{ _{g.}\left\{ _{g.H.('16)}^{gs.\left\{ _{405}^{434}\right.}^{43}\right.\right\}$ M/M × RK/T
38–30, 37–43

MO/G × RK/T
1357 ($_{1228}^{993}$) 3– 5,   3– 7,   6– 3,   7– 7
1358 ($_{1230}^{998}$) 4–14,   7– 6,   5– 8,   5– 6
7–19, 10–13, 11–11, 12–13

1359 ($_{1368}^{1801}$) MW/G × RK/T
4–4, 4–6, 8–7, 5–4

MZ/O × RK/T
1360 ($_{1715}^{1517}$) 0– 0,   1–0,   1–1, 0– 0
1361 ($_{1223}^{760}$) 5–12, 12–5,   9–7, 5–10, MZ/R 0–1
5–12, 13–5, 10–8, 5–10, MZ/R 0–1

1362 ($_{gs.\ 567}^{869}$) O/W × RK/T
3–7, 3–0, 2–2, 3–4

1363 ($\frac{1321}{1367}$) WG/O × RK/T
3–7, 3–3, 4–1, 5–6

1364 ($\frac{62}{162}$) Y/W × RK/T
12–13, 11–12, 17–6, 20–13, RK/RK, R/K 0–2 (one proves R/K)

1365 ($\frac{1926}{1715}$) YW/O × RK/T
6–4, 12–8, 4–7, 6–11

1366 ($\frac{573}{630}$) YZ/YZ × RK/T
13–19, 10–16

1367 ($\frac{968}{1323}$) MO/T × RK/G
2–7, 2–3, 8–8, 6–2

1368 ($\frac{1771}{1384}$) O/T × RK/G
7–9, 7–5, 6–8, 7–11

1369 ($\frac{883}{1267}$) YO/Z × RK/G
0–2, 0–0, 0–0, 1–1

1370 $\left(\text{g.} \left\{ \begin{smallmatrix} 1362 \\ \text{H. ('18)} \\ 717 \end{smallmatrix} \right. \right)$ +/T × W/RK
20–17, 15–16, 7–9, 15–11

1371 $\left(\begin{smallmatrix} \text{H. ('18)} \\ 1044 \end{smallmatrix} \right)$ +/Y × W/RK
12–7, 11–13, 8–11, 12–8

$$+/YT \times W/RK$$

1372 (1226) 2–0, 2–2, 1–2, 2–5
1373 (1227 / 1520) 1–0, 0–0, 0–0, 1–0
_____
3–0, 2–2, 1–2, 3–5

1374 (741 / 853) Y/T × W/RK
17–18, 14–6, 16–15, 16–14

1375 (985 / 1529) O/R × WT/K
0–2, 1–2, 1–5, 4–3

1376 (1119 / 1899) +/MR × +/WTK
28–23, 36–29, 20–32, 20–25

$$YRK/O \times WG/T$$

1377 (1771 / 859) 18–10, 15–11, 17–12, 11–14
1378 (1772 / 1448) 16– 5, 10– 8, 7–12, 5–11
1379 (1772 / 1948) 8–.7, 6–10, 11– 6, 8– 8
_____
42–22, 31–29, 35–30, 24–33

1380 (1038 / 1020) MR/O × WG/T
3–1, 3–2, 2–1, 3–2

1381 (820 / 1020) O/R × WG/T
6–4, 4–3, 3–1, 6–0

1382 (801 / 1383) YO/R × WG/T
3–3, 4–3, 3–3, 6–5

1383 ($\frac{1075}{1480}$) R/T × WG/K
     5–5–1, 3–4, 5–3, 3–2

1384 ($\frac{1262}{978}$) G/T × Z/RK
     1–3, 0–1, 3–0, 1–2

1385 (g. $\{\frac{51}{153}\atop 262}$) M/T × Z/RK
     4–3, 4–4, 2–2, 1–6

1386 ($\frac{754}{1045}$) Y/O × Z/RK
     0–0, 1–0, 1–0, 1–0

1387 ($\frac{1205}{1322}$) Y/T × Z/RK
     4–4, 4–8, 6–4, 6–4

1388 (1259) +/YT × Z/RK
     21–9, 11–13, 11–12, 14–13

     +/R × ZK/T
1389 ($\frac{1561}{1837}$) 14–16, 12– 8, 8– 6, 12–10
1390 ($\frac{1561}{1837}$) 9–13,   4–15, 10–14, 12–14
            23–29, 16–23, 18–20, 24–24

1391 ($\frac{5034}{1098}$) M/R × ZK/T
     2–4, 1–4, 5–6, 6–6

$$+/\text{MR} \times \text{ZK/T}$$

1392 ($\frac{7}{1098}$) 16–13, 15–12, 12–13, 13– 9

1393 ($\frac{1477}{1837}$) 7–11, 8–17, 16–10, 12–14

23–24, 23–29, 28–23, 25–23

1394 ($_{\text{g.}}\left\{ \begin{matrix} 1002 \\ 161 \\ \text{H.('18)} \end{matrix} \right.$) MR/T × ZK/T

16–20, 16–10, 9–11, 10–12

1395 ($\frac{1019}{1828}$) +/MR × ZK/G

5–5, 9–5, 6–8, 7–9, +/K 0-1

$$+/\text{MRT} \times \text{ZK/G}$$

1396 ($\frac{1920}{1299}$) 20– 8, 10– 5, 12–10, 9– 8

1397 ($\frac{1546}{1341}$) 7– 8, 4– 9, 4– 5, 5– 4

27–16, 14–14, 16–15, 14–12

1398 ($\frac{1336}{1346}$) MR/O × ZK/G

0–1, 2–1, 1–2, 1–0

1399 ($\frac{993}{1299}$) MR/T × ZK/G

5–2, 3–2, 3–6, 5–1

1400 ($\frac{718}{774}$) Y/O × ZK/G

3–8, 8–7, 4–1, 10–7

+/+ × HZ/RK

1401 (847)   9– 7,   10– 7
1402 (848/847)   24– 27,   20– 23
1403 (847)   22– 19,   12– 19, +/R 1–1, +/Z 0–1
1404 (847)   0– 5,   0– 2
1405 (1054/649)   33– 19,   29– 26,   1–0,   0–1, +/HRK 1–0
1406 (755/650)   9– 4,   6– 7
1407 (650)   23– 26,   31– 28,   +/HZK 1–0
1408 (650)   2– 3,   4– 3
1409 (901/650)   51– 54,   60– 54
1410 (755/650)   27– 26,   29– 21

        200–190, 201–190, +/R 2–1, +/Z 0–2, +/HRK 1–0, +/HZK 1–0

+/+ × B/MRG

1411 (1116/284) 26–40, 25–28, +/BG 1–0, +/MR 1–0
1412 (709/284) 8–16, 14–10,   +/M 0–1

        34–56, 39–38, +/BG 1–0, +/MR 1–0, +/M 0–1

+/O × B/MRG

1413 (1058/958) 12–14, 20–13, 19–12, 12–18, +/MR 1–0, +/BRG 1–1, BG/O 2–1, +/BG 1–1,
1414 (1459/958) 20–11, 10–13, 13–11, 13–13,   1–0,   0–1,
1415 (1081/1032) 4– 1,   3– 2,   2– 2,   1– 2,   0–1,   1–0,   1–0

        36–26, 33–28, 34–25, 26–33, +/MR 2–1, +/BRG 1–1, BG/O 3–1, +/BG 2–2,

                                  1413 +/M 1–0, MR/O 1–0, BRG/O 0–1, (O/RG 0–1?)
                                  1414   1–0
                                  1415

                     +/M 1–0, MR/O 2–0, BRG/O 0–1, (O/RG 0–1?)

+/W × B/MRG

1416 ($\frac{1724}{958}$) 10–13, 10–26, 11–14, 13–19, +/M 0–1, +/BRG 1–0, BRG/W 1–0
1417 ($\frac{1724}{958}$) 17–21, 22–20, 23–20, 24–27, 1–1, 1–1, 1–0 +/MR 2–1, M/W 2–0,
1418 ($\frac{1724}{958}$) 13–13, 11–10, 9–10, 10– 5, 0–1, 0–1,
1419 ($\frac{1114}{278}$) 20–18, 21–25, 21–20, 22–21, 1–2, 1–0, 1–0, 1–2, 1–0,
1420 ($\frac{1114}{278}$) 14–13, 14–15, 10–16, 9–11, 1–1, 1–0, 0–1,

74–78, 78–96, 74–80, 78–83, +/M 2–5, +/BRG 4–2, BRG/W 3–0, +/MR 4–4, M/W 3–1,
1416
1417 MR/W 3–0, +/BG 1–0
1418 BG/W 1–1
1419 0–1, 1–1
1420

MR/W 3–1, +/BG 1–0, BG/W 2–2

+/Z × B/MRG

1421 ($\frac{1636}{958}$) 9–19, 15–13, 15–18, 15– 7, +/BG 1–0, +/M 0–1, +/BRG 0–1, BG/Z 1–1, +/MR 1–1
1422 ($\frac{934}{1032}$) 8–10, 8–10, 16– 8, 12– 4, 1–0,
1423 ($\frac{935}{284}$) 2– 0, 1– 1, 0– 1, 0– 0, 1–0,
1424 ($\frac{148}{284}$) 10–12, 5–15, 18–17, 8–17, 0–2,

29–41, 29–39, 49–44, 35–28, +/BG 2–0, +/M 0–1, +/BRG 1–1, BG/Z 1–1, +/MR 1–3,
1421
1422 MR/Z 0–1
1423
1424 BRG/Z 0–1

MR/Z 0–1, BRG/Z 0–1

$+/YO \times B/MRG$

1425 $\left(\begin{smallmatrix} 1168 \\ 958 \end{smallmatrix} \right)$ 18–21, 14–15, 17– 9, 16– 7, +/MR 1–1, +/BRG 2–0, BRG/YO 1–1, BG/YO 1–0,

1426 $\left(\begin{smallmatrix} 709 \\ 284 \end{smallmatrix} \right)$ 7– 6, 7–11, 6– 5, 8– 3, 0–1, 0–1,

1427 $\left(\begin{smallmatrix} 709 \\ 284 \end{smallmatrix} \right)$ 10–16, 14–12, 10–20, 19–24,

1428 $\left(\begin{smallmatrix} 1122 \\ 284 \end{smallmatrix} \right)$ 18–19, 18–18, 11–25, 20–20, 1–0,

53–62, 53–56, 44–59, 63–54, +/MR 1–1, +/BRG 2–0, BRG/YO 1–2, BG/YO 2–1,

1425 +/M 0–1, +/BG 0–1, MR/YO 1–1, M/YO 1–0

1426

1427 1–0

1428 1–0

+/M 0–1, +/BG 0–1, MR/YO 3–1, M/YO 1–0

1429 $\left(\begin{smallmatrix} 1054 \\ 1032 \end{smallmatrix} \right)$ +/WT $\times$ B/MRG

9–9, 12–13, 5–6, 6–10, +/M 1–0

1430 $\left(\begin{smallmatrix} 951 \\ 635 \end{smallmatrix} \right)$ +/Z $\times$ B/MRK

5–8, 6–6, 6–2, 8–8, BRK/Z 1–0

$+/+ \times B/YRK$

1431 $\left(\begin{smallmatrix} 858 \\ 285 \end{smallmatrix} \right)$ 32–39, 30–35, +/BRK 4–3, +/Y 2–2

1432 $\left(\begin{smallmatrix} 858 \\ 285 \end{smallmatrix} \right)$ 26–23, 20–16, 1–2, 5–4

58–62, 50–51, +/BRK 5–5, +/Y 7–6

1433 $\left(\begin{smallmatrix} 651 \\ 5054 \end{smallmatrix} \right)$ +/+ $\times$ B/YWK

29–35, 32–29, +/BWK 3–5, +/Y 3–6

1434 ($\frac{919}{1125}$) ZK/T × MYO/G
 16–29, 12–16, 27–28, 13–22, O/T 2–0, MG/ZK 2–2, M/ZK 0–1, MYG/T 1–0

1435 ($\frac{868}{1599}$) +/WG × MRK/O
 2–0, 1–1, 2–0, 2–0, +/RK 1–1

 B/WG × MRK/O
1436 (1327) 9– 8, 7–13, 11–15, 9–13, RK/WG 2– 4, MO/WG 1–0, B/RK 2– 5, B/MO 1– 7
1437 (1327´) 4–11, 7–17, 10–15, 10–13,   2– 3,   1–0,   1– 1,   0– 4
1438 (1327) 16–13, 20–11, 15–20, 16–17,   2– 6,   3–3,   5– 8,   3– 4,
 29–32, 34–41, 36–50, 35–43, RK/WG 6–13, MO/WG 5–3, B/RK 8–14, B/MO 4–15,

                  1436
                  1437
                  1438 MR/WG 0–1, MRK/W 0–1 (co ♂)
                      MR/WG 0–1, MRK/W 0–1 (co ♂)

1439 ($\frac{760}{1576}$) +/T × MRK/O
 12–7, 7–11, 9–6, 8–9, +/MO 3–0, MO/T 3–0, RK/T 0–1, R/T 1–1

1440 ($\frac{866}{1576}$) +/WG × MRK/O
 6–7, 5–8, 12–7, 6–7, +/RK 4–1, RK/WG 2–0, +/MO 0–1, MO/WG 1–0

1441 ($\frac{1731}{1926}$) W/G × MRK/O
 0–1, 0–0, 1–0, 0–1

W/T × MRK/O

1442 ($\frac{1771}{5051}$) 3– 5, 10– 3, 5– 4, 2–7, MO/W 0–1, RK/W 0–2, MO/T 1–1, RK/T 1–1

1443 (1577) 6– 8, 5–10, 7– 8, 3–1, 1–0, 0–1, 3–7, · 1–3

9–13, 15–13, 12–12, 5–8, MO/W 1–1, RK/W 0–3, MO/T 4–8, RK/T 2–4

1444 ($\frac{718}{1358}$) W/T × MO/RK

2–5, 0–4, 1–2, 2–2, MRK/W 0–2, MRK/T 0–1

1445 ($\frac{1176}{966}$) T/G × MO/RK

2–1, 2–2, 1–1, 2–1, MRK/G 0–1, O/T 1–0, MRK/T 1–0 .

1446 (296) +/Z × MRG/O

6–2, 4–5, 4–5, 5–5, +/RG 1–1, MO/Z 0–3, Z/RG 1–1

1447 ($\frac{1764}{982}$) +/T × MO/WG

7–2, 8-4, .2–7, 4–5, +/O 0–1, O/T 1-0

1448 ($\frac{753}{974}$) Z/T × MO/WG

9–9, 11–6, 7–8, 6–6, O/Z 0–1

R/T × MO/WG

1449 ($\frac{1076}{974}$) 4–1, 4–4, 5– 6, 4– 6

1450 ($\frac{1828}{974}$) 2–5, 3-2, 3– 9, 8– 6

6–6, 7–6, 8–15, 12–12

+/+ × MWG/O

1451 ($\frac{1031}{1481}$) 1– 1, 2– 2

1452 (g. {$\frac{U. ('20)}{1480}$ }) 10–19, 23–13, +/MO 7–6, +/WG 2–4

11–20, 25–15, +/MO 7–6, +/WG 2–4

+/K × MWG/O

1453 (g. {U. ('20) / 1480}) 7– 4, 7– 5, 4– 6, 8– 8, +/MO 4–2, +/WG 0–2, WG/K 1–1, MO/K 2–2

1454 (g. {U. ('20) / 1480}) 8– 8, 10– 8, 11–12, 13– 8,   2–3,   2–1,   3–2,   3–4

15–12, 17–13, 15–18, 21–16, +/MO 6–5, +/WG 2–3, WG/K 4–3, MO/K 5–6

+/T × MWG/O

1455 (1612 / 1629) 4–11, 4– 7, 2– 7, 3– 1, MO/T 0–1

1456 (1612 / 1629) 3– 5, 4– 2, 6– 7, 2– 7,   1–1

1457 (1767 / 1611) 9– 4, 5– 2, 7– 5, 5– 9,   2–0, +/WG 2–1, +/MO 1–0, WG/T 0–1

1458 (1609 / 1629) 2– 4, 2– 2, 1– 4, 1– 0,   +/MW 1–0

1459 (1612 / 1611) 0– 3, 2– 1, 1– 0, 0– 1,   1–2

18–27, 17–14, 17–23, 11–18, MO/T 4–4, +/WG 2–1, +/MO 1–0, WG/T 0–1, +/MW 1–0

R/T × MWG/O

1460 (1609 / 1613) 0–0, 1–1, 1–2, 0–1

1461 (1609 / 1613) 2–3, 2–1, 5–0, 1–1

2–3, 3–2, 6–2, 1–2

R/T × MO/ZK

1462 (768 / 908) 3– 1, 3– 1, 3– 1, 3– 2, MZK/R 1–0, O/T 0–1

1463 (985) 12–11, 5–13, 6–10, 5– 9,   O/R 0–4

15–12, 8–14, 9–11, 8–11, MZK/R 1–0, O/T 0–1, O/R 0–4

+/T × MO/ZK

1464 (1238 / 1353) 3–5, 11– 9, 7– 7, 6– 6

1465 (880 / 1353) 3–4, 2– 5, 4– 3, 1– 5, +/MZK 1–0, +/O 1–0, O/T 0–1

6–9, 13–14, 11–10, 7–11, +/MZK 1–0, +/O 1–0, O/T 0–1

1466 ($\frac{1611}{1666}$) +/T × MZK/O

    0–1, 0–0, 0–0, 0–2, ZK/T 1–0, +/ZK 1–0

1467 ($\frac{1609}{1664}$) R/T × MZK/O

    1–3, 5–2, 5–1, 5–4, MO/R 0–1, ZK/T 0–1

1468 (1526) +/RT × MO/ZK

    5–1, 1–0, 2–5, 2–1

1469 ($\frac{15}{1526}$) +/G × MO/ZK

    1–0, 0–2, 2–2, 2–0, +/O 1–0

1470 ($\frac{1067}{1353}$) +/+ × MO/ZK

    7–2, 4–1, +/Z 0–1

1471 ($\frac{1267}{768}$) G/T × MZK/O

    0–1, 2–5, 4–3, 1–1, ZK/G 2–1, MO/T 1–0

1472 (g. { U. ('20) 1480 991) +/K × MOT/W

    34–39, 37–31, 34–43, 49–35, +/MW 0–1

1473 ($\frac{1602}{992}$) +/RK × MOT/Z

    0–4, 1–0, 0–1, 1–3, +/MZ 0–1, OT/RK 1–0, MO/RK 0·1

1474 ($\frac{943}{1472}$) +/Z × MOT/K

    2–0, 2–5, 1–3, 1–0, MK/Z 0–1

1475 ($\frac{1951}{236}$) +/OT × MR/WG

    3–5, 4–5, 0–3, 6–5, +/MRG 1–0

$+/T \times MR/WG$

1476 ($\frac{1655}{1020}$) 0–1, 1–1, 2–1, 1–0

1477 ($\frac{1609}{236}$) 4–3, 1–4, 2–3, 1–1, +/W 1–0

4–4, 2–5, 4–4, 2–1, +/W 1–0

1478 ($\frac{1526}{236}$) +/O $\times$ MR/WG

8–12, 11–9, 10–3, 8–8, +/R 1–0, +/MWG 1–0, MWG/O 2–0

1479 ($\frac{974}{1020}$) +/K $\times$ MR/WG

4–12, 12–6, 6–6, 8–4, +/MWG 0–1, +/W 1–0, W/K 0–1

1480 ($\frac{1274}{866}$) T/K $\times$ MR/WG

3–2, 2–1, 3–7, 2–6, MWG/T 0–1, MWG/K 0–1, W/K 0–1

1481 ($\frac{1576}{866}$) O/T $\times$ MR/WG

6–9, 8–17, 10–10, 8–2, MWG/O 2–2, MRG/O 0–1, MWG/T 0–2, MRG/T 1–1, R/T 1–0

1482 ($\frac{1526}{1610}$) +/O $\times$ MWG/R

4–3, 3–0, 3–3, 4–2, +/WG 1–0, MR/O 0–1, O/WG 1–0

$+/T \times MWG/R$

1483 (1609) 4–3, 3–3, 1–0, 3–1, +/MR 1–2

1484 ($\frac{1612}{1609}$) 0–0, 0–0, 2–0, 1–1, MR/T 2–0

4–3, 3–3, 3–0, 4–2, +/MR 1–2, MR/T 2–0

1485 ($\frac{1831}{1610}$) O/T $\times$ MWG/R

1–2, 1–1, 2–0, 0–3, MR/T 1–0

1486 ($\frac{1831}{236}$) O/T × MR/WG
5–7, 5–5, 6–10, 3–1, O/R 1–0, MWG/O 0–1

1487 ($\frac{1853}{1338}$) +/YOT × MR/ZK
0–0, 0–0, 0–2, 0–2

+/+ × MR/ZK
1488 ($\frac{748}{888}$) 11–21, 11–31, +/R 2–0, +/Z 0–1, +/MZK 1–0
1489 ($\frac{748}{1394}$) 1– 2, 3– 3
1490 ($\frac{748}{1021}$) 10– 4, 6–12   0–1, +/MRK 0–1
1491 ($\frac{351}{888}$) 0– 1, 0– 0
_____
22–28, 20–46, +/R 2–0, +/Z 0–1, +/MZK 1–1, +/MRK 0–1

1492 ($\frac{297}{1394}$) +/G × MR/ZK
5–2, 5–3, 6–2, 9–4

+/T × MR/ZK
1493 ($\frac{748}{1394}$) 3– 1, 1– 4, 1– 4, 2– 4
1494 ($\frac{748}{1394}$) 4– 2, 2– 1, 2– 3, 1– 3, +/R 0–2
1495 ($\frac{748}{1394}$) 5– 5, 7– 6, 7– 4, 6– 7
1496 ($\frac{5030}{1394}$) 5– 2, 3– 0, 2– 2, 2– 3
1497 ($\frac{748}{888}$) 7–13, 14–15, 7–11, 13–12
1498 ($\frac{748}{1394}$) 0– 0, 1– 1, 1– 0, 1– 0
1499 ($\frac{748}{1394}$) 5– 2, 8– 1, 4– 7, 11– 7,   1–0
1500 ($\frac{1250}{888}$) 0– 2, 1– 0, 2– 1, 1– 1
1501 ($\frac{748}{888}$) 3– 4, 1– 1, 1– 1, 2– 1
_____
32–21, 38–29, 27–33, 39–38, +/R 1–2

1502 ($\frac{297}{1394}$) O/G × MR/ZK
 10–5, 5–5, 3–4, 12–4

1503 ($\frac{754}{1394}$) O/T × MR/ZK
 8–7, 7–10, 12–5, 6–10, R/T 0–1, MZK/O 1–1, MRK/O 0–1

 +/T × MRK/Z
1504 ($\frac{1212}{1573}$) 0–1, 1–0, 2–1, 0–1, +/MZ 0–1
1505 ($\frac{1100}{319}$) 0–3, 1–4, 1–3, 2–1,   +/RK 1–0, +/ZK 1–0, RK/T 1–0
 0–4, 2–4, 3–4, 2–2, +/MZ 0–1, +/RK 1–0, +/ZK 1–0, RK/T 1–0

1506 ($\frac{1031}{1095}$) +/+ × MZK/R
 1–5, 2–2

1507 ($\frac{1262}{807}$) +/G × MZK/R
 2–3, 4–2, 1–2, 1–0, ZK/G 1–0

 +/T × MZK/R
1508 ($\frac{1019}{1658}$) 1– 1, 1– 1, 2– 2, 2– 1, +/MR 0–1, MR/T 0–1
1509 (803) 1– 1, 1– 1, 1– 2, 2–'0
1510 ($\frac{1288}{1661}$) 6– 6, 7– 1, 5– 7, 3– 8, 1–1, +/ZK 1–0
1511 ($\frac{1571}{1661}$) 5– 4, 3– 2, 6– 5, 4– 2, 2–0, ZK/T 1–0
1512 ($\frac{1287}{1663}$) 9– 2, 5– 2, 6– 7, 1– 2, 0–1, 0–1, 1–2
 22–14, 17– 7, 20–23, 12–13, +/MR 1–3, MR/T 2–2, +/ZK 2–2, ZK/T 1–0

1513 ($\frac{1339}{1663}$) +/O × MZK/R
 0–5, 2–0, 2–3, 2–3, +/MR 0–2, +/ZK 1–1

1514 ($\frac{1176}{1661}$) T/G × MZK/R

4–2, 2–4, 3–3, 5–5, ZK/G 2–0, ZK/T 3–1, MR/T 1–0

+/+ × MZ/RK

1515 ($\frac{\text{g.H.('18)}}{679}$) 6–1, 3–6, +/Z 1–0

1516 ($\frac{\text{g.H.('18)}}{1079}$) 6–3, 8–3,   2–0, +/MRK 3–0

12–4, 11–9, +/Z 3–0, +/MRK 3–0

1517 ($\frac{766}{1079}$) +/O × MZ/RK

0–0, 1–0, 1–1, 1–2, +/MRK 2–1, +/Z 1–3, MRK/O 1–0, O/Z 0–1

1518 ($\text{p.} \left\{ \frac{1362}{\text{H.('18)}}_{681} \right\}$) +/T × MZ/RK

7–4, 3–4, 5–0, 3–5, +/Z 1–0, MRK/T 0–1

1519 (1090) +/G × MZ/RK

10–2, 6–6, 5–2, 4–4, +/Z 0–2, +/MRK 1–0, MRK/G 1–0, Z/G 0–1

1520 ($\frac{309}{1079}$) +/W × MZ/RK

2–1, 0–1, 0–0, 0–2, +/Z 0–1, MRK/W 2–0

1521 ($\frac{863}{1079}$) WG/T × MZ/RK

0–0, 2–0, 2–2, 2–1

1522 ($\frac{1760}{1586}$) +/YZK × MRT/O

9–14, 13–16, 17–20, 12–16, +/RT 1–4, +/MO 3–3

1523 ($\frac{1545}{1530}$) +/G × MRT/O

0–3, 0–0, 0–0, 0–0, MO/G 1–0

1524 ($_{1957}$) +/YWK × MRT/O
     0–1, 0–2, 1–0, 0–1, +/MO 1–0, +/RT 0–1

1525 ($_{1582}^{919}$) ZK/G × MRT/O
     9–2, 6–8, 5–7, 8–5, MO/ZK 1–3, RT/ZK 1–1, MO/G 4–3, RT/G 2–1

1526 ($_{1956}^{1397}$) +/ZK × MRT/O
     1–2, 6–1, 3–2, 1–5, +/RT 1–1, MO/ZK 0–2, RT/ZK 0–4

     +/K × MRT/W
1527 ($_{311}^{883}$) 10–13, 10–11, 15–16, 10–13, RT/K 1–0
1528 ($_{311}^{883}$) 9–19, 10–11, 7–11, 13– 6,   +/MR 0–1
1529 ($_{1546}^{4}$) 15– 7, 12–11, 11–11, 6– 8,   +/MW 0–1, MW/K 1–0, WT/K 0–1
     34–39, 32–33, 33–38, 29–27, RT/K 1–0, +/MR 0–1, +/MW 0–1, MW/K 1–0, WT/K 0–1

     O/G × MRT/W
1530 ($_{311}^{763}$) 3– 5, 6– 9, 5–4, 7–3
1531 ($_{1546}^{1341}$) 6– 5, 6– 5, 6–3, 5–1
     9–10, 12–14, 11–7, 12–4

1532 ($_{1579}^{4}$) +/+ × MRT/W
     13–14, 12–12, +/RT 1–1

     +/K × MRT/W
1533 ($_{1547}^{4}$) 8–15, 9–12, 6– 9, 10– 5,   (+/+ 1–1?)
1534 ($_{1579}^{1239}$) 9–17, 14–18, 14–15, 26–15, +/MW 1–0
1535 ($_{1581}$) 1– 4, 1– 3, 0– 0, 0– 2
     18–36, 24–33, 20–24, 36–22, +/MW 1–0, (+/+ 1–1?)

O/K × MRT/W

1536 (1583) 0–1, 0–1, 0–1, 0–0, MR/K 1–0

1537 (1583) $\dfrac{\text{2–4, 2–2, 2–3, 4–4,} \qquad\qquad \text{O/RT 1–0}}{\text{2–5, 2–3, 2–4, 4–4, MR/K 1–0, O/RT 1–0}}$

1538 (1584) +/K × MRT/Z
0–0, 0–1, 0–0, 1–1

1539 (1584^2) +/+ × MRT/Z
17–17, 14–11, +/MR 1–0, +/ZT 0–1, +/RT 0–1

1540 ($\frac{1008}{1641}$) +/K × MZT/R
6–2, 2–0, 3–2, 6–4, +/MR 2–0, ZT/K 1–2, MR/K 2–0

1541 ($\frac{1036}{1085}$) K/G × MZT/R
1–4, 4–0, 2–0, 3–1

1542 ($\frac{1339}{1649}$) +/O × MZT/R
11–5, 9–10, 5–12, 4–6, +/MR 2–3, +/ZT 3–0, +/MZ 0–1, MR/O 1–2, O/ZT 0–2

1543 ($\frac{1345}{1642}$) O/G × MZT/R
2–2, 2–3, 2–4, 5–1, MR/G 1–0, ZT/G 1–0, O/ZT 1–1

1544 ($\frac{355}{303}$) YG/K × MZT/R
0–2, 2–0, 0–0, 2–1

1545 ($\frac{311}{1396}$) +/+ × MRT/G
19–17, 17–11, +/MG 4–5, +/RT 1–1

+/W × MRT/G

1546 ($\frac{1528}{774}$) 7– 2, 5– 4, 7– 5, 6– 7, +/MG 2–1, +/RT 0–1, MG/W 0– 1, W/RT 0–2

1547 ($\frac{1527}{774}$) 1– 3, 2– 2, 0– 1, 1– 0,   0– 2,   0–1

1548 ($\frac{1724}{1010}$) 18–21, 19–17, 11–16, 18–23,   4–3,   5–5,   2– 8,   3–2

26–26, 26–23, 18–22, 25–30, +/MG 6–4, +/RT 5–6, MG/W 2–11, W/RT 3–5

+/O × MRT/G

1549 ($\frac{1674}{1525}$) 5–4, 4–8, 2–7, 1–4, +/MG 0–2, +/RT 3–3, MG/O 1–0, O/RT 1–0

1550 ($\frac{1452}{1531}$) 1–1, 1–1,   1–1

6–5, 5–9, 2–7, 1–4, +/MG 1–3, +/RT 3–3, MG/O 1–0, O/RT 1–0

1551 ($\frac{350}{1396}$) +/Z × MRT/G

1–5, 3–4, 3–5, 4–7, +/MG 0–1, MG/Z 1–0

1552 ($\frac{1823}{1396}$) +/ZK × MRT/G

4–4, 4–6, 4–6, 4–5, MG/ZK 1–1, +/RT 0–1

1553 ($\frac{856}{1396}$) O/W × MRT/G

4–2, 3–2, 2–3, 2–4, W/T 1–1, MG/W 0–1

+/Z × MRG/T

1554 ($\frac{5040}{1481}$) 6– 2, 3– 2, 6–0, 3– 4

1555 (1040) 4–10, 5– 8, 5–1, 3– 3, +/RG 0–1, +/G 0–1, Z/G 1–0

1556 (1040) 7– 2, 5–11, 4–6, 5–10,   MRT/Z 0–1, RG/Z 1–0

17–14, 13–21, 15–7, 11–17, +/RG 0–1, +/G 0–1, Z/G 1–0, MRT/Z 0–1, RG/Z 1–0

1557 ($\frac{1589}{1148}$) +/W × MRG/T

    6–7, 3–3, 8–6, 9–9, +/TG 0–1, W/RG 1–0, MT/W 0–1

    +/O × MRG/T

1558 ($\frac{1452}{1148}$) 6–7, 3–2, 5–3, 2–0, +/RG 0–2, MT/O 3–3

1559 ($\frac{761}{1040}$) 0–1, 1–1, 0–0, 0–4,   +/MRT 0–1

    6–8, 4–3, 5–3, 2–4, +/RG 0–2, MT/O 3–3, +/MRT 0–1

1560 ($\frac{1831}{1854}$) YZK/O × MRG/T

    8–15, 1–9, 13–13, 7–8, MT/O 2–2, MRT/O 0–1, O/G 0–1

1561 ($\frac{1066}{1614}$) +/+ × MTG/R

    9–14, 13–7, +/MR 0–1, +/TG 1–0

1562 ($\frac{285}{566}$) +/B × MTG/R

    +/MTG, B/MTG 14–27, +/R 7–13, B/R 10–9, +/TG, B/TG 0–5, +/MR 2–3, B/MR 1–1

1563 ($\frac{931}{1850}$) +/Z × +/MRTG

    6–3, 2–7, 7–2, 1–6

1564 ($\frac{1760}{1536}$) +/YZ × MRT/K

    28–20, 28–19, 22–22, 18–26

    +/O × MRK/T

1565 ($\frac{859}{1048}$) 6– 3, 5– 3, 3– 2, 8– 7, MT/O 1–1

1566 ($\frac{1328}{271}$) 23–12, 7–10, 7– 8, 14–10,   3–3, +/MT 5–4, O/RK 2–2, +/RK 2–2

    29–15, 12–13, 10–10, 22–17, MT/O 4–4, +/MT 5–4, O/RK 2–2, +/RK 2–2

+/W × MRK/T

1567 ($\frac{1030}{271}$) 8– 5, 8– 6, 12– 6, 5– 9, +/RK 0– 4, +/MT 2–2, RK/W 2–3, MT/W 3–2
1568 ($\frac{691}{1444}$) 1– 0, 0– 4, 1– 3, 0– 1
1569 ($\frac{1479}{271}$) 9– 7, 7– 5, 8–12, 7–10, 2– 6, 2–2, 2–2
1570 ($\frac{1527}{271}$) 1– 1, 3– 2, 3– 2, 3– 2, 1– 0, 1–1, 1–0
·19–13, 18–17, 24–23, 15–22, +/RK 3–10, +/MT 5–5, RK/W 5–5, MT/W 3–2

+/WG × MRK/T

1571 ($\frac{1479}{271}$) 7–3, 9–6, 17–16, 16–10, +/MT 2–1, +/RK 3–0, RK/WG 0–3, MT/WG 0–5
1572 (1908) 4–4, 3–3–1, 0– 4, 2– 5
11–7, 12–9–1, 17–20, 18–15, +/MT 2–1, +/RK 3–0, RK/WG 0–3, MT/WG 0–5

+/Z × MRK/T

1573 ($\frac{705}{1518}$) 8–3, 1–4, 3–10, 6–4
1574 ($\frac{1517}{1049}$) 0–1, 2–1, 2– 2, 1–1
1575 ($\frac{1053}{1052}$) 1–1, 0–0, 0– 0, 0–0
9–5, 3–5, 5–12, 7–5

O/W × MRK/T

1576 ($\frac{1597}{1049}$) 8–10, 10– 7, 3–12, 6– 7
1577 ($\frac{1530}{1505}$) 4– 7, 11– 6, 8– 7, 8–11
12–17, 21–13, 11–19, 14–18

1578 ($\frac{1346}{269}$) ZK/G × MRK/T
1–2, 0–1, 1–2, 0–0

+/W × MRT/K

1579 (1527) 0– 3, 0–1, 1–2, 1–2

1580 (1472/1008) 2– 3, 3–0, 0–0, 1–1

1581 (1529) 9– 5, 8–8, 4–6, 10–5, W/RT 1–1, MRK/W 0-1

11–11, 11–9, 5–8, 12–8, W/RT 1–1, MRK/W 0-1

O/W × MRT/K

1582 (1442/1527) 2–2, 1–2, 0–2, 2–3

1583 (1727/1529) 5–5, 8–5, 5–5, 8–6, MK/W 1–0

7–7, 9–7, 5–7, 10–9, MK/W 1–0

1584 (g. 1271/1008) +/Z × MRT/K

6–10, 6–4, 6–4, 9–5

1585 (1339/1529) +/O × MRT/K

9–9, 9–6, 5–10, 7–13, MK/O 1–1

1586 (1418/1438) B/W × MRK/W (Result co ♂)

26–29, 26–24, 24–35, 30–25, W/RK 3–0, B/MW 1–0, W/WK 0–2, B/MR 0–2, MW/W 0–1

1587 (1569) +/T × MRK/W

1–5, 3–3, 3–4, 1–0

+/G × MRK/W

1588 (723/1050) 4–3, 1–6, 6–4, 6– 8

1589 (1647/1444) 6–4, 8–3, 4–4, 2– 4

10–7, 9–9, 10–8, 8–12

1590 ($\frac{782}{309}$) $+/O \times MRK/W$
1–2, 2–3, 8–4, 3–8

1591 (1632) $+/T \times MWK/R$
1–2, 2–0, 1–0, 2–1, +/MR 2–2, +/WK 3–2

$+/T \times MRK/W$

1592 ($\frac{1656}{309}$) 1– 1,   3– 1,   2– 1,   2– 2
1593 ($\frac{1213}{309}$) 0– 1,   0– 0,   0– 0,   0– 2
1594 ($\frac{760}{1576}$) 11–12, 12– 7, 19–11,   9–10
1595 ($\frac{1287}{1570}$) 3– 1,   2– 4,   3– 4,   4– 3
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15–15, 17–12, 24–16, 15–17

1596 (1920) $+/YT \times MRK/W$
2–0, 1–1, 2–0, 1–0

1597 ($\frac{1137}{309}$) $O/G \times MRK/W$
2–1, 2–3, 1–1, 1–0, MW/O 0–1

$O/T \times MRK/W$

1598 ($\frac{1324}{1576}$) 19–13, 16–16, 17–15,   6–14, MW/O 0–1, RK/O 0–1, MR/O 1–0
1599 (1577) 3– 4,   5– 7,   5– 8,   7– 3,   0–1,   MW/T 0–1
1600 (1577) 5– 5,   8– 1,   5– 5,   5–10
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27–22, 29–24, 27–28, 18–27, MW/O 0–2, RK/O 0–1, MR/O 1–0, MW/T 0–1

1601 ($\frac{1791}{719}$) $YT/G \times MRK/W$
2–3, 2–0, 4–0, 3–1, MW/G 0–1

1602 ($\frac{1655}{1059}$) +/T × MW/RK
      5–5, 11–2, 5–5, 8–1

1603 ($\frac{1380}{1359}$) O/T × MW/RK
      3–5, 3–3, 2–2, 2–3, MRK/O 2–0, O/W 1–0, MRK/T 2–2, W/T 0–1

1604 ($\frac{311}{270}$) +/W × MRK/G
      1–2, 0–1, 2–3, 1–1, W/RK 0–1

1605 ($\frac{1384}{1578}$) Z/T × MRK/G
      12–7, 13–5, 6–7, 12–14, RK/Z 1–1, MG/Z 5–4, RK/T 4–6, MG/T 2–0

      +/+ × MWG/T
1606 ($\frac{1072}{1065}$) 6– 9, 3– 8
1607 ($\frac{1031}{1480}$) 0– 3, 1– 4
1608 (1067) 3– 5, 5– 2
      9–17, 9–14

      +/R × MWG/T
1609 ($\frac{1107}{1354}$) 3–0, 5–3, 4–6, 5–4
1610 ($\frac{803}{1067}$) 2–1, 0–0, 0–3, 1–1
      5–1, 5–3, 4–9, 6–5

+/O × MWG/T

1611 ($\frac{1238}{1354}$) 10-15, 11-19, 12-14, 11-11, MT/O 4- 3, +/WG 0-2, +/MWT 0-1

1612 ($\frac{1452}{1354}$) 3- 2, 8- 8, 7- 2, 5- 1,   2- 3,   +/G 0-1, O/G 1-0, +/MT 1-0

1613 ($\frac{1452}{1354}$) 15- 7, 3-14, 9- 8, 5- 6,   4- 7

28-24, 22-41, 28-24, 21-18, MT/O 10-13, +/WG 0-2, +/MWT 0-1 +/G 0-1, O/G 1-0, +/MT 1-0

O/R × MT/WG

1614 ($\frac{1342}{1571}$) 10- 8, 4- 7, 2- 5,   7-3, O/WT 2-0, MTG/R 0-1, MG/R 1-0, R/T 2-0

1615 ($\frac{987}{1571}$) 7-10, 8- 8, 6- 7,   6-5,   1-0 MWG/O 1-0

17-18, 12-15, 8-12, 13-8, O/WT 2-0, MTG/R 0-1, MG/R 1-0, R/T 3-0, MWG/O 1-0

1616 ($\frac{1169}{986}$) +/O × MT/WG

1-0, 3-1, 2-3, 3-2, +/MWG 1-0, +/G 0-1, MWG/O 0-1

1617 ($\frac{809}{986}$) O/R × MT/WG

9-6, 4-5, 8-5, 2-7

+/HR × MTG/W

1618 ($\frac{953}{1114}$) 21-20, 24-13, 17-25, 20-28, +/TG 2-0

1619 ($\frac{952}{1114}$) 12- 6, 11-12, 13- 7, 10-11

33-26, 35-25, 30-32, 30-39, +/TG 2-0

+/MR × MTG/W

1620 ($\frac{390}{1114}$) 7-13, 11-10, 14-18, 12-16

1621 ($\frac{1417}{1114}$) 0- 3, 4- 5, 0- 7, 4- 1

1622 ($\frac{390}{1114}$) 14-10, 16- 7, 13-14, 9-19

21-26, 31-22, 27-39, 25-36

+/YOG × MTG/W

1623 ($\frac{1696}{1114}$) 23–11, 11–23, 12–12, 13–15

1624 ($\frac{1696}{1114}$) 8– 4, 15– 7, 5– 5, 8– 4

31–15, 26–30, 17–17, 21–19

+/R × MWG/T

1625 ($\frac{1510}{1971}$) 2–2, 1–0, 0–3, 2–2, +/MT 0–1

1626 ($\frac{1513}{1971}$) 0–0, 1–0, 0–3, 3–1

2–2, 2–0, 0–6, 5–3, +/MT 0–1

1627 (1971) +/YRK × MWG/T

0–1, 1–3, 2–0, 1–4 (R/T 0–1?)

+/O × MWG/K

1628 ($\frac{1439}{1480}$) 4–2, 6–1, 5–3, 3– 2, +/MK 1–0, +/G 0–1, +/WG 2–1, +/MWK 0–1

1629 ($\frac{294}{1454}$) 4–6, 9–6, 4–6, 6– 8

8–8, 15–7, 9–9, 9–10, +/MK 1–0, +/G 0–1, +/WG 2–1, +/MWK 0–1

1630 ($\frac{1284}{1453}$) +/R × MWG/K

0–1, 0–0, 1–0, 0–0

1631 ($\frac{1612}{1633}$) +/T × MWK/O

0–1, 2–2, 2–1, 2–1, WK/T 1–0

1632 ($\frac{1107}{1072}$) +/R × MWK/T

1–2, 3–0, 1–1, 0–1

$+/O \times MWK/T$

1633 ($\frac{1287}{1072}$) 0–1, 2–1, 0–1, 0–1, MT/O 0–1

1634 ($\frac{1452}{1072}$) 9–8, 7–2, 5–4, 5–2,   0–2, +/WK 1–0

     9–9, 9–3, 5–5, 5–3, MT/O 0–3, +/WK 1–0

1635 ($\frac{1555}{1556}$) +/T $\times$ MRG/Z

     4–5, 8–2, 4–1, 3–2, +/MZ 2–0, +/RG 0–3, MZ/T 1–0, RG/T 0–1

1636 ($\frac{2}{1446}$) +/+ $\times$ MRG/Z

     20–19, 29–14, +/RG 7–7, +/MZ 5–2

1637 ($\frac{1918}{1542}$) +/RK $\times$ MZT/O

     4–8, 6–6, 8–7, 5–5, +/MO 1–1, +/ZT 1–1, MO/RK 0–3, RK/ZT 1–4

1638 ($\frac{850}{778}$) R/W $\times$ MZT/O

     7–7, 6–2, 2–0, 0–6, MO/W 0–1, R/ZT 3–0

1639 ($\frac{1440}{778}$) +/RK $\times$ MZT/O

     1–0, 1–0, 0–3, 1–0, +/ZT 0–1

1640 ($\frac{891}{772}$) K/G $\times$ MZT/O

     2–0, 2–3, 0–0, 2–1, MO/G 0–1, MO/K 1–1, (+/G 1–0?)

R/G $\times$ MZT/O

1641 (1543) 7–13, 6–8, 2–6, 9–5, R/ZT 3–4, MO/R 1–0, ZT/G 0–1, MO/G 1–3

1642 ($\frac{1743}{778}$) 1–4, 4–2, 1–3, 6–2,   3–1,   1–2

     8–17, 10–10, 3–9, 15–7, R/ZT 6–5, MO/R 2–2, ZT/G 0–1, MO/G 1–3

R/K × MZT/O

1643 ($\frac{5040}{299}$) 7–2, 4– 6, 5–2, 4–4, MO/K 2–2, ZT/K 2–1, R/ZT 1–1, MO/R 1–0

1644 ($\frac{928}{1961}$) 7–4, 2– 4, 8–2, 6–3, 1–0

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14–6, 6–10, 13–4, 10–7, MO/K 2–2, ZT/K 2–1, R/ZT 2–1, MO/R 1–0

+/+ × MZT/G

1645 ($\frac{311}{1794}$) 17–14, 7– 9, +/MG 3–3, +/ZT 2–3

1646 ($\frac{314}{772}$) 6– 5, 3– 5, 3–0, 2–0

1647 ($\frac{1031}{820}$) 3– 1, 3– 0

1648 (g.{$\frac{1292}{1865}\atop\frac{}{1873}}$) 7– 1, 1– 2, 1–3

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33–21, 14–16, +/MG 7–6, +/ZT 4–3

1649 (1543) O/R × MZT/G

5–5, 5–5, 1–2, 5–4, MG/O 0–1, O/ZT 0–2, MG/R 3–1, R/ZT 1–0

1650 ($\frac{1339}{1028}$) +/O × MT/ZK

3–3; 3–2, 1–5, 2–2

O/R × MT/ZK

1651 ($\frac{820}{692}$) 0– 5, 2– 3, 1–2, 1– 0, R/T 0–1, (M/R 1–0?)

1652 ($\frac{1171}{692}$) 3– 5, 7– 6, 7–4, 3– 5

1653 (1028) 2– 3, 10– 7, 2–3, 8– 5, 1–0, MZK/O 0–1

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5–13, ·19–16, 10–9, 12–10, R/T 1–1, MZK/O 0–1, (M/R 1–0?)

+/+ × MZK/T

1654 ($\frac{1085}{768}$) 17–16, 12–14, +/MT 0–1, +/ZK 1–0

1655 ($\frac{866}{768}$) 55–63, 39–56, 1–1, +/MZ 0–1

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72–79, 51–70, +/MT 0–1, +/ZK 2–1, +/MZ 0–1

$+/R \times MZK/T$

1656 ($\frac{693}{1098}$) 10–14, 14–10, 3–11, 6– 7

1657 ($\frac{1201}{807}$) 2– 4, 0– 7, 3– 1, 7– 6, R/K 1–0, R/ZK 1–0

1658 ($\frac{1100}{1670}$) 0– 0, 0– 0, 1– 3, 2– 1,   +/ZK 1–0

1659 (803) 4– 5, 7– 7, 8– 5, 8– 6,   1–0

1660 (803) 3– 4, 8– 9, 12–12, 15– 8

1661 (803) 8– 5, 9– 2, 14– 7, 10– 4,   1–0   1–0

1662 (803) 1– 0, 0– 1, 1– 0, 1– 1

1663 (803) 5– 6, 6– 5, 11– 8, 7– 4

33–38, 44–41, 53–47, 56–37, R/K 2–0, R/ZK 2–0, +/ZK 2–0

1664 (1102) $+/O \times MZK/T$
4–9, 11–9, 11–8, 6–7, +/K 0–1, +/ZK 1–0, +/MT 0–2, MT/O 4–2

1665 ($\frac{859}{1541}$) $+/O \times MZT/K$
0–0, 0–1, 1–0, 1–1

1666 ($\frac{1339}{1099}$) $+/O \times MZK/T$
5–7, 2–6, 7–5, 3–2

$+/R \times MZK/T$

1667 (1512) 3–2, 0–3, 2–3, 4– 4

1668 (1510) 4–2, 5–1, 3–2, 4– 6

7–4, 5–4, 5–5, 8–10

1669 ($\frac{1743}{1507}$) R/T $\times$ MZK/G
7–5, 9–7, 8–13, 5–7, MG/R 0–2, ZK/R 2–2, MG/T 2–3, ZK/T 1–4

1670 ($\frac{507}{1507}$) T/T × MZK/G

24–22, 23–30, MG/T 6–6, ZK/T 0–1, K/T 0–1, MK/T 0–1

+/T × YO/RK

1671 ($\frac{1067}{1129}$) 6– 7, 7–5, 1–3, 4– 7, +/YRK 0–1, YRK/T 1–0

1672 ($\frac{1655}{1135}$) 1– 3, 1–3, 4–2, 3– 6

7–10, 8–8, 5–5, 7–13, +/YRK 0–1, YRK/T 1–0

1673 ($\frac{1357}{1135}$) T/G × YO/RK

6–11, 12–4, 7–10, 5–9, O/T 0–2, YRK/G 0–1

1674 ($\frac{1628}{762}$) +/MWG × YRK/O

6–9, 14–17, 9–8, 13–8, +/YR 0 1, +/RK 1–0

1675 ($\frac{350}{778}$) +/Z × YRK/O

3–0, 1–2, 2–3, 0–0

1676 ($\frac{1121}{1725}$) MT/Z × YRK/O

9–14, 7–11, 12–12, 5–9

W/T × YRK/O

1677 ($\frac{1576}{1771}$) 4–4, 9– 6, 8–15, 5–7

1678 ($\frac{1764}{1728}$) 5–3, 2– 6, 4– 3, 5–1, W/RK 0–1

9–7, 11–12, 12–18, 10–8, W/RK 0–1

+/T × YRK/O

1679 ($\frac{1072}{1734}$) 22–20, 12–15, 14–16, 25–14, YO/T 2–1, RK/T 1–0

1680 ($\frac{1072}{1734}$) 14–14, 5–3, 11–4, 5–8,   1–0, +/YO 0–1

36–34, 17–18, 25–20, 30–22, YO/T 2–1, RK/T 2–0, +/YO 0–1

1681 ($\frac{1735}{1945}$) W/G × YRK/O

12–11, 10-5, 10–13, 10–11

WG/T × YRK/O

1682 ($\frac{1448}{762}$) 20–20, 23–23, 17–14, 23–16, RK/T 1–0

1683 ($\frac{1949}{1945}$) 3–8, 1–3, 3–2, 2–1

1684 ($\frac{1916}{778}$) 5–2, 3–2, 7–6, 4–3,   YO/T 1–0, YR/T 0–1

1685 ($\frac{1020}{299}$) 4–5, 4–2, 1–6, 2–2,   1–0

32–35, 31–30, 28–28, 31–22, RK/T 1–0, YO/T 2–0, YR/T 0–1

+/WG × YRK/O

1686 (1330) 1–1, 2–1, 3–5, 2–2, +/OK 1-0

1687 ($\frac{1914}{1726}$) 4–9, 3–5, 4–8, 12–7,   +/YR 0-1, RK/WG 1-1, +/RK 0-1

1688 (1944) 2–2, 4–5, 4–6, 5–1,   YO/WG 0-1

1689 (1944) 0–0, 0–0, 0–0, 2–0,   +/YO 1-0

7-12, 9-11, 11-19, 21-10, +/OK 1-0, +/YR 0-1, RK/WG 1-1, +/RK 0-1, YO/WG 0-1, +/YO 1-0

+/HZ × YRK/O

1690 ($\frac{656}{1944}$) 2–3, 3–4, 10–5, 6–3, +/YO 0–1

1691 ($\frac{656}{1944}$) 5–0, 4–4, 1–5, 5–1

7–3, 7–8, 11–10, 11–4, +/YO 0–1

1692 ($\frac{958}{1146}$) +/B × YO/WG

13–21, 11–12, 11–17, 12–11, +/YWG 1–0, B/O 2–1, B/YWG 0–2

1693 ($\frac{1282}{1147}$) +/+ × YO/WG

2–0, 0–3

1694 ($\frac{761}{1382}$) +/T × YO/WG

3–2, 0–1, 0–5, 2–2, +/YWG 1–0

1695 (1382) R/T × YO/WG

12–9, 5–8, 3–5, 5–8, YWG/R 1–1, O/R 1–0

1696 ($\frac{1813}{1711}$) +/T × YOG/W

17–27, 28–25, 12–23, 34–19, +/YW 1–2, +/OG 0–1, OG/T 2–3, YW/T 1–0

1697 ($\frac{958}{1814}$) +/B × YWK/O

3–3, 4–5, 6–8, 9–4, B/WK 0–1

+/T × YWK/O

1698 ($\frac{U.\ ('21)}{1238}$) 2–1, 3–0, 3–6, 0–5

1699 ($\frac{1659}{1238}$) 1–0, 1–0, 0–0, 1–0, YW/T 0–1

1700 ($\frac{761}{1806}$) 2–0, 3–1, 2–0, 1–0,   YO/T 0–1, +/YW 1–0

5–1, 7–1, 5–6, 2–5, YW/T 0–1, YO/T 0–1, +/YW 1–0

+/G × YWK/O

1701 ($\frac{1818}{1238}$) 0–1, 3–1, 1–1, 0–0, WK/G 0–1

1702 ($\frac{368}{1806}$) 5–2, 1–0, 2–1, 1–0   +/YO 0–1

5–3, 4–1, 3–2, 1–0, WK/G 0–1, +/YO 0–1

1703 ($\frac{1031}{1961}$) +/+ × YZT/O
    0–1, 0–2

1704 ($\frac{1417}{1122}$) BRG/W × YO/ZG
    12-15, 16-13, 10-11, 8-9, BRG/YZG 1-2, YZG/W 2-0, BRG/O 1-1, O/W 1-2 (+/YO 1-0, R/ZG 1-0?)

1705 ($\frac{1289}{1434}$) +/T × YO/ZK
    4–7, 5–3, 8–7, 7–5, +/YZK 1–0, O/T 0–1

1706 ($\frac{1816}{1434}$) R/G × YO/ZK
    1–0, 0–2, 2–2, 2–2

1707 ($\frac{958}{1958}$) +/B × YZK/O
    8–3, 13–8, 7–7, 5–10, +/YO 1–0

    +/T × YZK/O
1708 ($\frac{332}{1283}$) 15–18, 15–22, 15–16, 14–20, +/ZK 0–1, +/YO 0–1, +/YZ 0–1
1709 ($\frac{1292}{1287}$) 5– 6, 4– 5, 0– 3, 1– 6,   1–0,   YO/T 1–0
    20–24, 19–27, 15–19, 15–26, +/ZK 1–1, +/YO 0–1, +/YZ 0–1, YO/T 1–0

    +/W × YOG/T
1710 (337) 14–12, 8–10, 8– 9, 8–14, +/YT 4–2, YT/W 2–3, +/OG 1–2, W/OG 2–2
1711 ($\frac{1595}{1855}$) 1– 0, 0– 0, 1– 1, 1– 0
    15–12, 8–10, 9–10, 9–14,   +YT 4–2, YT/W 2–3, +/OG 1–2, W/OG 2–2

1712 ($\frac{564}{337}$) +/RK × YOG/T
    7–9, 8–14, 17–11, 14–17, +/YT 2–2, YT/RK 1–4, OG/RK 0–2, +/OG 1–4

1713 $\left(\begin{smallmatrix} \text{g.H.('18)} \\ 506 \end{smallmatrix}\right)$ +/+ × YW/RK

8–11, 10–2, +/YRK 0–1

1714 ($\begin{smallmatrix} 748 \\ 506 \end{smallmatrix}$) +/T × YW/RK

32–32, 25–31, 20–34, 23–26, +/YRK 1–0, YRK/T 1–1

O/T × YW/RK

1715 ($\begin{smallmatrix} 707 \\ 1227 \end{smallmatrix}$) 13–23, 15–12, 14–13, 18–15, YRK/O 0–2

1716 ($\begin{smallmatrix} 1175 \\ 5041 \end{smallmatrix}$) 1– 1, 0– 0, 0– 3, 1– 1

14–24, 15–12, 14–16, 19–16, YRK/O 0–2

+/G × YRK/W

1717 ($\begin{smallmatrix} 1647 \\ 1779 \end{smallmatrix}$) 8– 5, 16–10, 8– 8, 6– 3, +/RK 0–2, +/YW 1–1, RK/G 0–1, YW/G 0–1

1718 ($\begin{smallmatrix} 1262 \\ 1761 \end{smallmatrix}$) 0– 0, 0– 0, 1– 2, 0– 0

1719 ($\begin{smallmatrix} 368 \\ 1772 \end{smallmatrix}$) 10–11, 12–10, 4–14, 9–11, 2–0, 1–0, 1–0

1720 ($\begin{smallmatrix} 1797 \end{smallmatrix}$) 2– 2, 0– 2, 1– 0, 0– 0, 1–0

20–18, 28–22, 14–24, 15–14, +/RK 2–2, +/YW 2–1, RK/G 0–1, YW/G 2–1

+/T × YRK/W

1721 ($\begin{smallmatrix} 1110 \\ 1213 \end{smallmatrix}$) 2– 1, 1– 1, 0– 2, 1– 1, YW/T 0–1

1722 ($\begin{smallmatrix} 1811 \\ 1797 \end{smallmatrix}$) 2– 0, 1– 0, 0– 2, 2– 1, +/YW 0–1

1723 ($\begin{smallmatrix} 1767 \\ 1797 \end{smallmatrix}$) 0– 1, 1– 0, 0– 0, 0– 0

1724 ($\begin{smallmatrix} 1609 \\ 1767 \end{smallmatrix}$) 14–19, 15–19, 8– 8, 16–14, 0–2, +/RK 1–1, RK/T 0–3

18–21, 18–20, 8–12, 19–16, YW/T 0–1, +/YW 0–3, +/RK 1–1, RK/T 0–3

O/T × YRK/W

1725 ($\frac{707}{1761}$) 7– 2,   3– 5, 11– 6, 10– 6, RK/T 1–0, YW/T 0–1
1726 ($\frac{1577}{1763}$) 5– 5,   5– 2,   3– 7,   5– 4,   0–1,   2–0, YW/O 2–0, O/RK 0–1
1727 ($^{g.}\frac{1684}{1772}$) 10–11, 11–10, 12–17, 9–13,   1–0,   0–1,   3–2
1728 (1772) 11–13, 12–19, 15–11, 16–11,   1–0,   1–1
1729 (1772) 16– 9, 9–12, 13–12, 6– 7,   2–1,   1–1
1730 ($\frac{1175}{1764}$) 1– 2,   6– 2,   0– 3,   2– 0,   1–0

50–42, 46–50, 54–56, 48–41, RK/T 2–1, YW/T 4–2, YW/O 5–2, O/RK 4–4

T/G × YRK/W

1731 ($\frac{865}{1761}$) 3–3, 3–3, 6– 6, 8–2, YW/G 1–0, YW/T 1–1, RK/T 1–0
1732 (865) 1–2, 0–1, 2– 4, 0–2,
1733 ($\frac{1367}{1677}$) 2–3, 2–2, 1– 6, 5–3,   1–0,   RK/G 0–2

6–8, 5–6, 9–16, 13–7, YW/G 2–0, YW/T 1–1, RK/T 1–0, RK/G 0–2

O/G × YRK/W

1734 ($\frac{919}{1779}$) 12–13,   7–12, 13–11, 8– 6, YW/O 1–2, O/RK 1–1, YW/G 1–2
1735 ($\frac{919}{1772}$) 23–21, 21–25, 25–28, 23–25,   0–1,   0–2,   1–1, RK/G 0–1
1736 ($\frac{919}{1772}$) 33–23, 23–24, 33–39, 28–22,   0–2,   2–3,   0–2,   1–1, (+/W 1–0?)
1737 (1681) 2– 2,   1– 5,   0– 1,   1– 2,   1–0
1738 (1681) 6– 8,   3– 6,   2– 6,   5– 3

76–67, 55–72, 73–85, 65–58, YW/O 2–5, O/RK 3–6, YW/G 2–5, RK/G 1–2, (+/W 1–0?)

1739 ($\frac{1471}{1924}$) O/T × YRK/Z
5–2, 0–2, 1–1, 2–4, YZ/O 0–1

1740 ($\frac{1084}{1778}$) +/+ × YRK/Z
9–5, 7–8

+/T × YZK/R
1741 ($\frac{1019}{1825}$) 2–1, 2–2, 3–4, 0–3, YZ/T 1–0
1742 ($\frac{1019}{1825}$) 3–1, 0–2, 2–2, 3–0,   +/RK 0-1
5–2, 2–4, 5–6, 3–3, YZ/T 1–0, +/RK 0-1

1743 ($\frac{1262}{813}$) T/G × YZK/R
6–7, 11–16, 6–7, 10–6

+/+ × YZ/RK
1744 ($\frac{\text{g.H.('18)}}{644}$) 0– 1,   0– 2
1745 ($\frac{676}{644}$) 24– 22, 14– 13, +/YRK 0–1
1746 ($\frac{291}{644}$) 35– 34, 40– 38,   +/YZK 0–1, +/Z 0–1,   (+/YRZK 0–2?)
1747 ($\frac{291}{644}$) 31– 40, 38– 31,   0–1
1748 ($\frac{\text{g.H.('18)}}{644}$) 15– 15, 12– 9,   0–1
1749 ($\frac{\text{g.H.('18)}}{249}$) 32– 34, 24– 30,   0–1,   1–1,   1–1, +/R 1–1
1750 ($\frac{\text{g.H.('18)}}{249}$) 1– 2,   4– 3
138–148, 132–126, +/YRK 0–2, +/YZK 1–2, +/Z 1–4, +/R 1–1, (+/YRZK 0–2?)

+/T × YZ/RK
1751 ($\frac{748}{249}$) 4– 9, 4–5, 2–2, 3– 3
1752 ($\frac{888}{249}$) 2– 4, 1–2, 2–1, 1– 3
1753 ($\frac{888}{249}$) 0– 2, 4–1, 4–4, 2– 9, +/R 1–1, YRK/T 1–0
1754 ($\frac{1250}{249}$) 0– 2, 0–1, 0–0, 0– 0
6–17, 9–9, 8–7, 6–15, +/R 1–1, YRK/T 1–0

T/G × YZ/RK

1755 ($\frac{852}{644}$) 4– 1,   2– 1,   1– 3,   0– 2, Z/T 0–1

1756 ($\frac{5034}{644}$) 13–19, 16–11, 13–12, 11–21

1757 ($\frac{694}{249}$) 6– 4,   5– 6,   4– 2,   2– 6,   0–1

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23–24, 23–18, 18–17, 13–29, Z/T 0–2

1758 ($\frac{90}{644}$) O/T × YZ/RK

12–10, 5–13, 10–11, 11–11, YRK/O 1–0, Z/T 0–1

1759 ($\mathrm{g.}\frac{531}{245}$) T/T × YZ/RK

4–6, 4–14, YRK/T 0–1, Z/T 2–1

1760 ($\frac{1011}{1286}$) +/+ × YZK/R

4–4, 9–3, +/YZ 1–0

+/W × YRK/T

1761 ($\frac{1226}{1950}$) 20–22, 24–19, 13–19, 13–13, +/YT 1–0, +/RK 1–1, RK/W 2–2, YT/W 4–3

1762 ($\frac{309}{1216}$) 7– 4,   2– 8,   3– 4,   4– 8,   1–1,   1–0

1763 ($\frac{708}{1685}$) 0– 0,   0– 0,   0– 1,   0– 0

1764 ($\frac{964}{1948}$) 5–10, 10– 6, 14– 6,   7– 6,   0–1

1765 ($\frac{964}{1948}$) 4– 3,   5– 9,   3– 6,   0– 4

1766 ($\frac{1529}{1728}$) 0– 1,   0– 0,   0– 0,   1– 0

1767 ($\frac{1529}{1728}$) 5– 5,   5– 1,   4– 6,   7– 5,   2–0

1768 (1724) 6– 4,   3– 7,   6– 6,   4– 2,   0–1,   1–0,   0–1

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47–49, 49–50, 43–48, 36–38, +/YT 2–2, +/RK 1–2, RK/W 4–2, YT/W 6–4

$+/Z \times YRK/T$

1769 ($\frac{368}{1733}$) 10– 5, 7–4, 8– 9, 7– 7, +/YT 0–1, YT/Z 0–1, RK/Z 1–0

1770 ($\frac{368}{1733}$) 3– 5, 1–3, 2– 3, 3– 3,   1–0

13–10, 8–7, 10–12, 10–10, +/YT 0–1, YT/Z 1–1, RK/Z 1–0

$O/W \times YRK/T$

1771 ($\frac{1725}{1731}$) 21–16, 16–16, 14–12, 18–14, RK/O 1–0, YT/O 0–4, RK/W 0–1, YT/W 1–2

1772 ($\frac{1001}{1377}$) 5– 1, 4– 4, 2– 9, 2– 4,   0–1

1773 ($\frac{1730}{}$) 2– 4, 2– 0, 0– 2, 2– 1,   0–1

28–21, 22–20, 16–23, 22–19, RK/O 1–2, YT/O 0–4, RK/W 0–1, YT/W 1–2

1774 ($\frac{1013}{1972}$) +/+ $\times$ YRK/T

14–11, 8–11, +/YT 0–1

1775 (1971) +/MWG $\times$ YRK/T

1–5, 1–2, 2–2, 1–1

$Z/G \times YRK/T$

1776 ($\frac{1384}{1214}$) 4–0, 3–0, 5–5, 4–3, YT/Z 1–0, RK/G 1–0

1777 ($\frac{319}{1677}$) 0–1, 1–0, 0–0, 3–1,   RT/G 1–0

1778 ($\frac{1369}{1677}$) 1–3, 2–3, 8–2, 4–1,   0–1

5–4, 6–3, 13–7, 11–5, YT/Z 1–1, RK/G 1–0, RT/G 1–0

1779 ($\frac{1000}{1677}$) W/G $\times$ YRK/T

2–6, 2–1, 4–3, 4–2, RK/W 1–0, YT/W 0–1

1780 ($\frac{1262}{1388}$) +/G × YT/RK
  0–2, 4–2, 0–1, 3–0

  +/W × YT/RK
1781 (1226) 1–2, 4– 4, 3– 4, 3– 7, +/YRK 0–1
1782 ($\frac{730}{1226}$) 0–1, 0– 2, 0– 0, 0– 0
1783 ($\frac{1226}{1259}$) 3–4, 6– 4, 6– 3, 3– 8,   +/YK 1–0, YK/W 0–1
1784 ($\frac{309}{1200}$) 0–0, 1– 2, 5– 3, 2– 3
  4–7, 11–12, 14–10, 8–18, +/YRK 0–1, +/YK 1–0, YK/W 0–1

  +/Z × YT/RK
1785 (1259) 1– 4, 5– 5, 3– 9, 7– 4, Z/T 0–1
1786 ($\frac{747}{1259}$) 13– 2, 4– 7, 7– 7, 3– 7
1787 ($\frac{522}{1260}$) 2– 2, 3– 0, 1– 1, 1– 0
1788 (1259) 17–14, 20–28, 26–33, 22–31,   Z/K 0–1
  33–22, 32–40, 37–50, 33–42, Z/T 0–1, Z/K 0–1

1789 ($\frac{297}{1259}$) O/G × YT/RK
  6–11, 5–4, 8–8, 7–6, T/G 0–1

1790 ($\frac{1597}{1227}$) O/W × YT/RK
  0–0, 0–0, 3–0, 0–0

1791 ($\frac{694}{1260}$) W/G × YT/RK
  9–3, 4–4, 3–4, 3–8, YRK/G 2–0

1792 ($\frac{693}{733}$) Z/G × YT/RK
4–4, 4–2, 0–3, 3–2

1793 ($\frac{840}{1170}$) +/W × YG/RK
3–4, 0–2, 2–3, 3–5, +/G 0–1, YK/W 1–0, YRK/W 1–0

1794 ($\frac{1211}{1731}$) +/MZT × YRK/G
6–9, 4–6, 4–1, 6–7, +/RK 0–1

+/W × YRK/G
1795 ($\frac{708}{776}$) 8– 2, 2– 2, 2– 1, 2– 0
1796 ($\frac{1125}{1673}$) 10– 8, 6– 6, 9– 7, 7–11, +/YRG 0–1, YG/W 3–0, W/RK 1–0
1797 ($\frac{1589}{1717}$) 9– 3, 5– 4, 10–12, 6– 5, 0–1
27–13, 13–12, 21–20, 15–16, +/YRG 0–1, YG/W 3–1, W/RK 1–0

1798 ($\frac{1282}{1733}$) +/+ × YRK/G
5–1, 4–4, +/YG 0–1

+Z × YRK/G
1799 ($\frac{368}{1733}$) 4–3, 1–1, 2–1, 3–2
1800 ($\frac{1093}{1717}$) 3–3, 0–4, 7–1, 3–2
7–6, 1–5, 9–2, 6–4

1801 ($\frac{968}{778}$) MW/T × YRK/G
0–1, 1–0, 0–1, 1–2

Z/T × YRK/G

1802 ($\frac{753}{776}$) 1–3, 0–4, 2–1, 0–0, Z/K 1–1, YG/T 0–1

1803 ($\frac{1554}{1779}$) 4–1, 4–4, 1–4, 2–2,   Z/RK 1–0

         5–4, 4–8, 3–5, 2–2, Z/K 1–1, YG/T 0–1, Z/RK 1–0

1804 (1351) +/R × YG/WT

         2–4, 5–2, 6–5, 6–4, R/G 0–1

1805 ($\frac{5027}{1173}$) +/MRK × YG/WT

         8–17, 10–12, 16–13, 17–9, +/YWT 1–1, +/G 2–0, MRK/G 3–1

1806 ($^{g.\,1684}_{1245}$) O/O × YWK/T

         46–57, 52–43, YT/O 4–4, O/WK 2–3

         +/R × YWK/T

1807 ($\frac{1071}{1698}$) 4– 6, 3– 8,   6– 9, 4– 6, R/WK 2–1

1808 ($\frac{1512}{1237}$) 0– 0, 1– 3,   2– 1, 2– 0,   0–1, +/YT 1–0, +/WK 1–0

1809 ($\frac{1071}{1698}$) 4– 5, 2– 1,   5– 5, 2– 5,   0–1

         8–11, 6–12, 13–15, 8–11, R/WK 2–2, +/YT 1–1, +/WK 1–0

1810 ($\frac{1013}{1237}$) +/+ × YWK/T

         0–2, 0–1

         +/O × YWK/T

1811 ($\frac{1102}{1818}$) 4– 4, 1– 6, 2–4, 1–3, +/YT 0–1,   (MT/O 0–1?)

1812 (1698) 0– 1, 0– 0, 1–1, 0–0,   1–0

1813 (1699) 0– 2, 4– 2, 0–1, 0–0,

1814 ($\frac{1700}{1698}$) 1– 1, 1– 1, 2–1, 1–4,   YT/O 1–0

1815 ($\frac{1700}{1698}$) 2– 2, 0– 2, 1–2, 0–0

         7–10, 6–11, 6–9, 2–7, +/YT 1–1, YT/O 1–0 (MT/O 0–1?)

$+/R \times YWK/G$

1816 ($\frac{804}{1245}$) 15–10, 8– 4,   3– 6, 12– 7, YWG/R 1–1

1817 ($\frac{804}{1245}$) 11–13, 16–10, 13–13,   7–17

26–23, 24–14; 16–19, 19–24, YWG/R 1–1

$+/T \times YWK/G$

1818 ($\frac{1825}{1245}$) 4–5,   8– 7, 1– 3, 3–2

1819 ($\frac{1572}{1245}$) 5–4,   3– 8, 2– 8, 4–5

9–9, 11–15, 3–11, 7–7

1820 ($\frac{761}{1245}$) $+/O \times YWK/G$

6–8, 6–7, 10–10, 7–6, +/WK 1–0, +/YWG 0–1, O/WK 1–1, YWG/O 0–1, YG/O 1–0

1821 ($\frac{H.\,('22)}{1988}$) $+/+ \times +/YZTG$

8–5, 11–8, +/ZTG 3–0, +/Y 2–2

1822 ($\frac{351}{1260}$) $+/K \times YT/YZ$

6–11, 6–7, 8–10, 6–12

$+/R \times YT/ZK$

1823 ($\frac{1281}{1346}$) 3– 1,   3– 0,   1– 0,   1– 2

1824 ($\frac{952}{1143}$) 8–14, 19–16, 15–11, 21–18, YZK/R 2–3, R/T 2–1, +/YZK 1–1, +/T 1–1

11–15, 22–16, 16–11, 22–20, YZK/R 2–3, R/T 2–1, +/YZK 1–1, +/T 1–1

$+/R \times YZK/T$

1825 ($\frac{692}{1708}$) 4–11, 11– 9, 5– 8,   4– 8, R/ZK 0–1, YT/R 0–1

1826 ($\frac{1540}{1709}$) 7– 3,   2– 6, 2– 6,   9– 2,   +/ZK 0–2

1827 ($\frac{1071}{1709}$) 0– 0,   0– 0, 0– 0,   1– 1

11–14, 13–15, 7–14, 14–11, R/ZK 0–1, YT/R 0–1, +/ZK 0–2

1828 ($\frac{1507}{1743}$) R/G × YZK/T
 14–5, 4–12, 6–15, 10–8, YT/R 0–1, R/ZK 1–0, ZK/G 0–1

1829 (1282) +/+ × YZK/T
 6–15, 15–6, +/YT 1–2, +/ZK 1–1

 +/O × YZK/T
1830 ($\frac{762}{1282}$) 2–1, 0–0, 1–0, 2–1
1831 ($\frac{761}{1282}$) 2–7, 3–5, 5–4, 3–5, +/ZK 0–1, +/YT 0–1, O/ZK 2–0
 4–8, 3–5, 6–4, 5–6, +/ZK 0–1, +/YT 0–1, O/ZK 2–0

 +/+ × YZK/G
1832 ($\frac{837}{1743}$) 5– 5, 11– 5, +/ZK 0–1
1833 ($\frac{1031}{1828}$) 53–57, 51–39, +/YZG 1–0, +/YG 2–2
 58–62, 62–44, +/ZK 0–1, +/YZG 1–0, +/YG 2–2

1834 ($\frac{1282}{1340}$) +/+ × YG/ZK
 6–7, 8–5, +/YZK 1–0

1835 ($\frac{11}{1340}$) +/MRT × YG/ZK
 7–7, 15–8, 15–12, 11–7, +/G 3–0, MRT/G 1–1, MRT/YZK 0–1

1836 ($\frac{\mathbf{g}\cdot_{1}^{771}}{1175}$) +/OT × YG/ZK
 2–3, 4–2, 6–4, 2–5, +/YZK 1–0

$+/+ \times$ OT/ZK

1837 ($\frac{1066}{1836}$) 14– 8,   7– 4, (ZK/T 2–4, Proved contam.)

1838 (755) 27–27, 43–36

41–35, 50–40, (ZK/T 2–4, Proved contam.)

1839 ($\frac{889}{1836}$) $+/Y \times$ OT/ZK

26–13, 18–20, 16–23, 16–29, +/ZT 1–0

1840 ($\frac{1271}{1637}$) $+/+ \times$ RK/ZT

26–28, 26–35, +/RT 1–0

1841 ($\frac{2}{1526}$) $+/+ \times$ RT/ZK

16–7, 24–20

1842 ($\frac{1729}{1571}$) YRK/O $\times$ RK/WG

0–2, 1–1, 0–1, 3–0, O/WK 1–0

$+/+ \times$ MR/MTG

1843 ($\frac{1054}{1018}$) 67–41,   62– 55

1844 ($\frac{1119}{390}$) 34–27,   37– 30

1845 ($\frac{1119}{390}$) 4– 7,   4– 7

1846 ($\frac{1116}{390}$) 18–16,   13– 8

123–91, 116–100

$+/Z \times$ MR/MTG

1847 ($\frac{951}{1018}$) 23–17, 24–34, 24–21, 28–24, +/MRG 1–0, +/M 1–0

1848 ($\frac{934}{1119}$) 8– 9, 11–11,   6– 7, 11– 5

1849 ($\frac{934}{1119}$) 18–15, 12–15, 18–22,   9–15

49–41, 47–60, 48–50, 48–44, +/MRG 1–0, +/M 1–0

1850 ($\frac{1116}{390}$) +/YO × MR/MTG
  14–19, 20–18, 17–17, 25–10, +/MRTG 0–1

1851 ($\frac{1696}{390}$) +/YOG × MR/MTG
  19–23, 20–26, 23–28, 30–22

  +/+ × MZT/YO
1852 ($\frac{1295}{1088}$) 9– 3, 12–11
1853 ($\frac{1292}{1088}$) 8– 7, 17– 8, +/MO 1–0, +/YOT 1–0
  17–10, 29–19, +/MO 1–0, +/YOT 1–0

1854 ($\frac{1382}{1148}$) R/T × MRG/YO
  5–8, 6–6, 6–6, 6–13, YRG/R 0–1, MR/R 0–1, MO/T 1–0

1855 ($\frac{1566}{1148}$) +/T × MRG/YO
  3–3, 1–2, 1–3, 6–3, YOG/T 0–1

1856 ($\frac{759}{1157}$) +/O × MYT/ZK
  12–9, 6–13, 8–10, 11–8, +/T 3–0, +/MYZK 3–2, O/T 1–0, MYZK/O 1–1, MZK/O 0–1

  +/+ × MTG/YO
1857 (1116) 37–37,   51–38, +/MO 1–0
1858 (1116) 7– 7,   8– 9
1859 (1116) 38–29,   45–40,   +/YTG 0–1
  82–73, 104–87, +/MO 1–0, +/YTG 0–1

1860 ($\frac{285}{1564}$) +/B × MRT/YZ
  7–5, 6–8, 2–4, 5–5

1861 (1564) +/K × MRT/YZ
  8–8, 5–8; 13–8, 6–7

1862 ($\frac{1735}{1232}$) O/W × MRT/YG
  3–1, 4–5, 2–0, 5–1, MG/O 1–0

+/+ × MRT/WG

1863 ($\frac{5}{1328}$) 16–19, 8–19, +/MRG 1–0
1864 ($\frac{294}{1008}$) 2– 2, 4– 1
1865 ($\frac{294}{1008}$) 0– 2, 2– 1,   +/RT 1–1
1866 (868) 5– 8, 1– 6
  _____
  23–31, 15–27, +/MRG 1–0, +/RT 1–1

+/O × MRT/WG

1867 ($\frac{1339}{1008}$) 5– 4, 5–2, 6–10, 9– 6, O/RT 0–1
1868 ($\frac{1454}{1008}$) 1– 3, 3–1, 0– 2, 4– 1
1869 ($\frac{1454}{1008}$) 3– 5, 4–3, 5– 7, 9– 5
  _____
  9–12, 12–6, 11–19, 22–12, O/RT 0–1

+/+ × MRT/ZK

1870 ($\frac{2}{1526}$) 5– 11,   4– 7,
1871 (1013) 30– 31, 27– 31, +/RT 0–1, +/MZK 1–0
1872 ($\frac{889}{1013}$) 5– 2,   2– 4,   0–1
1873 (901) 37– 35, 41– 41,   1–3,   0–3, +/ZT 1–1
1874 ($\frac{366}{1014}$) 9– 12, 14– 14,   0–1,   0–1
1875 (901) 46– 47, 42– 43,   2–2,   2–1,   +/MRK 2–0
1876 ($\frac{366}{901}$) 4– 2,   3– 4
  _____
  136–140, 133–144, +/RT 3–7, +/MZK 3–5, +/ZT 1–2, +/MRK 2–0

1877 ($\frac{1454}{1397}$) +/O × MRT/ZK
1-0, 1-2, 1-5, 1-2

+/+ × MZT/RK
1878 ($\frac{351}{1079}$) 5-2, 2- 8, +/MRK 0-2, +/ZT 1-0
1879 ($\frac{1031}{1639}$) 1-1, 2- 1,   0-1
1880 ($\frac{294}{1088}$) 0-0, 0- 2,   0-1
_____
6-3, 4-11, +/MRK 0-4, +/ZT 1-0

+/O × MZT/RK
1881 (1081) 13-12, 17-15, 11-17, 17-17, +/MRK 1-1, O/ZT 3-0, +/ZT 1-4, MRK/O 4-1
1882 (1637) 13-12, 18-13, 16-16, 15-13,   1-0,   2-2,   3-0,   0-2
1883 ($\frac{1287}{1088}$) 0- 0, 2- 2, 1- 0, 0- 0,   1-0
1884 ($\frac{1238}{1088}$) 1- 3, 0- 3, 0- 0, 0- 0,   0-1
_____
27-27, 37-33, 28-33, 32-30, +/MRK 2-2, O/ZT 5-2, +/ZT 5-4, MRK/O 4-3

+/+ × MRG/ZK
1885 ($\frac{1248}{268}$) 17-16, 18-15, +/RG 0-1, +/MZK 1-1, +/MRK 1-2
1886 ($\frac{1248}{268}$) 2- 1, 1- 2,   0-1,   1-0
1887 ($\frac{1056}{958}$) 24-27, 36-33,   1-2,   0-1, +/ZG 0-1
_____
43-44, 55-50, +/RG 0-1, +/MZK 2-4, +/MRK 2-3, +/ZG 0-1

+/O × MRG/ZK
1888 ($\frac{1454}{1339}$) 1- 6, 3- 2, 4- 3, 2- 0, +/MZK 1-0
1889 ($\frac{1058}{958}$) 12-13, 13-16, 15-14, 12-21,   1-0, O/RG 2-4, +/RG 3-0
_____
13-19, 16-18, 19-17, 14-21, +/MZK 2-0, O/RG 2-4, +/RG 3-0

1890 ($\frac{934}{1145}$) +/Z × MRK/OT
14-26, 14-21, 19-24, 15-12, +/RK 2-3, +/MOT 0-3, MOT/Z 0-4, Z/RK 2-3

$+/+ \times$ MRK/WT

1891 ($\frac{755}{1058}$) 19– 26, 13– 18, +/WK 3–0
1892 (858) 10– 17, 15– 16
1893 (1054) 22– 24, 24– 23
1894 (1054) 33– 35, 41– 31,   0–1, +/RK 1–0
1895 (1054) 18– 25, 19– 26,   0–1,   1–1
1896 (1054) 57– 62, 49– 34
1897 (1054) 34– 24, 44– 41,   0–2,   +/MRT 1–0
1898 ($\frac{1054}{1805}$) 67– 56, 60– 51,   1–0,   2–0,   +/MWT 2–0
1899 ($\frac{1054}{1805}$) 29– 27, 32– 21,   2–0,   1–0,   2–0,   1–2, +/WTK 0–1
1900 ($\frac{1054}{1805}$) 51– 43, 44– 42,   1–0

340–339, 341–303, +/WK 7–4, +/RK 5–1, +/MRT 3–0, +/MWT 3–2, +/WTK 0–1

1901 (1376) $+/+ \times$ MR/WTK
36–34, 41–29, +/R 1–1, +/MWTK 2–0

$+/O \times$ MRK/WG

1902 ($\frac{1330}{271}$) 7–12, 11–10, 16–10, 9–12, +/MWG 1–2, +/MRG 0–1, O/WK 0–2, MRG/O 1–1,
1903 ($\frac{762}{271}$) 4– 5, 3– 4, 7– 3, 1– 2,   1–0,   1–0,
1904 ($\frac{738}{271}$) 1– 1, 0– 0, 0– 0, 1– 0,   0–1
1905 ($\frac{969}{271}$) 1– 1, 1– 1, 3– 0, 1– 1,   1–0

13–19, 15–15, 26–13, 12–15, +/MWG 2–2, +/MRG 2–2, O/WK 0–2, MRG/O 1–1,

1902 O/RK 2–0, +/WK 0–1
1903   2–2
1904
1905

O/RK 4–2, +/WK 0–1

$+/T \times$ MRK/WG

1906 ($\frac{1825}{271}$) 9–13, 11–12, 8–11, 9– 8, +/MWG 0–1, +/MRG 0–1, +/RK 0–1, +/WK 1–1,

1907 ($\frac{1100}{1440}$) 13–12, 9–13, 13– 8, 13–11, 0–1, 0–2,

1908 ($\frac{1100}{1440}$) 5– 5, 4– 8, 5– 6, 3– 3,

27–30, 24–33, 26–25, 25–22, +/MWG 0–2, +/MRG 0–1, +/RK 0–3, +/WK 1–1,

1906 RK/T 1–1, MRG/T 1–0
1907 1–0, MWG/T 0–1
1908 0–1

RK/T 1–2, MRG/T 2–0, MWG/T 0–1

1909 (1327) B/O $\times$ MRK/WG

9–7, 9–4, 6–5, 6–13, B/WK 0–1, B/RK 0–1, B/MWG 1–0

$+/+ \times$ MRK/WG

1910 ($\frac{4}{271}$) 9– 6, 9– 13, +/RK 0– 2, +/MRG 2–0, +/MWG 0–1

1911 ($\frac{4}{271}$) 4– 3, 5– 6, 1–0

1912 ($\frac{1107}{1571}$) 17– 9, 9– 15, 1– 0, 1–0, +/WK 2–0

1913 ($\frac{346}{1571}$) 33– 37, 29– 33, 1– 7, 2–2, 1–3, 5–2

1914 ($\frac{1099}{1571}$) 16– 26, 9– 24, 3– 0, 1–2, 1–0, 0–1

1915 ($\frac{901}{860}$) 37– 34, 32– 29, 2– 2, 2–2, 1–0, (MWG/O 1–0?)

116–115, 93–120, +/RK 7–11, +/MRG 8–6, +/MWG 3–4, +/WK 8–3, (MWG/O 1–0?)

1916 ($\frac{1224}{1049}$) O/T $\times$ MRK/WG

1–1, 2–0, 1–2, 2–1

$$+/+ \times MWG/RK$$

1917 ($\frac{1292}{1354}$) 10– 8, 7– 9, +/MRK 5– 5, +/WG 2– 8

1918 ($\frac{1282}{1354}$) 27–25, 36–34,   4– 8,   7– 3

1919 ($\frac{1099}{1354}$) 9– 5, 14– 8,   3– 4,   2– 3

46–38, 57–51, +/MRK 12–17, +/WG 11–14

$$+/W \times MRK/YT$$

1920 ($\frac{1213}{5047}$) 4–1, 4–1, 1– 7, 2–3, +/MRT 1–0, YRK/W 1–0

1921 ($\frac{309}{5047}$) 0–1, 0–1, 0– 1, 0–1

1922 ($\frac{309}{5047}$) 1–1, 1–3, 0– 2, 2–1

5–3, 5–5, 1–10, 4–5, +/MRT 1–0, YRK/W 1–0

1923 ($\frac{1388}{5047}$) +/Z × MRK/YT

3–3, 4–6, 2–2, 1–0

1924 ($\frac{883}{1676}$) +/Z × MT/YRK

2–2, 10–7, 5–1, 4–11, +/MK 1–0

1925 ($\frac{1036}{270}$) T/G × MRK/YW

1–4, 2–4, 1–2, 0–2

1926 ($\frac{707}{720}$) O/T × MRK/YW

30-19, 23-9, 36-23, 17-31, YRK/O 2-2, RK/O 0-1, YWK/O 1-1, YWK/T 1-0, MW/T 1-0, YRK/T 2-0

1927 ($\frac{303}{768}$) +/+ × MZK/OT

11–9, 6–6, +/ZK 2–4, +/MOT 3–4

1928 ($\frac{1054}{564}$) +/+ × MTG/RK
21–15, 10–20, +/TG 2–4, +/MRK 0–3

1929 ($\frac{1143}{564}$) YOT/ZK × MTG/RK
10–8, 6–7, 8–4, 9–5, ZK/TG 4–1, MRK/ZK 0–1

+/+ × YOG/WT
1930 (1164) 15– 8, 4–14, +/YWT 1–1, +/OG 0–1
1931 (1164) 28–42, 31–32,   3–5,   2–5
_____
43–50, 35–46, +/YWT 4–6, +/OG 2–6

1932 ($\frac{932}{1164}$) +/R × YOG/WT
16–23, 21–20, 15–17, 11–21, YWT/R 0–3, R/OG 4–0, +/OG 4–2, +/YWT 1–1

+/+ × YOT/ZK
1933 ($\frac{1054}{1143}$) 7– 6, 6– 4, +/OT 0–2, +/YZK 0–1
1934 ($\frac{1032}{1143}$) 10–17, 14–16,   1–1,   1–1
_____
17–23, 20–20, +/OT 1–3, +/YZK 1–2

1935 (654) +/O × YRK/HZ
21–14, 25–15, 23–20, 17–17

1936 ($\frac{1774}{1690}$) +/T × YRK/HZ
15–27, 19–23, 25–18, 24–20

1937 ($_{\text{g.}\{\frac{1292}{771},1848}}$) +/+ × YRK/OT
5–16, 6–10

$+/+ \times$ YRK/WG

1938 ($\frac{1031}{1684}$) 3- 3, 4- 4, +/RK 0- 1, +/YWG 2- 1
1939 ($\frac{4}{1685}$) 4- 4, 3- 2,   0- 1,   0- 3
1940 ($\frac{1282}{1330}$) 9-17, 10- 4,   4- 2,   1- 4
1941 ($\frac{1235}{1683}$) 11-18, 16-15,   3- 5,   7- 1
1942 ($\frac{958}{1688}$) 23-22, 33-27,   5- 1,   3- 0
1943 ($\frac{712}{1688}$) 15- 9, 12- 9,   1- 1,   3- 1

          65-73, 78-61, +/RK 13-11, +/YWG 16-10

$+/O \times$ YRK/WG

1944 ($\frac{1339}{1210}$) 19-13, 21-17, 11-20, 20-16, +/YWG 4-3, YWG/O 3-4, +/RK 4-3, O/RK 1-5
1945 ($\frac{759}{1330}$) 6-10, 6- 6, 7- 6, 8- 7,   1-2,   0-2,   0-1

          25-23, 27-23, 18-26, 28-23, +/YWG 5-5, YWG/O 3-6, +/RK 4-3, O/RK 1-6

1946 ($\frac{1105}{1379}$) $+/OT \times$ YRK/WG
          5-2, 0-0, 1-2, 3-3, +/YWG 0-1

$+/T \times$ YRK/WG

1947 ($\frac{803}{1330}$) 13-15, 19-22, 14-15, 19-12, +/YWG 5-0, +/RK 5-3, YWG/T 1-3, RK/T 5-2
1948 ($\frac{1825}{1377}$) 6- 6, 12-11, 3- 6, 6- 6,   2-0,   0-2,   1-0,   1-2

          19-21, 31-33, 17-21, 25-18, +/YWG 7-0, +/RK 5-5, YWG/T 2-3, RK/T 6-4

1949 (1685) O/T $\times$ YRK/WG
          5-2, 2-2, 2-2, 2-3, RK/O 0-1, YWG/O 0-1, RK/T 0-2, YWG/T 0-1

1950 ($\frac{1310}{644}$) $+/T \times$ YRK/YZ
          3-5, 5-2, 1-2, 2-4

$1951\ (\ {}^{890}_{1350}\ )\ +/+\times \text{YZK/OT}$
20–32, 22–17, +/YOT 0–1, +/ZK 1–0, +/OK 1–0

$1952\ (\ {}^{1351}_{1271}\ )\ +/\text{R}\times \text{YZK/OT}$
9–7, 4–6, 8–7, 5–3, +/OK 1–0, R/OK 1–0

$1953\ (\ {}^{1119}_{957}\ )\ +/+\times \text{BWG/MRK}$
32–38, 33–40, +/BWK 1–1, +/MWG 1–0

$$+/+\times \text{MRT/YWK}$$
$1954\ (\ {}^{4}_{1031}\ )$ 1–2, 2–1
$1955\ (\ {}_{1031}\ )$ 2–6, 7–2
—————
3–8, 9–3

$$+/\text{O}\times \text{MRT/YWK}$$
$1956\ (\ {}^{762}_{1031}\ )$ 7–6, 10–8, 14–12, 14–8
$1957\ (\ {}^{300}_{1031}\ )$ 0–0, 1–0, 0–2, 0–0
—————
7–6, 11–8, 14–14, 14–8

$1958\ (\ {}^{1526}_{1285}\ )\ +/\text{O}\times \text{MRT/YZK}$
3–2, 6–2, 5–5, 2–6

$$+/+\times \text{MZT/YRK}$$
$1959\ (\ {}^{1281}_{1211}\ )$ 12–17, 24–21, +/MZK 1–0, +/MRK 0–1, +/YZT 0–1
$1960\ (\ {}^{1281}_{1211}\ )$ 12–10, 15–12
—————
24–27, 39–33, +/MZK 1–0, +/MRK 0–1, +/YZT 0–1

+/O × MZT/YRK

1961 ($\frac{772}{639}$) 12–11, 14–12, 21–8, 16–18, +/YZT 1–0, YZT/O 0–1

1962 ($\frac{760}{1211}$) 0– 0, 0– 0, 0–0, 1– 0

12–11, 14–12, 21–8, 17–18, +/YZT 1–0, YZT/O 0–1

O/G × MZT/YRK

1963 ($\frac{993}{1211}$) 0–0, 1–1, 0–1, 1–2

1964 ($\frac{993}{1211}$) 0–1, 1–0, 1–1, 0–0

0–1, 2–1, 1–2, 1–2

+/+ × MRG/YZK

1965 ($\frac{650}{1560}$) 12– 6, 12– 8, +/YRG 2–1, +/YZG 1–0

1966 ($\frac{650}{1560}$) 1– 5, 1– 3

13–11, 13–11, +/YRG 2–1, +/YZG 1–0

+/T × MRG/YZK

1967 ($\frac{1826}{1560}$) 10– 8, 6–11, 13–13, 9– 7, +/MZK 2–0, +/MRK 1–0, YRG/T 3–1, MZK/T 1–0,

1968 ($\frac{1774}{1560}$) 13–15, 10– 9, 5– 9, 8– 8,   1–0,

23–23, 16–20, 18–22, 17–15, +/MZK 2–0, +/MRK 1–0, YRG/T 3–1, MZK/T 2–0,

1967 MRK/T 1–0, +/YRG 1–0, ZK/T 1–0,   (+/G 1–0?)

1968   +/YZG 1–0

MRK/T 1–0, +/YRG 1–0, ZK/T 1–0, +/YZG 1–0 (+/G 1–0?)

+/+ × MWG/YRK

1969 ($\frac{1072}{1065}$) 1–4, 3–0

1970 ($\frac{1282}{1065}$) 0–5, 3–5, +/MRK 0–1
_____
1–9, 6–5, +/MRK 0–1

+/T × MWG/YRK

1971 ($\frac{1287}{1065}$) 11– 7, 8– 6, 8– 6, 8– 2,   YRG/T 1–0

1972 ($\frac{1067}{1065}$) 2– 0, 4– 3, 5– 6, 0– 4, +/YWG 1–0

1973 ($\frac{1060}{1065}$) 4– 0, 6– 3, 6– 4, 3– 6,   +/YRG 1–0

1974 ($\frac{1826}{1068}$) 7–16, 17–10, 15–10, 12–13,   MRK/T 0–1
_____
24–23, 35–22, 34–26, 23–25, +/YWG 1–0, +/YRG 1–0, MRK/T 0–1, YRG/T 1–0

1975 ($\frac{1105}{1674}$) +/OT × MWG/YRK
0–1, 0–0, 0–1, 0–0

+/+ × MZT/MTG

1976 ($\frac{1054}{564}$) 38–36, 30–38

1977 ($\frac{1082}{564}$) 32–47, 56–45
_____
70–83, 86–83

+/R × MZT/MTG

1978 ($\frac{952}{564}$) 30–14, 22–25, 27–13, 19–24

1979 ($\frac{954}{564}$) 9–18, 17–18, 16–12, 7–15

1980 ($\frac{954}{564}$) 20–12, 16–13, 17–21, 8–14
_____
59–44, 55–56, 60–46, 34–53

1981 ($\frac{952}{566}$) +/R × MZK/MTG
17–21, 23–18, 19–12, 14–14

1982 ($\frac{1143}{566}$) +/Y × MZK/MTG
     28–26, 28–25, 36–27, 15–21

     +/+ × MTG/YZK
1983 (1113) 5– 7, 10–10, +/MK 0–1
1984 (1113) 11– 8, 12–13,   1–2, +/YZTG 0–2, +/YTG 0–1, +/MZK 0–1
1985 ($\frac{1113}{1273}$) 5–12, 18– 9,   .   1–0
     ──
     21–27, 40–32, +/MK 1–3, +/YZTG 0–2, +/YTG 0–1, +/MZK 1–1

     +/R × MTG/YZK
1986 ($\frac{1122}{1113}$) 21–14, 16–12, 16– 7, 14– 9, +/MK 1–0, +/MZK 1–1, YZTG/R 1–0, MK/R 1–2,
1987 ($\frac{1122}{1113}$) 16–17, 16–19, 18–15, 17–16,   1–3,   0–1,   2–0,
1988 ($\frac{1122}{1113}$) 7– 8, 6– 7, 7– 4, 2– 4,
     ──
     44–39, 38–38, 41–26, 33–29, +/MK 2–3, +/MZK 1–2, YZTG/R 1–0, MK/R 3–2,

            1986
            1987 +/YZTG 0–2, YTG/R 1–0, MZK/R 1–1, +/YTG 1–0, R/TG 0–1
            1988   0–1
            ──
            +/YZTG 0–3, YTG/R 1–0, MZK/R 1–1, +/YTG 1–0, R/TG 0–1

     B/R × MTG/YZK
1989 ($\frac{956}{1113}$) 15–18, 17–14, 17–12, 18–11, B/MK 0–1, MZK/R 1–0, YTG/R 1–0, B/YZTG 0–1,
1990 ($\frac{956}{1113}$) 12–17, 15– 9, 17–12, 16–12,   0–1,
     ──
     27–35, 32–23, 34–24, 34–23, B/MK 0–1, MZK/R 1–0, YTG/R 1–1, B/YZTG 0–1,

            1989
            1990 MK/R 2–1, B/MZK 0–1, YZTG/R 1–0
            ──
            MK/R 2–1, B/MZK 0–1, YZTG/R 1–0

BISEXUAL AND PARTHENOGENETIC.

(Explanation in text.)

5000 $\left(\begin{smallmatrix}5007\\5119\end{smallmatrix}\right)$ T/K × Y/Y
0–1, 1–0, Y/Y 0–1

5001 $\left(\begin{smallmatrix}51\\5376\end{smallmatrix}\right)$ M/G × R/R
7–8, 4–13, R/R 0–2

5002 $\left(\begin{smallmatrix}1276\\5130\end{smallmatrix}\right)$ YK/G × R/R
5–9, 3–4, R/R 0–1

5003 $\left(\begin{smallmatrix}1310\\96\end{smallmatrix}\right)$ YK/W × R/R
16–19, 21–10, R/R 0–1

5004 $\left(\begin{smallmatrix}247\\5066\end{smallmatrix}\right)$ YZ/K × R/R
4–5, 4–4, R/R 0–5

5005 $\left(\begin{smallmatrix}\text{g.}\ \{\begin{smallmatrix}\text{H. ('14)}\\\text{g. }462\\624\end{smallmatrix}\}\end{smallmatrix}\right)$ M/YK × T/T
28–13, 21–24, T/T 0–1

5006 $\left(\begin{smallmatrix}71\\397\end{smallmatrix}\right)$ Y/Y × T/T
26–35, T/T 0–16

5007 $\left(\begin{smallmatrix}562\\5310\end{smallmatrix}\right)$ M/T × K/K
10–7, 8–3, K/K 1–5

5008 $\left(\begin{smallmatrix}537\\5207\end{smallmatrix}\right)$ M/R × K/K
29–16, 27–23, K/K 1–2

5009 $\left(\begin{smallmatrix}256\\5270\end{smallmatrix}\right)$ YK/W × K/K
4–4, 5–2, K/K 0–6 .

T/T × K/K
5010 $\left(\begin{smallmatrix}525\\5391\end{smallmatrix}\right)$ 10– 4, K/K 0–15
5011 $\left(\begin{smallmatrix}159\\5137\end{smallmatrix}\right)$ 2– 7,   0–21
————————————
12–11, K/K 0–36

Y/R × K/K
5012 $\left(\begin{smallmatrix}1183\\5300\end{smallmatrix}\right)$ 9–13, 7–12, K/K 0–32
5013 $\left(\begin{smallmatrix}500\\5294\end{smallmatrix}\right)$ 0– 1, 0– 0,   0– 1
————————————
9–14, 7–12, K/K 0–33

5014 $\left(\begin{smallmatrix}786\\539\end{smallmatrix}\right)$ YT/O × K/K
13–6, 10–8, K/K 0–17

5015 $\left(\begin{smallmatrix}64\\5236\end{smallmatrix}\right)$ Y/W × K/K
3–3, 3–1, K/K 0–2

$Y/Y \times K/K$

5016 $\left(\substack{568\\5300}\right)$ 20–28, K/K 0–10

5017 $\left(\substack{77\\5069}\right)$ 0– 1,   0– 3
_____
20–29, K/K 0–13

5018 $\left(\substack{246\\5279}\right)$ YZ/O $\times$ K/K
8–2, 10–3, K/K 0–1

$YZ/YZ \times K/K$

5019 $\left(\substack{570\\5312}\right)$ 4– 4, K/K 0– 1

5020 $\left(\substack{570\\5138}\right)$ 8– 8,   0–15
_____
12–12, K/K 0–16

5021 $\left(\substack{543}\right)$ MR/MR $\times$ K/K
1–2, K/K 0–26

5022 $\left(\substack{103\\5137}\right)$ MR/R $\times$ K/K
7–7, 6–6, K/K 0–1

5023 $\left(\substack{540\\443}\right)$ K/K $\times$ YZ/YZ
44–48, YZ/YZ 0–3

5024 $\left(\substack{704\\5385}\right)$ K/T $\times$ YZ/YZ
3–3, 7–4, YZ/YZ 0–9

5025 $\left(\substack{1128\\5410}\right)$ YO/T $\times$ WG/WG
4–4, 3–4, WG/WG 0–1

5026 $\left(\substack{807}\right)$ MZK/T $\times$ +/R
3–5, 11–13, 7–9, 6–7, R/R 0–1

5027 $\left(\substack{5327\\655}\right)$ MRK/MRK $\times$ +/Z   (Testing Parth. ♂)
6–3, 6–2, +/+ 0–6, Z/Z 0–5

5028 $\left(_{\text{g.}}\left\{\substack{644\\1362\\\text{H. ('18)}}\right\}\right)$ YZ/RK $\times$ +/T
10–13, 7–13, 16–17, 9–15, T/T 0–1

5029 $\left(\substack{517\\\text{U.('18)}}\right)$ K/K $\times$ Y/R
9–9, 7–5, R/R 0–3

5030 $\left(\substack{1257\\1204}\right)$ R/T $\times$ Y/W
21–16, 20–7, 15–12, 24–18, +/R 1–1, YW/R 2–1,
                +/T 1–0, YW/T 1–2, W/W 0–1

5031 $\left(\substack{1715\\1228}\right)$ RK/T $\times$ +/YW
6–9, 8–11, 15–8, 7–8, RK/W 0–1, W/T 0–1, (R/K 1–0?)

5032 ($\frac{446}{216}$) Z/Z × Y/K
       1–0, 1–0, YK/Z 1–0, Y/Y 0–5, K/K 0–2

5033 ($\frac{748}{1256}$) YK/T × R/Z
       14–17, 17–20, 9–15, 17–10, R/R 0–1, Z/Z 0–1

5034 ($\frac{393}{126}$) M/G × R/T
       24–19, 20–20, 20–17, 22–22, M/RT 0–1,
                     +/+ 0–1, R/R 0–7, T/T 0–1

5035 ($\frac{393}{871}$) M/M × R/K
       0–7, 0–2, R/R 0–1

5036 ($\frac{644}{916}$) YZ/YZ (2) × R/K (3)
       31–23, 24–28, +/YZ 1–1, R/R 0–5, K/K 0–7

5037 (744) Y/T × W/K
       10–9, 13–11, 8–8, 10–8, W/W 0–1

5038 ($\frac{U.('19)}{814}$) YZ/R × T/K
       1–3, 9–3, 5–6, 9–13, T/T 0–1, K/K 0–3

5039 ($\frac{400}{543}$) M/M × MR/K
       3–8, 5–5, R/R 0–1

5040 ($\frac{356}{978}$) +/K × MZ/R
       +/MZ, MZ/MZ 6–14, 11–17, 7–5, 6–11, +/Z 5–1,
                     +/MR 2–4, Z/K 0–4

5041 ($\frac{1359}{1239}$) RK/G × YW/T
       25–29, 23–20, 28–25, 19–17, YT/RK 0–1, W/G 0–1,
                     YW/YW 0–1

5042 ($\frac{499}{916}$) R/K × YZ/T
       7–7, 6–10, 9–7, 9–11, R/Z 1–1, YT/R 0–1, Z/K 0–1,
                     YT/K 1–0, T/T 0–1

5043 (5020) YZ/K × YZ/K
       10–29, 32–40, 15–19, YK/K 1–5, Z/K 2–2, Z/Z 0–3

5044 ($\frac{477}{5019}$) O/O × YZ/K
       4–6, 4–4, YZ/YZ 0–1

5045 ($\frac{497}{5019}$) R/R × YZ/K
       8–11, 10–6, YK/R 1–0, R/Z 0–1, YZ/YZ 0–1, K/K 0–2,
                     YK/YK 0–1

5046 ($\frac{1258}{226}$) R/T × YZ/K
       1–2, 1–0, 3–3, 0–0, K/K 0–4, YZ/YZ 0–1

5047 ($^{1046}_{1256}$) MRK/W × YT/R
        9–16, 15–15, 17–10, 16–9, W/T 0–1, R/R 0–4, YT/YT 0–2

5048 ($^{126}_{256}$) R/T × YK/W
        32–22, 22–20, 21–22, 22–24, R/K 4–1, YW/R 0–4,
                K/T 1–2, YW/T 0–1, YWK/T 0–1, W/W 0–1

5049 ($^{451}_{812}$) T/T × YK/R
        4–5, 7–9, K/T 1–0, YK/YK 0–17, R/R 0–21,
                   RK/RK 0–1, K/K 0–1

5050 ($^{612}_{812}$) R/R × YK/T
        10–9, 6–7, R/K 2–1, YT/R 3–1, YK/YK 0–1

5051 ($^{1224}_{1922}$) O/T × MRK/W
        0–4, 2–3, 3–1, 0–4, W/W 0–1

5052 ($^{310}_{838}$) W/G × MT/RK
        3–5, 4–7, 3–1, 5–2, MRK/G 3–3, W/T 1–1, RK/RK 0–2

5053 ($^{281}_{5415}$) B/G × MRK/MRK
        5–1, 6–3, MRK/MRK 0–1

5054 ($^{1327}_{1809}$) B/O × YWK/R
        22–28, 23–33, 29–33, 15–21, B/YR 1–0, B/RK 1–0,
                YW/O 1–0, O/WK 1–0, YR/O 1–0, O/RK 0–1,
                YWK/YWK 0–1

PARTHENOGENETIC.   (Exposed to Males.)

Although the females were exposed to the males (in parenthesis) their eggs were not fertilized.

$+/+$ ♀ ♀
5055 (748   ) $(+/+ \times)$ $+/+$ 0–1
5056 (748   ) $(+/+ \times)$ 0–5
                               $\overline{0–6}$

5057 (5335   ) $(K/K \times)$ M/M
                               M/M 0–4

Y/Y ♀ ♀
5058 (5118   ) $(Z/K \times)$ Y/Y 0–8
5059 (5345   ) $(Z/K \times)$ 0– 5
5060 (5345   ) $(T/K \times)$ 0–22
5061 (5120   ) $(K/K \times)$ 0– 2
5062 (5121   ) $(RK/T \times)$ 0– 4
                               $\overline{\text{Y/Y } 0–41}$

R/R ♀ ♀
5063 (g. 386) $(M/K \times)$ R/R 0–16
5064 (5127   ) $(M/K \times)$ 0– 2
5065 (5063   ) $(Y/Y \times)$ 0– 7
5066 (499   ) $(K/K \times)$ 0– 1
                               $\overline{\text{R/R } 0–26}$

T/T ♀ ♀
5067 (5135   ) $(YZ/K \times)$ T/T 0–6
5068 (5135   ) $(M/K \times)$ 0–2
                               $\overline{\text{T/T } 0–8}$

K/K ♀ ♀
5069 (5299   ) $(M/T \times)$ K/K 0– 4
5070 (5137   ) $(Y/R \times)$ 0–22
5071 (5366   ) $(Y/Y \times)$ 0– 2
5072 (5381   ) $((Y/Z \times)$ 0– 7
5073 (5232   ) $(R/T \times)$ 0– 3
5074 (5261   ) $(+/+ \times)$ 0– 9
5075 (5270   ) $(Y/Z \times)$ 0–10
                               $\overline{\text{K/K } 0–57}$

5076 (5373   ) $(K/K \times)$ MR/MR ♀
                               MR/MR 0–2

YZ/YZ ♀ ♀

5077 (5382) (K/K ✕)   YZ/YZ   0–29–1
5078 (5385) (RK/T ✕)   0– 2
                        YZ/YZ   0–31–1

YK/YK ♀ ♀

5079 (629) (Y/Y ✕)   YK/YK   0– 6
5080 (5079) (Y/Y ✕)   0–10
5081 (629) (YK/YK ✕)   0–14
                      YK/YK   0–30

5082 (43) (R/K ✕)   M/G ♀
              M/M 0–3, G/G 0–5

5083 (871) (Y/K ✕)   R/W ♀
              R/R 0–1, W/W 0–1

5084 (g. $\{^{916}_{5348}$) (YZ/T ✕)   R/K ♀
              R/R 0–2, +/+ 0–1

T/K ♀ ♀

5085 (5011) (Y/Y ✕)   T/T 0– 9, K/K 0– 8
5086 (784) (O/O ✕)   0– 1,   0– 3
5087 (U.('18)) (Y/R ✕)   0– 3,   0– 1
                     T/T 0–13, K/K 0–12

5088 (780) (Y/W ✕)   K/G ♀
              K/K 0–11, G/G 0–16

5089 (903) (+/YO ✕)   B/ZK ♀
              B/B 0–3, ZK/ZK 0–4

YZ/R ♀ ♀

5090 (5045) (K/K ✕)   YZ/YZ 0–3, R/R 0–2
5091 (124) (T/K ✕)   0–3,   0–1
                     YZ/YZ 0–6, R/R 0–3

5092 (614) (O/O ✕)   YK/R ♀
              YK/YK 0–0–2, R/R 0–3, K/K 0–1

5093 (979) (Z/G ✕)   O/RK ♀
              O/O 0–3, RK/RK 0–3

5094 (1521) (+/YO ✕)   RK/T ♀
              RK/RK 0–4, T/T 0–2

5095 (1336) (Y/R ×) ZK/T ♀
       ZK/ZK 0–3, T/T 0–1

5096 (1359) (+/T ×) MW/RK ♀
       MW/MW 0–0, RK/RK 0–2

5097 (679) (O/T ×) MZ/RK ♀
       MZ/MZ 0–1, RK/RK 0–3

5098 (1045) (O/T ×) MRK/Z ♀
       MRK/MRK 0–1 .

         YRK/W ♀ ♀
5099 (139) (O/T ×) YRK/YRK 0–2, W/W 0–0
5100 (1772) (+/O ×)   0–6   0–5
         YRK/YRK 0–8, W/W 0–5

         YZ/RK ♀ ♀
5101 (644) (T/G ×) YZ/YZ 1–1, RK/RK 0–7
5102 (644) (O/T ×)   0–0,   0–2
         YZ/YZ 1–1, RK/RK 0–9

PARTHENOGENETIC.

(Explanation in text.)

+/+ ♀♀
5103 (5027)   +/+ 0-2 (2)
5104 (5027)   0-5 (2)
        0-7

M/M ♀♀
5105 (5338)   M/M 0- 1
5106 (5339)   0- 1
5107 (5337)   0- 7
5108 (5106)   0- 4
5109 (5107)   0- 12 (2)
5110 (5107)   0- 15 (3)
5111 (5329)   0- 40
5112 (5334)   0- 23
5113 (5108)   0- 18
5114 (40)   0- 2 (3)
5115 (5057)   0- 2 (g)
5116 (5114)   0- 1
5117 (5116)   0- 1
      M/M 0-127

Y/Y ♀♀
5118 (77)   Y/Y 0- 1
5119 (5343)   0- 2
5120 (5343)   0- 4
5121 (5340)   0- 8
5122 (5120)   0- 3
      Y/Y 0-18

R/R ♀♀
5123 (595)   R/R 0- 1
5124 (494)   0- 61 (2)
5125 (5357)   0- 7
5126 (5063)   0- 24 (2)
5127 (5329)   0- 35
5128 (5329)   0- 1
5129 (5329)   0- 4
5130 (5129)   0- 20
      R/R 0-153

5131 (5063) R/R ♀♀ (3)
      R/R 2-24

Z/Z ♀♀
5132 (5381)   Z/Z 0-4
5133 (5132)   0-4 (2)
      Z/Z 0-8

T/T ♀♀
5134 (5366)   T/T 0- 4
5135 (5366)   0- 9
      T/T 0-13

5136 (g. 177) (Ptx. ×) G/G ♀
      G/G 0-9-5

K/K ♀♀
5137 (5300)   K/K 0- 68
5138 (5300)   0- 41
5139 (5307)   0- 6 (g)
5140 (5299)   0- 22 (2)
5141 (5311)   0- 3 (g)
5142 (5301)   0- 1
5143 (5305)   0- 5
5144 (5137)   0- 3
5145 (5137)   0- 6
5146 (5137)   0- 30
5147 (5140)   0- 7
5148 (5140)   0- 1
5149 (5140)   0- 3
5150 (5140)   0- 7
5151 (5069)   0- 2
5152 (5137)   0- 10
5153 (5137)   0- 5
5154 (5137)   0- 16
5155 (5137)   0- 21
5156 (5137)   0- 8
5157 (5137)   0- 9
5158 (5137)   0- 18
5159 (5138)   0- 40

K/K ♀♀ (cont.)

5160	(5012)	K/K	0–	3	
5161	(5137)		0–	82	(g)
5162	(5012)		0–	47	(g)
5163	(5137)		0–	43	(g)
5164	(5138)		0–	29	(g)
5165	(5137)		0–	21	(g)
5166	(5305)		0–	21	(g)
5167	(5311)		0–	4	(g)
5168	(5305)		0–	5	(g)
5169	(5138)		0–	4	(g)
5170	(5169)		0–	19	(g)
5171	(5338)		0–	1	
5172	(5338)		0–	1	
5173	(5309)		0–	3	(g)
5174	(5306)		0–	12	(g)
5175	(5142)		0–	12	
5176	(5310)		0–	8	
5177	(5343)		0–	1	
5178	(5342)		0–	19	
5179	(5156)		0–	5	
5180	(5156)		0–	25	
5181	(5156)		0–	31	
5182	(5156)		0–	3	
5183	(5156)		0–	9	(2)
5184	(5343)		0–	2	
5185	(5343)		0–	2	
5186	(5343)		0–	19	
5187	(5161)		0–	9	
5188	(5161)		0–	14	
5189	(5161)		0–	1	(2)
5190	(5167)		0–	14	(2)
5191	(5167)		0–	24	(2)
5192	(5157)		0–	27	
5193	(5157)		0–	7	
5194	(5161)		0–	1	(2)
5195	(5158)		0–	10	(3)
5196	(5017)		0–	20	
5197	(5294)		0–	28	(2)
5198	(5294)		0–	3	(2)
5199	(5294)		0–	20	
5200	(5294)		0–	5	(2)

K/K ♀♀ (cont.)

5201	(5154)	K/K	0–	49	(g)
5202	(5343)		0–	46	
5203	(5158)		0–	31	
5204	(5163)		0–	55	(g)
5205	(5165)		0–	39	
5206	(5165)		0–	35	(g)
5207	(5165)		0–	86	(2)
5208	(5165)		0–	21	(g)
5209	(5017)		0–	2	
5210	(5146)		0–	12	(g)
5211	(5146)		0–	95	(g)
5212	(5161)		0–	25	(g)
5213	(5159)		0–	25	
5214	(5159)		0–	78	
5215	(5159)		0–	14	
5216	(5159)		0–	8	
5217	(5163)		0–	27	(g)
5218	(5164)		0–	30	(g)
5219	(5070)		0–	207	(g)
5220	(5345)		0–	18	
5221	(5011)		0–	37	
5222	(5011)		0–	55	(g)
5223	(5152)		0–	58	(g)
5224	(5166)		0–	74	(g)
5225	(5011)		0–	25	
5226	(5168)		0–	13	(g)
5227	(5139)		0–	5	(g)
5228	(5176)		0–	59	
5229	(5150)		0–	82	(g)
5230	(5159)		0–	32	(2)
5231	(5204)		0–	44	
5232	(5204)		0–	34	
5233	(5204)		0–	36	
5234	(5207)		0–	61	
5235	(5207)		0–	4	
5236	(5382)		0–	16	
5237	(5345)		0–	18	(2)
5238	(5174)		0–	70	(g)
5239	(5346)		0–	26	
5240	(5344)		0–	7	(2)
5241	(5223)		0–	29	(3)

		K/K ♀ ♀ (cont.)				K/K ♀ ♀ (cont.)
5242 (	5223	) K/K 0– 5 (3)	5283 (	5265	) K/K 0– 9 (2)
5243 (	5382	) 0– 7 (2)	5284 (	5074	) 0– 4
5244 (	5382	) 0– 26 (2)	5285 (	5267	) 0– 49
5245 (	5366	) 0– 64	5286 (	5075	) 0– 6 (3)
5246 (	5366	) 0– 9	5287 (	5267	) 0– 17 (g)
5247 (	5219	) 0– 31 (3)	5288 (	5285	) 0– 4
5248 (	5219	) 0– 18 (3)	5289 (	5285	) 0– 1 (2)
5249 (	5201	) 0– 23	5290 (	5288	) 0– 4
5250 (	5177	) 0– 2	5291 (	5288	) 0– 5
5251 (	5179	) 0– 28	5292 (	5288	) 0– 3
5252 (	5179	) 0– 44 (3)	5293 (	5288	) 0– 3

K/K 0–3170

5253 (	5199	) 0– 3			K/K ♀ ♀
5254 (	5374	) 0– 1 (3)			
5255 (	5229	) 0– 3	5294 (	5138	) K/K 1– 14
5256 (	5211	) 0– 14 (g)	5295 (	5145	) 2–212 (4)
5257 (	5296 (	0– 4 (4)	5296 (	5175	) 1– 31 (g)
5258 (	5232	) 0– 9 (3)	5297 (	5176	) 1– 17 (2)

K/K 5–274

5259 (	5241	) 0– 2			
5260 (	5231	) 0– 8			(Ptx. ×) K/K ♀ ♀
5261 (	5245	) 0– 5 (4)			
5262 (	5245	) 0– 1 (4)	5298 (	543	) K/K 0– 10
5263 (	5221	) 0– 11 (g)	5299 (	5298	) 0– 14
5264 (	5245	) 0– 7 (g)	5300 (	5298	) 0– 10
5265 (	5254	) 0– 7	5301 (	5298	) 0– 7
5266 (	5255	) 0– 2 (2)	5302 (	5300	) 0– 4
5267 (	5264	) 0– 4	5303 (	5300	) 0– 7
5268 (	5261	) 0– 7	5304 (	5301	) 0– 7
5269 (	5261	) 0– 5	5305 (	5300	) 0– 49
5270 (	5264	) 0– 6	5306 (	5300	) 0– 4
5271 (	5264	) 0– 2 (2)	5307 (	5301	) 0– 8
5272 (	5247	) 0– 4 (g)	5308 (	5301	) 0– 12
5273 (	5072	) 0– 9 (g)	5309 (	5299	) 0– 8
5274 (	5232	) 0– 4 (g)	5310 (	5299	) 0– 2
5275 (	5232	) 0– 2 (g)	5311 (	5299	) 0– 9
5276 (	5234	) 0– 5 (g)	5312 (	5299	) 0– 1
5277 (	5249	) 0– 17 (g)	5313 (	5301	) 0– 1
5278 (	499	) 0– 17 (g)	5314 (	5299	) 0– 22
5279 (	499	) 0– 3 (g)			

K/K 0–170

5280 (	5258	) 0– 7 (g)
5281 (	5279	) 0– 4
5282 (	5270	) 0– 3

MR/MR ♀
5315 (5329)   MR/MR 0-16
5316 (543)   (Ptx. ×) MR/MR ♀
               MR/MR 0-1

5317 (5340) YR/YR ♀
               YR/YR 0-9

YZ/YZ ♀ ♀
5318 (5382)   YZ/YZ 0-18
5319 (5381)   0- 7
5320 (581)   0-19 (2)
5321 (5381)   0- 8
5322 (5381)   0- 7
5323 (5320)   0- 5 (g)
               YZ/YZ 0-64

RK/RK ♀ ♀
5324 (g. 640)   RK/RK 0-1
5325 (5406)   0-1
               RK/RK 0-2

5326 (5397) MRK/MRK ♀
               MRK/MRK 0-11

5327 (5415) MRK/MRK ♀ ♀ (2)
               MRK/MRK 1-1

5328 (743) +/W ♀
               +/+ 0-1, W/W 0-1

5329 (g. 386) M/R ♀
               M/M 0-11, R/R 0-4, +/+ 0-2, MR/MR 0-2

5330 (128) M/W ♀
               M/M 0-1, W/W 0-1

5331 (393) M/Z ♀
               M/M 0-1

5332 (51) M/G ♀ ♀ (2)
               M/M 0-1, G/G 0-2

M/K ♀ ♀
5333 (196)   M/M 0-16, K/K 0-15,   +/+ 0-0-1, MK/MK 0-1 (2)
5334 (197)   0- 3,   0- 1,   0-1
5335 (197)   0- 5,   0- 5 (2)
5336 (5007)   0-12,   0-13 (3)
               M/M 0-36, K/K 0-34,   +/+ 0-0-1, MK/MK 0-2

(Ptx. ×) M/K ♀ ♀
5337 (196)   M/M 0- 5, K/K 0- 2
5338 (196)   0-15,   0- 9
5339 (196)   0- 2,   0- 0
               M/M 0-22, K/K 0-11

5340 (U. ('18)) Y/R ♀
               Y/Y 0-5, R/R 0-8, YR/YR 0-2

5341 (743) Y/W ♀ ♀ (2)
    Y/Y 0–1

    Y/K ♀ ♀
5342 (5012)   Y/Y 0– 2, K/K 0– 1, +/+ 0–1
5343 (5012)   0– 8,   0–11,   YK/YK 0–2
5344 (5012)   0– 2,   0– 6
5345 (215)   0– 3,   0– 3 (2)
5346 (215)   0– 0,   0– 1 (2)
5347 (5017)   0– 9,   0– 6
5348 (5013)   0– 3,   0– 3,   0–1 (Y/K 0–1?)
    Y/Y 0–27, K/K 0–31, +/+ 0–1, YK/YK 0–3 (Y/K 0–1?)

    O/T ♀ ♀
5349 (784)   O/O 0–19, T/T 0–10
5350 (784)   0–23,   0–13
5351 (U. ('18))   0– 2,   0– 1 (2)
    O/O 0–44, T/T 0–24

5352 (1182) (Ptx. ×) O/T
    O/O 0–4, T/T 0–3

5353 (216) O/K ♀
    O/O 0–18, K/K 0–13

    (Ptx. ×) O/G
5354 (177)   O/O 0-0-4, G/G 0-2-10 (2)
5355 (373)   0-0,   0–1
    O/O 0-0-4, G/G 0-3-10

    R/K ♀ ♀
5356 (207)   R/R 0–1, K/K 0–1
5357 (g. 207)   0–1,   0–0
5358 (5045)   0–3,   0–7
    R/R 0–5, K/K 0-8

    W/K ♀ ♀
5359 (512)   W/W 0–3, K/K 0–1
5360 (211)   0–1,   0–1
5361 (1310)   0–5,   0–4
    W/W 0–9, K/K 0-6

5362 (892) Z/T ♀
    Z/Z 0–5, T/T 0–1 (2)

5363 (695) Z/G ♀
            Z/Z 0–6, G/G 0–2

          Z/K ♀ ♀
5364 (908)   Z/Z 0–1, K/K 0–0 (2)
5365 (202)   0–0,   0–1 (2)
            ──────────────────────
            Z/Z 0–1, K/K 0–1

          T/K ♀ ♀
5366 (5011)   T/T 0–31, K/K 0–30   (TK/TK 0–5?)
5367 (784)   0– 6,   0– 8 (2)
5368 (233)   0– 2,   0– 0 (2)
5369 (5007)   0– 2,   0– 1   (0–0–1)
5370 (1279)   0– 2,   0– 2 (2)
            ──────────────────────────────────────
            T/T 0–43, K/K 0–41,   (TK/TK 0–5–1?)

5371 (936) HZ/R ♀ ♀ (3)
            HZ/HZ 0–1

5372 (903) B/ZK ♀ ♀ (2)
            B/B 0–3, ZK/ZK 0–3, BZK/BZK 0–1, +/+ 0–1

5373 (5022) MR/K ♀
            MR/MR 0–9, K/K 0–9

5374 (5022) MR/K ♀ ♀ and K/K ♀ (g)
            MR/MR 0–8, K/K 0–19

5375 (49) M/RK ♀ ♀ (2)
            M/M 0–2, RK/RK 0–2, +/+ 0–1

          YZ/R ♀ ♀
5376 (5045)   YZ/YZ 0– 7, R/R 0–11
5377 (247)   0– 8,   0– 8
5378 (123)   0– 6,   0– 7
            ──────────────────────
            YZ/YZ 0–21, R/R 0–26

5379 (800) YK/R ♀ ♀ (2)
            YK/YK 0–5, R/R C–7, YR/YR 0–1

5380 (1310) YK/W ♀ ♀ (2)
            YK/YK 0–0, W/W C–3, YW/YW 0–1

YZ/K ♀ ♀
5381 (5019)   YZ/YZ 0–11, K/K 0– 3, Z/Z 0–1
5382 (5019)   0– 9,   0–18,   0–1, YK/YK 0–1
5383 (581) ·   0– 6,   0– 4,   0–1,   0–1
5384 (1249)   0– 2
5385 (226)   0– 2,   0– 0,   0–1
          YZ/YZ 0–30, K/K 0–25, Z/Z 0–4, YK/YK 0–2

5386 (246) YZ/O ♀
          YZ/YZ 0–1

5387 (1299) YT/O ♀
          YT/YT 0–1–1, O/O 0–1

5388 (g. 1263) YZ/G ♀
          YZ/YZ 0–2

5389 (U. ('19)) R/ZK ♀ ♀ (2)
          R/R 0–2, ZK/ZK 0–1

HZ/RK ♀ ♀
5390 (43)   HZ/HZ 0–1, RK/RK 0–2, HRK/HRK 0–1 (3)
5391 (843)   0–1,   0–3   (3)
          HZ/HZ 0–2, RK/RK 0–5, HRK/HRK 0–1

5392 (1380) MR/WG ♀
          MR/MR 0–4, WG/WG 0–2

5393 (1359) MW/RK ♀ ♀ (2)
          MW/MW 0–4, RK/RK 0–1

5394 (309) MRK/W ♀
          MRK/MRK 0–1

5395 (888) MR/ZK ♀
          ZK/ZK 0–1

5396 (5027) MRK/Z ♀
          MRK/MRK 0–4, Z/Z 0–3

MRK/T ♀ ♀
5397 (1049)   MRK/MRK 0– 2, T/T 0– 1
5398 (269)   0– 1,   0– 0
5399 (271)   0–13,   0–13, MT/MT 0–2, RK/RK 0–3 (2)
          MRK/MRK 0–16, T/T 0–14, MT/MT 0–2, RK/RK 0–3

5400 (1114) MTG/W ♀ ♀ (2)
          MTG/MTG 0–1

5401 (1238) YWK/O ♀
               YWK/YWK 0–2, O/O 0–2

5402 (1245) YWK/G ♀
               YWK/YWK 0–2, G/G 0–1

5403 (1779) YRK/W ♀
               W/W 0–1

           YZ/RK ♀ ♀
5404 (644)   YZ/YZ 0–7, RK/RK 0–5 (2)
5405 (1266)   0–2,   0–2
           YZ/YZ 0–9, RK/RK 0–7

           YK/RK ♀ ♀
5406 (640)   YK/YK 0–2, RK/RK 0–6
5407 (gs. 640)   0–0,   0–0, YRK/YRK 0–1
           YK/YK 0–2, RK/RK 0–6, YRK/YRK 0–1

5408 (1145) MRK/OT ♀ ♀ (2)
               RK/RK 0–1, MOT/MOT 0–1

5409 (858) MRK/WT ♀
               MRK/MRK 0–3, WT/WT 0–4

           MRK/WG ♀ ♀
5410 (271)   MRK/MRK 0– 1, WG/WG 0– 4, MRG/MRG 0–1
5411 (271)   0– 0,   0– 1
5412 (271)   0–16,   0–20,
5413 (271)   0– 2,   0– 3,   0–1
5414 (1332)   0– 4,   0– 2,
           MRK/MRK 0–23, WG/WG 0–30, MRG/MRG 0–2,

                              5410
                              5411
                              5412 MWG/MWG 0–3 (2)
                              5413
                              5414
                                   MWG/MWG 0–3

5415 (271) MRK/WG ♀
               MRK/MRK 1–3, WG/WG 0–1

```
                    MZT/RK ♀ ♀
5416 ( 1637 )      MZT/MZT 0–1
5417 ( 1081 )               0–2, RK/RK 0–4 (2)
                   ─────────────────────────────
                   MZT/MZT 0–3, RK/RK 0–4 (2)

5418 ( 1081 ) MZT/RK ♀ ♀ (2)
               MZT/MZT 0–5, RK/RK 1–2

5419 ( 5396 ) MRK/MRK ♀ ♀ (2)
               MRK/MRK 0–6
```

Table V is for use in observing further breeding of the progeny of the matings.

When it is desired to observe the further breeding of the progeny of any mating, follow the underscored numbers along the columns of this table. The numbers under the one selected are of the matings, one or both parents of which came from this underscored number. If the number is not among the ones underscored, none of its progeny were bred further.

C, after a number, indicates that other matings were made from that one, but too late to be included in the paper. The term "et al.", under an underscored number, shows that there were other offspring from that mating which have been bred since the data were compiled.

TABLE V.—Showing the further breeding of the progeny of the matings.

(Explanation in text.)

Houston, Tex.			g.	816	'18	g.	439	'11
	No.	Yr.	g.	888	'18	g.	440	'11
	7	'18	g.	926	'16	g.	458	'11
g.	16	'11	g.	963	'14			
	50	'18	g.	1021	'18	*Sugarland, Tex.*		
g.	130	'16	g.	1043	'18		346	'21
gs.	192	'14	g.	1098	'18		354	'21
	220	'18	g.	1185	'18	gs.	368	'20
	281	'21		1307	'18	gs.	369	'20
	286	'16		1309	'14		889	'21
	288	'18	g.	1311	'18		1104	'21
	289	'14	gs.	1356	'16		1347	'21
	290	'18	g.	1370	'18			
	291	'18		1371	'18	*Source Unknown.*		
g.	297	'18	g.	1394	'18		223	'19
	306	'18	g.	1515	'18	g.	439	'11
	307	'18	g.	1516	'18	g.	440	'11
g.	331	'18	g.	1518	'18	g.	559	'16
g.	334	'16	g.	1713	'18		1091	'20
g.	340	'18	g.	1744	'18		1111	'21
g.	352	'14	g.	1748	'18	g.	1452	'20
g.	360	'16	g.	1749	'18	g.	1453	'20
g.	361	'16	g.	1750	'18	g.	1454	'20
g.	362	'16		1821	'22	g.	1472	'20
g.	391	'16	g.	5005	'14		1698	'21
g.	411	'14	g.	5028	'18		5029	'18
g.	438	'13					5038	'19
g.	443	'16	*Tamos, Mex.*				5087	'18
g.	469	'14	g.	16	'11		5340	'18
g.	522	'18	g.	17	'11		5351	'18
g.	535	'14	g.	21	'11		5389	'19
g.	536	'14	g.	42	'11			
g.	553	'16	g.	54	'11			
g.	559	'16	g.	63	'11			
g.	630	'16	g.	92	'11			
g.	634	'16		287	'11			
g.	655	'21		292	'11			
	721	'16	g.	323	'11			
g.	722	'16	g.	341	'11			
	781	'16	g.	405	'11			

Column 1

$\frac{2}{3}$
1539
1636
1841
1870

$\frac{4}{981}$
1529
1532
1533
1910
1911
1939
1954

$\frac{5}{1863}$

$\frac{7}{1250}$
1392

$\frac{10}{1246}$

$\frac{11}{1013}$
1237
1835

$\frac{12}{1204}$
1310

$\frac{13}{999}$
1031

$\frac{14}{338}$
445

$\frac{15}{650}$
937
1469

Column 2

$\frac{16}{17}$

$\frac{17}{18}$

$\frac{18}{19}$

$\frac{19}{779}$

$\frac{21}{375}$

$\frac{23}{410}$

$\frac{24}{716}$

$\frac{25}{26}$

$\frac{26}{28}$
29

$\frac{29}{30}$
43
98

$\frac{30}{32}$

$\frac{32}{33}$

$\frac{33}{34}$
35
560

$\frac{35}{36}$
37
38

Column 3

$\frac{36}{40}$

$\frac{37}{39}$

$\frac{40}{41}$
48
5114

$\frac{42}{406}$
407

$\frac{43}{31}$
46
1356
5082

$\frac{44}{197}$

$\frac{46}{381}$
382

$\frac{48}{101}$
199
871

$\frac{49}{1044}$
5375

$\frac{51}{230}$
262
307
393
676
678
681
683
g. 688
695
g. 704
777

Column 4

825
839
851
852
g. 879
908
909
910
911
1322
g. 1385
5001
5332

$\frac{52}{680}$
853
854
927

$\frac{53}{129}$
679
684
819

$\frac{57}{447}$
459
463

$\frac{58}{682}$

$\frac{59}{884}$
885
886

$\frac{60}{744}$

$\frac{61}{717}$

$\frac{62}{829}$
1364

Column 5

$\frac{64}{715}$
5015

$\frac{66}{216}$

$\frac{67}{430}$

$\frac{71}{72}$
5006

$\frac{72}{67}$
73
74
75

$\frac{75}{76}$

$\frac{77}{787}$
873
894
5017
5118

$\frac{78}{62}$

$\frac{80}{105}$
106
811
915

$\frac{81}{475}$
773

$\frac{82}{779}$

$\frac{83}{671}$

Column 6

$\frac{84}{85}$
86

$\frac{86}{87}$

g. $\frac{88}{90}$
246
706
872

$\frac{90}{769}$
1137
1758

$\frac{93}{94}$

$\frac{94}{104}$
122

$\frac{96}{97}$
1258
5003

$\frac{98}{380}$

$\frac{99}{385}$
502

$\frac{100}{383}$

$\frac{103}{5022}$

$\frac{104}{427}$
431
438

492	823	_141_	g. 1394	_174_	195
1197	5091	682		1153	395
		885	_162_		416
_105_	_126_		143	_177_	417
831	701	_144_	679	180	418
	741	269	680	g. 5136	697
_107_	898		1364	5354	698
96	1098	_145_			5333
290	1141	52	_163_	_180_	5337
	1242	53	201	81	5338
_110_	1243		248	181	5339
488	5034	_148_	g. 688	182	
610	5048	1424	g. 704	749	_197_
621			717		5334
	_127_	_150_	g. 740	_181_	5335
_111_	811	1077	g. 827	183	
597	1188	1101	g. 879	184	_198_
			g. 1385	185	419
_115_	_128_	_152_		186	420
67	5330	173	_164_		
118			624	_183_	
425	_131_	_153_	625	187	_200_
434	132	154			550
435	133		_165_	_185_	
436	134	_154_	812	173	_201_
	135	155		178	795
_116_			_167_		798
428	_132_	_155_	110	_188_	
1181	136	165		356	_202_
	137		_170_		7
_121_		_156_	571	_189_	690
585	_133_	157	572	g. 413	695
586	64		573		5365
587	743	_157_	575	_191_	
599		158	1263	193	_207_
	_135_		1269	409	494
_122_	211	_159_		700	495
g. 121		784	_171_		g. 496
584	_136_	5011	477	_192_	g. 497
g. 912	138			191	5356
1197	213	_160_	_172_	408	g. 5357
		1312	478	g. 413	
_123_	_138_			421	_208_
1256	128	_161_	_173_	802	532
5378		673	476		
	_139_	815	525	_196_	_209_
_124_	5099	897		83	515
672		1279		194	

<u>211</u>	218	<u>239</u>	<u>252</u>	507	1427
872	222	240	253	1578	1428
5360	481	446		5398	
	483				<u>285</u>
<u>212</u>	539		<u>254</u>	<u>270</u>	1236
516	725	<u>240</u>	598	1604	1272 C
810	785	245	608	1925	1431
871			609		1432 C
	<u>232</u>	<u>242</u>	620	<u>271</u>	1562 C
<u>215</u>	484	582		637	1860
746			<u>255</u>	1332	
784	<u>233</u>	<u>245</u>	622	1566	<u>286</u>
787	5368	169		1567	353
5345		643	<u>256</u>	1569	
5346	<u>234</u>	1759	800	1570	<u>287</u>
	243		1242	1571	21
<u>216</u>	527	<u>246</u>	1311	1902	42
5032	706	90	5009	1903	
5353	715	1139	5048	1904	<u>291</u>
	732	1141		1905	808
<u>217</u>	884	5018	<u>257</u>	1906	1097
789	886	5386	<u>258</u>	1910	1746
	897		260	1911	1747
<u>218</u>	907	<u>247</u>		5399	
627	908	1190	<u>259</u>	5410	<u>292</u>
	909	1191	<u>261</u>	5411	54
<u>219</u>	910	5004		5412	
461	915	5377	<u>262</u>	5413	<u>294</u>
530	1002		128	5415	1629
	1188	<u>248</u>	1043		1864
<u>223</u>		339	1046	<u>277</u>	1865
1274	<u>235</u>	644	1385	959	1880
	517	688			
<u>225</u>			<u>263</u>	<u>278</u>	<u>296</u>
911	<u>236</u>	<u>249</u>	1211	1419	1446
	1337	1749		1420	
<u>226</u>	1338	1750	<u>264</u>		<u>297</u>
684	1475	1751	504	<u>281</u>	1492
5046	1477	1752	631	958	1502
5385	1478	1753		5053	1789
	1486	1754	<u>268</u>		
<u>230</u>		1757	1034	<u>284</u>	<u>299</u>
701	<u>238</u>		1885	1411	1643
881	168	<u>251</u>	1886	1412	1685
898	1279	gs. 46		1423	
		gs. 594	<u>269</u>	1424	<u>300</u>
<u>231</u>		gs. 1183	308	1426	1957
217			320		

302	**318**	1167	**361**	947	**386**
937	1004	1710	363	948	g. 102
		1712		949	g. 739
303	**319**		**362**	1013	gs. 1277
1112	1505	**341**	275		g. 5063
1544	1777	479	276	**370**	g. 5329
1927			364	372	
	321	**343**			**389**
304	883	1062		**372**	202
10	1053		**366**	373	203
	1133	**346**	6		1002
308		1913	521	**373**	
1048	**323**		653 C	20	**390**
	528	**350**	660	359	1620 C
309		692	661	474	1622
g. 270	**325**	1112	843	646	1844 C
315	332	1551	844	1208	1845
324	1051	1675	845	5355	1846
1049			1874		1850
1520	**329**	**351**	1876	**374**	1851
1590	300	1491		398	
1592		1822	**367**		**391**
1593	**332**	1878	662	**375**	392
1597	150			93	508
1762	1073	**352**	**368**	142	
1784	1078	192	301	376	**393**
1921	1708		346	377	297
1922		**353**	943		394
5394	**334**	224	944	**380**	693
	633		945	44	694
310		**354**	1218	103	793
5052	**335**	2	1248	196	823
	310	347	1291	386	5034
311	311		1702	388	5035
971		**355**	1719		5331
1031	**336**	764	1769	**383**	
1527	1227	1303	1770	98	**395**
1528	1251	1544	1799	384	204
1530				543	
1545	**337**	**356**	**369**	822	**397**
1604	1057	314	15		151
1645	1158	355	302	**384**	156
	1159	870	656	403	5006
314	1162 C	5040	657	414	
1646	1163 C		658	699	**399**
	1164	**357**	659		43
315	1165	g. 373	663	**385**	178
317	1166 C		889	767	
319			946		

400	**434**	**454**	**472**	**489**	**505**
822	g. 113	451	152	700	g. 334
	g. 423				
400	gs. 553	**455**	**474**	**492**	**506**
22	gs. 630	601	177	918	642
170	gs. 634		1209		719
174	gs. 1356	**458**		**494**	720
179		70	**475**	g. 59	922
401	**439**		84	91	1713
402	441	**459**	186	g. 140	1714
403		104		g. 499	
404	**441**	214	**476**	5124	**507**
5039	57	460	171		1048
	142		1263	**497**	1670
402		**462**		5045	
1220	**442**	gs. 192	**477**		**508**
	78	gs. 352	172	**499**	g. 228
411	80	gs. 411	g. 780	123	671
23	145	gs. 469	5044	247	
27		gs. 535		g. 740	**509**
45	**443**	gs. 536	**478**	826	gs. 61
99	239	912	777	1253	131
189	789	gs. 963	1276	1257	210
412	5023	g. 1309	1312	5042	250
		gs. 5005		5066	511
413	**446**		**479**	5278	1156
773	1249	**463**	82	5279	
	5032	65			**510**
		164	**482**	**500**	511
414	**447**	g. 448	84	5013	
415	122	450	174		**511**
	164	456	g. 217	**501**	228
426		g. 462	231	113	513
116	**448**	g. 466	286	541	1249
538	69	526	gs. 422	542	
		g. 529	g. 424		**512**
431	**449**		781	**502**	514
165	68	**466**	786	100	5359
g. 166	455	79		193	
g. 432		465	**485**		**514**
g. 433	**450**	629	606	**503**	212
g. 464	219	812	668	639	
g. 599	454			734	**517**
g. 1313		**470**	**487**		241
	451	81	489	**504**	5029
433	166	749	802	505	
71	167	1196	1182		**518**
	5049				234

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
519	537	551	66	587	602
316	387	537	77	254	218
520	389		215	961	604
583	904	553	567		785
	5008	563	5016	589	
522				486	605
523	538	555	569	962	g. 113
1787	501	49	524	1199	g. 423
		556	570	1304	gs. 553
524	539				gs. 630
g. 147	546	557 ·	570	590	gs. 634
233	5014	548	5019	114	1181
235			5020	115	gs. 1356
446	540	558		253	
746	g. 209	547	571	591	607
	224		175		421
525	g. 512	560		592	
55	576	102	573	100	608
56	g. 873	198	175	251	425
159	5023	245	1366	600	490
171		537		1196	
1269	542	555	574		612
5010	539		894	594	109
		562		119	111
527	543	5007	575	207	257
893	200		250	595	615
899	481	564		697	616
	540	849	579	698	646
528	544	1158	580		728
57	545	1712		595	963
153	557	1928	580	5123	1208
	558	1929 C	80		5050
529	724	1976	389	597	
219	5021	1977	1277	117	614
	5039	1978			110
531	5298	1979	581	600	426
g. 58	5316	1980	238	593	607
208			242	601	608
g. 1759	545	566	1275		5092
	103	1562 C	5320	601	
532	549	1981 C	5383	g. 174	617
161		1982		g. 217	259
917	549		584	gs. 422	619
1187	206	567	69	g. 424	
	551	640	121	g. 453	618
535		gs. 1362		602	95
g. 25	550		586	603	108
g. 47	552	568	252	786	116
806		55	590		609
962		56			

624	642	651	821	694	712
g. 109	g. 270	1433 C	1745	523	1943
g. 111	726			865	
. 918		654	678	922	715
5005	644	935	795	1110	754
	249	1935	887	1757	
625	265		895	1791	716
626	340				670
	622	655	679	695	673
629	645	951	677	394	732
167	923	5027	769	927	826
464	1079		796	5363	907
467	1200	656	1047		
468	1260	366	1515	699	717
5079	1744	367	5097	493	333
5081	1745	1690			336
	1746	1691	681	701	506
630	1747		229	914	828
395	1748	668	506	1194	1226
560	1755	47	1518		1370
1366	1756	538		704	
	1758		683	677	718
631	1950	669	331	5024	1400
428	5028	1316	351		1444
632	5036		690	705	
	5101	671	1079	1573	719
633	5102	696	1096		325
388	5404	869	1203	707	328
				321	1050
634	649	673	688	1299	1223
567	365 C	669	960	1336	1224
	842 C	742	1251	1346	1601
635	846 C	790		1715	
1430	1405 C	791	689	1725	720
		853	824	1926	1052
639	650	895			1926
820	8	1046	691	708	
1961	649		1568	801	721
	651	674		1035	1
640	845	5	692	1123	170
g. 145	847	343	1651	1177	222
gs. 162	848	759	1652	1763	353
163	1082	967	1825	1795	444
gs. 825	1406	969			722
gs. 1204	1407	970	693	709	724
gs. 1205	1408		176	1412	725
g. 5324	1409	676	1656	1426	929
gs. 5406	1410	351	1792	1427	
gs. 5407	1965	685			
	1966				

Column 1:

722
gs. 127
g. 209
gs. 255
gs. 256
g. 512
569
gs. 832
g. 873
1220
gs. 1310

723
345
1264
1267
1588

724
519
575
578

725
576
577

727
770
840
928
1063

728
114
115
117
429

729
1212
1222

730
713
1213
1227
1782

Column 2:

731
813

732
1259
1260

733
638
1792

736
967

737
315

738
1232
1233
1904

740
1316

741
1374

742
112

743
12
312
716
1044
5328
5341

744
5037

745
1244
1317

746
518

Column 3:

747
1786

748
1488
1489
1490
1493
1494
1495
1497
1498
1499
1501
1714
1751
5033
5055
5056

749
818

750
674
925
996

752
295
355
840
1170
1171

753
765
997
1039
1448
1802

754
707
766
1386
1503

Column 4:

755
934
1406
1410
1838
1891

759
1061
1856
1945

760
299
327
977
979
1073
1075
1361
1439
1594
1962

761
301
302
659
948
1234
1559
1694
1700
1820
1831

762
1062
1064
1065
1072
1674
1682
1830
1903
1956

Column 5:

763
1530

766
324
325
1517

767
482
818

768
809
1136
1462
1471
1654
1655
1927

771
1105
1349
1350
g. 1584
g. 1836
g. 1937

772
1640
1646
1961

773
399

774
1341
1400
1546
1547

776
1795
1802

Column 6:

778
1638
1639
1642
1675
1684
1801

779
357
358
370
371

780
1307
5088

781
293
404

782
978
1590

784
g. 88
g. 473
5086
5349
5350
5367

785
452
1153

786
424
453
568
628
1183
5014

	787	810	666	840	859	702
g.	88	745	667	1793	1377	792
g.	473	828	699		1565	830
	743	829	924	843	1665	876
		854	926	5390		877
	791		929	5391	860	906
	1244	811			1915	913
		835	823	847		1265
	799		1005	1401	862	5035
	878	812		1402 C	973	5083
		614	824	1403	996	
	800	728	1120	1404	1000	872
	1207	1313	1121			740
	5379	5049		848	863	
		5050	825	1402	1049	879
	801		689		1138	623
	368	813	693	850	1521	1137
	1382	850	703	1202		1319
		1074	714	1300	865	
	803	1130	797	1638	335	880
	1178	1240	905		993	1465
	1292	1743	1305	851	1050	
	1509		1306	689	1731	883
	1610	814			1732	344
	1659	794	826	852		1134
	1660	821	742	863	866	1135
	1661	1190	745	1755	859	1136
	1662	1192	887		974	1180
	1663	5038		853	986	1369
	1947		831	1374	1020	1527
		815	808		1321	1528
	804	1250	1193	855	1440	1924
	949			718	1480	
	1816	816	832		1481	884
	1817	1352	255	856	1655	799
			306	1000		885
	805	818	683	1024	868	747
	398	374		1094	1435	788
		379	837	1553	1866	798
	807	805	1832			1318
	326			858	869	
	768	820	838	1057	1362	886
	1507	1381	975	1431		741
	1657	1647	5052	1432 C	870	
	5026	1651		1892	342	888
			839	5409		707
	809	822	1045		871	1201
	762	414			672	1261
	1617	533				1488

1491	**901**	**918**	1849	**956**	**963**
1497	1409	461	1890	1989 C	378
1500	1873	588		1990 C	618
1501	1875	589	**935**		668
1752	1876	596	1423	**957**	
1753	1915	612		648 C	**964**
5395		613	**936**	1953 C	984
	902	617	932	et al.	1172
889	1160 C		5371		1764
1014		**919**		**958**	1765
1839	**903**	369	**943**	9 C	
1872	5089	984	655	149	**966**
	5372	1009	1474	277	1445
890		1026		278	
1951	**908**	1102	**946**	279	**968**
	705	1150	654	280	674
891	877	1175		282	675
974	5364	1176	**949**	283	1059
975		1289	933	284	1367
976	**910**	1434		285	1801
1640	704	1525	**951**	322	
	896	1734	653 C	664	**969**
892		1735	934	665	1905
522	**912**	1736	952	710	
1003	485		953	902	**971**
5362		**926**	954	903	964
	915	508	1122 C	1032	
893	729	509	1430	1143	**974**
713		510	1847 C	1413	4
874	**916**			1414	1084
1042	89	**928**	**952**	1416	1448
1206	123	1644	930 C	1417	1449
	124		931	1418	1450
894	126	**929**	1619 C	1421	1479
221	226	574	1824	1425	
442	g. 339		1978	1692	**975**
	g. 714	**931**	1981 C	1697	997
896	810	1563 C		1707 C	
1216	814	et al.	**953**	1887	**976**
	815		647	1889	771
897	1253	**932**	648 C	1942	989
793	1254 ·	1932	950		992
794	1257	et al.	1618 C	**961**	1353
836	1278			598	
876	5036	**934**	**954**	1199	**978**
881	5042	1422	1979		1384
906	g. 5084	1848	1980	**962**	5040
913				108	

979	1038	1868	**1028**	**1041**	**1053**
5093	1155	1869	1650	863	345
	1264		1653	1021	1575
980	1357	**1010**			
1076	1399	1548	**1030**	**1043**	**1054**
	1963		1567	330	1165
982	1964	**1011**		636	1166 C
1447		1760	**1031**	1266	1405 C
	998		4		1429 C
985	774	**1013**	10	**1044**	1843 C
1286	971	1774	11	62	1893
1375	1358	1810	1245	670	1894
1463	1462	1871	1328	676	1895
		1872	1451	839	1896
986	**1000**		1506	1371	1897
271	1035	**1014**	1607		1898
296	1039	1874	1647	**1045**	1899
691	1779		1703	874	1900
1239		**1018**	1833	1386	1928
1330	**1001**	1843 C	1879	5098	1933
1616	1772	1847 C	1938		1976
1617			1954	**1046**	
	1002	**1019**	1955	309	**1056**
987	747	964	1956	636	1887
1615	835	1329	1957	642	
	888	1395		719	**1058**
990	892	1508	**1032**	720	660
890	893	1741	1415	5047	1413
	1025	1742	1422		1889
991	1041		1429 C	**1048**	1891
1472	1394	**1020**	1934	1565	
		969			**1059**
992	**1005**	1380	**1036**	**1049**	1602
1473	727	1381	272	314	
	978	1476	1109	866	**1060**
993		1479	1541	1574	1973
317	**1006**	1685	1925	1576	
753	1090			1916	**1065**
763	1093	**1021**	**1038**	5397	1606
776		1490	973		1969
778	**1008**		1001	**1050**	1970
870	1540	**1023**	1380	1588	1971
891	1580	764			1972
972	1584	999	**1040**	**1052**	1973
1020	1864	1001	1555	1575	
1022	1865		1556		**1066**
1023	1867	**1024**	1559		1561
1036		995			1837

<u>1067</u>	<u>1076</u>	<u>1091</u>	<u>1110</u>	<u>1121</u>	<u>1131</u>
274	970	1040	1721	350	1059
944	1006	1127		838	1321
946	1091	1245	<u>1113</u>	883	
1066	1094		1983	1027	<u>1133</u>
1235	1341	<u>1093</u>	1984 C	1080	708
1470	1449	1800	1985	1676	
1608			1986 C		<u>1135</u>
1610	<u>1078</u>	<u>1095</u>	1987 C		1672
1671	1092	1506	1988	<u>1122</u>	1673
1972			1989 C	1428	
	<u>1079</u>	<u>1097</u>	1990 C	1704	<u>1136</u>
<u>1068</u>	263	766		1986 C	801
1069	1516	1195	<u>1114</u>	1987 C	1123
1974	1517		930 C	1988	1124
	1520	<u>1098</u>	931		
<u>1069</u>	1521	1391	1419	<u>1123</u>	<u>1137</u>
565 C	1878	1392	1420	1093	480
1159		1656	1618 C	1126	875
	<u>1080</u>		1619 C	1128	1262
<u>1071</u>	900	<u>1099</u>	1620 C	1129	1597
1807		943	1621		
1809	<u>1081</u>	1104	1622	<u>1124</u>	<u>1143</u>
1827	1415	1666	1623 C	804	849
	1881	1914	1624	1125	1033 C
<u>1072</u>	5417	1919	5400	1127	1070 C
947	5418			1147	1824
1071		<u>1100</u>	<u>1116</u>	<u>1125</u>	1929 C
1606	<u>1082</u>	1505	1411	1176	1933
1632	1977	1658	1846	1178	1934
1633		1907	1850	1434	1982
1634	<u>1084</u>	1908	1857 C	1796	
1679	1087		1858		<u>1145</u>
1680	1740	<u>1102</u>	1859 C	<u>1127</u>	1890
1969		1664		1179	5408
	<u>1085</u>	1811	<u>1119</u>		
<u>1074</u>	1541		1115 C	<u>1128</u>	<u>1146</u>
150	1654	<u>1105</u>	1117 C	5025	955
817		1946	1376		956
1007	<u>1088</u>	1975	1844 C	<u>1129</u>	1122 C
1100	1852		1845	1149	1692
1171	1853	<u>1106</u>	1848	1671	
	1880	2	1849		<u>1147</u>
<u>1075</u>	1883		1953 C	<u>1130</u>	1293
900	1884	<u>1107</u>		1184	1693
1383		1609	<u>1120</u>		
	<u>1090</u>	1632	891		
	1519	1912			

1148	**1171**	**1190**	**1211**	**1226**	**1239**
1557	751	921	273	188	1349
1558	1095		298	1308	1534
1854	1202	**1191**	299	1352	5041
1855	1298	1268	303	1372	
	1301		304	1761	**1242**
1151	1302	**1197**	772	1781	1185
305	1652	491	778	1782	1222
			1085	1783	
1152	**1173**	**1199**	1086		**1245**
298	1805	592	1089	**1227**	1103
		1198	1131	308	1295
1153	**1175**		1320	687	1806
83	1716	**1200**	1794	1373	1816
1154	1730	503	1959	1715	1817
1156	1836	1784	1960	1790	1818
			1962		1819
1155	**1176**	**1201**	1963	**1228**	1820
1298	1445	752	1964	972	5402
	1514	1657		1357	
1157			**1212**	5031	**1246**
1016	**1177**	**1203**	1504		15
1087	1088	1195		**1229**	274
1347	1150		**1213**	708	1248
1348		**1204**	1593	1300	
1856	**1182**	5030	1721	1345	**1248**
	471		1920		1885
1164	472	**1205**		**1230**	1886
1930	767	249	**1214**	1358	
1931	5352	729	718		**1249**
1932		730	1776	**1232**	916
et al.	**1183**	733		1862	1276
	437	792	**1216**		5384
1168	5012	830	1762	**1235**	
710		1387		1142	**1250**
1116	**1184**		**1217**	1941	1500
1425	1239	**1208**	1120		1754
		1304		**1237**	
1169	**1187**		**1223**	1808	**1253**
738	125	**1209**	979	1810	800
919	678	470	1267		1192
1335		605	1361	**1238**	
1340	**1188**	611		1464	**1254**
1616	831	1182	**1224**	1611	1186
	896		1170	1698	1191
1170	1203	**1210**	1916	1699	
765	1255	868	5051	1701	**1255**
1301	1256	1944		1884	265
1793				5401	1200

<u>1256</u>	<u>1263</u>	<u>1278</u>	1940	1396	<u>1313</u>
120	gs. 51	685	1970	1399	487
731	gs. 5388	1189		5387	1209
5033			<u>1283</u>		
5047	<u>1264</u>	<u>1279</u>	300	<u>1304</u>	<u>1321</u>
	1140	227	344	611	1363
<u>1257</u>	1169	799	1708		
816		827		<u>1305</u>	<u>1322</u>
899	<u>1266</u>	833	<u>1284</u>	878	733
905	5405	834	1630	1280	754
5030		1139			1387
	<u>1267</u>	1258	<u>1285</u>	<u>1306</u>	
<u>1258</u>	237	1318	1958	1201	<u>1323</u>
645	1369	5370			751
1194	1471		<u>1286</u>	<u>1308</u>	1108
5046		<u>1280</u>	1760	1240	1367
	<u>1271</u>	1308			
<u>1259</u>	757		<u>1287</u>	<u>1309</u>	<u>1324</u>
146	1273	<u>1281</u>	1512	45	859
737	1840	13	1595	396	1140
1388	1952	303	1633	397	1598
1783		305	1709	961	
1785	<u>1273</u>	1027	1883		<u>1327</u>
1786	1118 C	1085	1971	<u>1310</u>	664
1788	1985	1283	-	336	665
1789		1823	<u>1288</u>	694	955
	<u>1274</u>	1959	1510	703	956
<u>1260</u>	925	1960		748	957
1325	928		<u>1289</u>	1186	1436
1787	977	<u>1282</u>	1705	1226	1437
1791	1022	656		1241	1438
1822	1036	657	<u>1292</u>	1243	1909
	1037	658	1648	1950	5054
<u>1262</u>	1080	945	1709	5003	
350	1134	1285	1853	5361	<u>1328</u>
723	1184	1286	1917	5380	867
727	1331	1291	1937		1566
1133	1480	1292		<u>1311</u>	1863
1252		1294	<u>1295</u>	1215	
1274	<u>1276</u>	1296	1852	1217	<u>1330</u>
1324	232	1452		1262	1111
1384	788	1693	<u>1297</u>		1686
1507	797	1798	862	<u>1312</u>	1902
1718	1265	1829	864	879	1940
1743	5002	1830		1305	1945
1780		1831	<u>1299</u>	1306	1947
	<u>1277</u>	1834	772		
	917	1918	1155		

1332	1346	1359	1372	1394	1704
5414	998	1060	1228	330	et al.
	1229	1603	1297	638	
1336	1283	5041		1489	1418
318	1398	5096	1375	1492	1586 C
760	1578	5393	1173	1493	et al.
768	1823		1326	1494	
770		1362	1351	·1495	1434
855	1350	256		1496	1705
856	1951	g. 297	1376	1498	1706 ·
994 ·		g. 331	1901 C	1499	
998	1351	g. 340	et al.	1502	1438
1398	858	681		1503	1586 C
5095	882	744	1377		
	935	851	1772	1395	1439
1338	1054	852	1948	354	1628
1487	1804	g. 1043			
	1952	1205	1379	1396	1440
1339		1322	1946	342	1024
1513	1353	g. 1370		774	1331
1542	281	g. 1518	1380	1169	1639
1585	1464	g. 5028	1233	1545	1907
1650	1465		1603	1551	1908
1666	1470	1364	5392	1552	
1867		731		1553	1442
1888	1354	824	1381		759
1944	1609	1206	1332	1397	1582
	1611		1333	268	
1340	1612	1366		1526	1444
1172	1613	14	1382	1877	965
1175	1917		1694		966
1834	1918	1367	1695	1398	981
1835	1919	1363	1854	1037	1568
		1733		1109	1589
1341	1356		1383	1345	
1287	554	1368	1382		1446
1288	561	1359		1409	1636
1397	562		1384	365 C	
1531		1369	1135	652 C	1448
	1357	1778	1368	846 C	983
1342	920		1605		1378
1071	1006	1370	1776	1416	1682
1614	1673	1005		647	
			1388		1450
1345	1358	1371	1780	1417	982
775	1444	1097	1923	1161 C	
1157		1259	·	1621	
1543					

<u>1451</u>	<u>1480</u>	<u>1507</u>	1074	<u>1536</u>	1148
294	1383	295	5094	1522	1039
1354	g. 1452	304		1564	1803
	g. 1453	1100	<u>1522</u>		
<u>1452</u>	g. 1454	1669	950	<u>1538</u>	<u>1555</u>
1550	g. 1472	1670		322	958
1558	1607	1828	<u>1525</u>		1635
1612	1628		1549	<u>1539</u>	
1613		<u>1508</u>		882	<u>1556</u>
1634	<u>1481</u>	1026	<u>1526</u>		1635
	1019	1103	1014	<u>1540</u>	
<u>1453</u>	1328		1017	951	<u>1560</u>
1630	1335	<u>1510</u>	1334	1826	1965
	1451	1625	1337		1966
<u>1454</u>	1554	1668	1338	<u>1541</u>	1967
1629			1468	1665	1968
1868	<u>1483</u>	<u>1512</u>	1469		
1869	282	1667	1478	<u>1542</u>	<u>1561</u>
1877		1808	1482	1637	390
1888	<u>1486</u>		1841		564
	1018	<u>1513</u>	1870	<u>1543</u>	566
<u>1459</u>		1626	1958	1641	662
1414	<u>1488</u>			1649	936
	807	<u>1517</u>	<u>1527</u>		1018
<u>1464</u>		318	691	<u>1545</u>	1069
901	<u>1490</u>	320	991	5	1113
	750	980	1030	1523	1114
<u>1467</u>	866	1053	1547		1116
566	1151	1252	1570	<u>1546</u>	1119
	1152	1324	1579	1126	1273
<u>1471</u>		1360	1582	1232	1389
1739	<u>1499</u>	1574		1397	1390
	1281		<u>1528</u>	1529	
<u>1472</u>	1336	<u>1518</u>	1030	1531	<u>1564</u>
1474		782	1546		565 C
1580	<u>1503</u>	783		<u>1547</u>	932
	993	1355	<u>1529</u>	1008	938
<u>1475</u>		1573	1375	1533	939
1119	<u>1504</u>		1581		940
	686	<u>1520</u>	1583	<u>1548</u>	941 C
<u>1477</u>		687	1585	1070 C	1221 C
1393	<u>1505</u>	760	1766		1272 C
	1577	1373	1767	<u>1552</u>	1860
<u>1479</u>				1125	1861 C
1008	<u>1506</u>	<u>1521</u>	<u>1530</u>		
1210	1102	332	1523	<u>1554</u>	<u>1565</u>
1569	1106	980	1577	296	761
1571	1107			880	
			<u>1531</u>	1040	
			1550		

1566	1579	1595	1459	1637	1655	
1855	1009	1711	1466	564	803	
	1532			1081	1092	
1569	1534	1597	1612	1082	1101	
1587		752	1455	1840	1476	
	1581	968	1456	1882	1602	
1570	933	1576	1459	5416	1672	
1595	1535	1790	1484			
			1631	1639	1656	
1571	1582	1599		1879	807	
1511	1525	1435	1613		1592	
1614			1460	1641		
1615	1583	1601	1461	1540	1657	
1842	1536	310			692	
1912	1537	319	1614	1642	1303	
1913		994	1034	1543		
1914	1584	1063	1058		1658	
	901	1323	1146	1645	1508	
1572	1538		1561	1084		
1819	1539	1602			1659	
		1060	1615	1646	1699	
1573	1585	1061	988	343		
335	1010	1473	1327		1661	
875	1012		.	1647	1510	
1504		1605	1617	1088	1511	
	1589	1177	987	1589	1514	
1576	1557		1029	1717		
327	1797	1607			1663	
1004		1064	1628	1649	1512	
1007	1590	1065	1072	1542	1513	
1038	750	1067	1674			
1439				1651	1664	
1440	1591	1609	1629	985	1467	
1481	390	1458	1455	989		
1594	661	1460	1456	1028	1665	
1598		1461	1458	1344	g. 1648	
1677	1592	1467				
	313	1477	1632	1652	1666	
1577	850	1483	1056	1339	1466	
1443	855	1484	1591	1340		
1599		1724		1342	1670	
1600	1593		1633	1343	920	
1726	856	1610	1631	1353	976	
		1482			1108	
1578	1594	1485	1636	1654	1658	
1605	1019		1421	1099		
	1124	1611				
		1457				

<u>1672</u>	<u>1688</u>	<u>1711</u>	<u>1727</u>	1075	<u>1763</u>
841	1942	283	1583	1076	1726
965	1943	337		1086	
1090		1696	<u>1728</u>	1180	<u>1764</u>
	<u>1690</u>		1678	1642	1447
<u>1673</u>	534	<u>1713</u>	1766	1669	1678
1128	709	837	1767	1828	1730
1129	936			1832	
1148	1936	<u>1715</u>	<u>1729</u>		<u>1767</u>
1354		329	1842	<u>1749</u>	1326
g. 1648	<u>1692</u>	686		321	1457
1796	1115 C	1130	<u>1730</u>	813	1723
		1131	1773	1281	1724
<u>1674</u>	<u>1696</u>	1132			
1549	959	1225	<u>1731</u>	<u>1750</u>	<u>1771</u>
1975	1118 C	1230	270	726	1368
	1160 C	1231	313		1377
<u>1676</u>	1161 C	1320	641	<u>1755</u>	1442
753	1623 C	1323	736	1261	1677
776	1624	1360	1441	1266	
986	1851	1365	1771	1268	<u>1772</u>
1924		5031	1794		1378
	<u>1698</u>			<u>1758</u>	1379
<u>1677</u>	1807	<u>1717</u>	<u>1733</u>	480	1719
738	1809	1797	1769	1138	1727
1733	1812	1800	1770	1325	1728
1777	1814		1798		1729
1778	1815	<u>1724</u>	1799	<u>1759</u>	1735
1779		1114		225	1736
	<u>1699</u>	1416	<u>1734</u>		5100
<u>1681</u>	1813	1417	1679	<u>1760</u>	
1737		1418	1680	1522	<u>1774</u>
1738	<u>1700</u>	1548		1564	285
	1814	1768	<u>1735</u>		1936
<u>1683</u>	1815		1681	<u>1761</u>	1968
1941		<u>1725</u>	1862	507	
	<u>1706</u>	857		1211	<u>1776</u>
<u>1684</u>	1010	864	<u>1739</u>	1718	919
g. 1238	1168	1023	1333	1725	
g. 1727		1214		1731	<u>1778</u>
g. 1806,	<u>1708</u>	1676	<u>1742</u>		1740
1938	1825	1771	1237	<u>1762</u>	
				329	<u>1779</u>
<u>1685</u>	<u>1709</u>	<u>1726</u>	<u>1743</u>	857	1717
1329	1826	654	675	968	1734
1763	1827	1687	809	1051	1803
1939			817	1214	5403
1949			820		

__1780__	1221 C	1450	__1853__	__1913__	992
735	1898	1833	711	860	1105
763	1899		1487	1055	
1078	1900	__1831__			__1936__
1089		1485	__1854__	__1914__	938
	__1806__	1486	861	650	939
__1783__	1700	1560	1142	861	940
1223	1702		1560	1056	941 C
		__1833__		1058	942
__1784__	__1809__	348	__1855__	1687	
838	5054	349	1146		__1938__
1230		1287	1711	__1916__	1218
1231	__1811__	1288		1684	
	1722	1289	__1862__		__1939__
__1789__		1290	1173	__1918__	1234
1151	__1813__	1293	1174	1637	1235
1152	1696	1294			
1224		1295	__1863__	__1920__	__1943__
1297	__1814__	1296	267	311	1117 C
1299	1697	1350	868	1229	1236
1346				1396	
	__1816__	__1836__	__1864__	1596	__1944__
__1791__	1706	755	1012		1219
1601		1168		__1922__	1688
	__1818__	1351	__1878__	734	1689
__1794__	1701	1837	503	5051	1690
1645	1811	1839			1691
			__1880__	__1923__	
__1795__	__1823__	__1837__	843	736	__1945__
1210	1552	1389	844		1681
		1390		__1924__	1683
__1796__	__1825__	1393	__1885__	1330	
347	1282		903	1739	__1947__
	1284	__1839__	1032		236
__1797__	1741	1143		__1926__	266
1720	1742	1144	__1899__	13	
1722	1818	1145	1376	326	__1948__
1723	1906		et al.	639	1011
	1948	__1840__		862	1379
__1801__		942	__1907__	1132	g. 1584
1359	__1826__		761	1365	1764
	337	__1850__	995	1441	1765
__1804__	1113	1563 C	1147		g. 1836
1162 C	1967	et al.		__1927__	g. 1937
1167	1974		__1908__	771	
		__1852__	1572	804	__1949__
__1805__	__1828__	712		990	1683
842 C	803	1083		991	
1164	1395				

1950	1971	5343	1054	5090	5126
139	1625	5344	1144	5358	5131
865	1626		1145	5376	
1110	1627	5013	1805		5066
1212	1775	5348	5103	5047	5004
1213			5104	1228	
1215	1972	5016	5396	1920	5069
1216	1774	204		1921	197
1217			5030	1922	5017
1761	1988	5017	1496	1923	5151
	1821 C	5196			
1951	et al.	5209	5031	5048	5070
755		5347	1077	144	5219
756	5001			1314	
758	819	5018	5034	1315	5072
1017		782	120	1317	5273
1270	5006	783	205		
1271	449		921	5049	5074
1475		5019	923	99	5284
	5007	580	1096	264	
1955	24	581	1391	486	5075
1011	141	5044	1756		188
1015	244	5045		5050	5286
1016	904	5381	5040	606	
1238	1275	5382	237	806	5079
1247	5000		1095		254
1285	5336	5020	1554	5051	5080
	5369	5043	1643	1442	
1956					5081
1526	5010	5022	5041	5052	259
	190	498	1716	775	
1957	531	5373			5098
1524		5374	5042	5053	269
	5011		796	635	
1958	5085	5023	914	1327	5099
1707 C	5221	gs. 127			273
	5222	gs. 255	5043	5054	
1961	5225	gs. 256	160	1433	5106
762	5366	579	780		5108
1644		583		5057	
1703	5012	gs. 832	5045	5115	5107
	457	gs. 1310	48		24
1965	500		60	5060	49
1033 C	739	5027	107	60	5109
	5160	9 C	161		5110
1969	5162	148	832	5063	
1068	5342	149	916	127	5108
		858	1187	5065	5113

5111	**5135**	**5145**	**5163**	**5199**	**5236**
52	5067	5295	5204	5253	230
53	5068		5217		5015
		5146		**5201**	
5114	**5136**	5210	**5164**	5249	**5241**
5116	183	5211	5218		5259
				5204	
5116	**5137**	**5150**	**5165**	5231	**5245**
5117	209	5229	5205	5232	5261
	210		5206	5233	5262
5118	233	**5152**	5207		5264
5058	235	5223	5208	**5207**	
	5011			5008	**5247**
5119	5022	**5154**	**5166**	5234	5272
58	5070	5201	5224	5235	
5000	5144				**5248**
	5145	**5156**	**5167**	**5211**	201
5120	5146	5179	5190	5256	
5061	5152	5180	5191		**5249**
5122	5153	5181		**5219**	225
	5154	5182	**5168**	5247	5277
5121	5155	5183	5226	5248	
5062	5156				**5252**
	5157	**5157**	**5169**	**5221**	226
5126	5158	5192	5170	5263	
105	5161	5193			**5254**
106	5163		**5174**	**5223**	5265
	5165	**5158**	5238	5241	
5127		5195		5242	**5255**
107	**5138**	5203	**5175**		5266
124	5020		5296	**5229**	
126	5159	**5159**		5255	**5258**
5064	5164	5213	**5176**		5280
	5169	5214	211	**5231**	
5129	5294	5215	5228	5260	**5261**
5130		5216	5297		5074
	5139	5230		**5232**	5268
5130	5227		**5177**	202	5269
5002		**5161**	5250	203	
	5140	221		5073	**5264**
5132	5147	5187	**5179**	5258	5267
5133	5148	5188	5251	5274	5270
	5149	5189	5252	5275	5271
5133	5150	5194			
143		5212	**5193**	**5234**	**5265**
	5142		234	5276	5283
5134	5175				
162					

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<u>5267</u>	<u>5299</u>	<u>5311</u>	<u>5339</u>	<u>5353</u>	5319
5285	215	5141	5106	88	5321
5287	5069	5167			5322
	5140		<u>5340</u>	<u>5357</u>	
<u>5268</u>	5309	<u>5312</u>	5121	5125	<u>5382</u>
232	5310	5019	5317		141
	5311			<u>5358</u>	241
<u>5269</u>	5312	<u>5319</u>	<u>5342</u>	101	242
205	5314	246	14	199	5077
		248	5178	220	5236
<u>5270</u>	<u>5300</u>		<u>5343</u>		5243
5009	195	<u>5320</u>	198	<u>5359</u>	5244
5075	5012	243	208	140	5318
5282	5016	247	5119		
	5137	5323	5120	<u>5360</u>	<u>5385</u>
<u>5277</u>	5138		5177	129	144
229	5302	<u>5324</u>	5184		5024
	5303	262	5185	<u>5363</u>	5078
<u>5279</u>	5305		5186	146	
227	5306	<u>5326</u>	5202	176	<u>5392</u>
5018		271			236
5281	<u>5301</u>		<u>5344</u>	<u>5366</u>	266
	194	<u>5327</u>	64	169	
<u>5285</u>	207	5027	5240	5071	<u>5394</u>
223	5010			5134	272
5288	5142	<u>5329</u>	<u>5345</u>	5135	
5289	5304	12	5059	5245	<u>5396</u>
	5307	5111	5060	5246	5419
<u>5288</u>	5308	5127	5220		
5290	5313	5128	5237	<u>5373</u>	<u>5397</u>
5291		5129		5076	5326
5292	<u>5305</u>	5315	<u>5346</u>		
5293	5143		5239	<u>5374</u>	<u>5404</u>
	5166	<u>5334</u>		5254	263
<u>5294</u>	5168	5112	<u>5347</u>		
5013			59	<u>5376</u>	<u>5406</u>
5197	<u>5306</u>	<u>5335</u>	61	125	5325
5198	5174	51	212	5001	
5199		5057			<u>5410</u>
5200	<u>5307</u>		<u>5348</u>	<u>5377</u>	267
	5139	<u>5336</u>	g. 339	112	268
<u>5296</u>		213	g. 714		5025
5257	<u>5309</u>		g. 5084	<u>5380</u>	
	216	<u>5337</u>		139	<u>5415</u>
<u>5298</u>	5173	5107	<u>5350</u>		5053
196			160	<u>5381</u>	5327
5299	<u>5310</u>	<u>5338</u>	163	244	
5300	5007	5105		5072	
5301	5176	5171	<u>5351</u>	5132	
		5172	89		
			168		

EXPLANATION OF PLATE I

The drawings have been made by Mr. S. Fred Prince and, as printed, are about two and one-half times natural size.

The top row represents the normal recessive type, +/+, and eleven dominant elementary patterns.

The second row, except the last one to the right,, represents various combinations of the elementary dominant patterns in pairs. The last one of the second row and the first nine of the third row show three-pattern combinations. The last three of the third row and the first two and the fourth of the last row are four pattern complexes. In the fourth row, the third and fifth show five patterns, while the sixth represents a six-pattern complex.

The Y/YT, Y/T, and YT/T drawings of the fourth row show the influence of single and double doses of Y and T, respectively.

The last three of the fourth row show (1) an individual with short pronotum and wings, (2) one with the pronotum turned up and forward, and (3) an individual with the pattern obscured by an alga and intermediate length of pronotum and wings.

These drawings actually represent many other combinations of the same patterns, respectively. For example, in the top row, +/Y = Y/Y, Z/Z = +/Z and so on. Second row: Z/K = +/ZK = Z/ZK = ZK/K = ZK/ZK; RK/RK = R/K = +/RK = R/RK = RK/K. In the third row: +/MZK = M/ZK = MZ/K = MK/Z = MZK/MZK = M/MZK = MZ/MZK = MZ/ZK = MK/MZK = MZ/MK. In the fourth row: MRT/ZK = MZK/RT = MZT/RK = MRK/ZT = MRT/MZK = MRK/MZT. Double doses of none of the factors appear to make perceptible differences in the pattern complexes, except in the case of the redness of T, as shown Y/YT, Y/T, and YT/T, in the last, row.

+/+   +/B   H/H   +/M   +/Y   O/O

Z/G   Z/K   W/K   +/YK   RK/RK   M/K

MO/K   YZ/G   MZ/G   YK/Z   +/MZK   YK/R

MO/ZK   MT/ZK   MRT/ZK   +/MWTK   MZT/YO   MR/YZTG

PLATE I

R/R	W/W	Z/Z	T/T	K/K	G/G
YZ/YZ	Y/R	R/T	H/W	K/T	+/MWG
MR/Z	MZ/T	+/MTG	MRT/G	YZ/RK	MRK/B
Y/YT	Y/T	YT/T	MRG/B (Short wing)	K/K (Upt Pron.)	MWG/K (Alga)
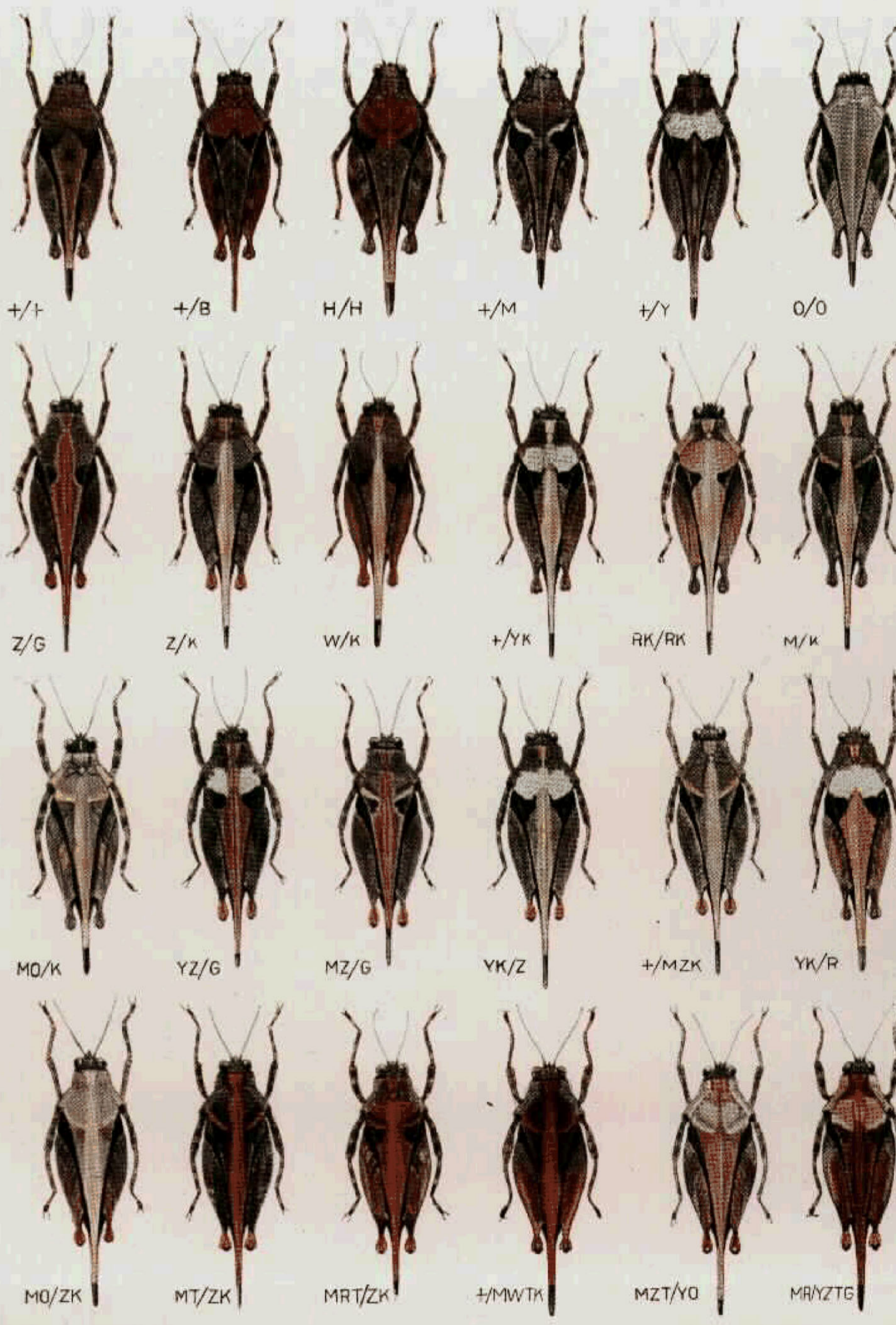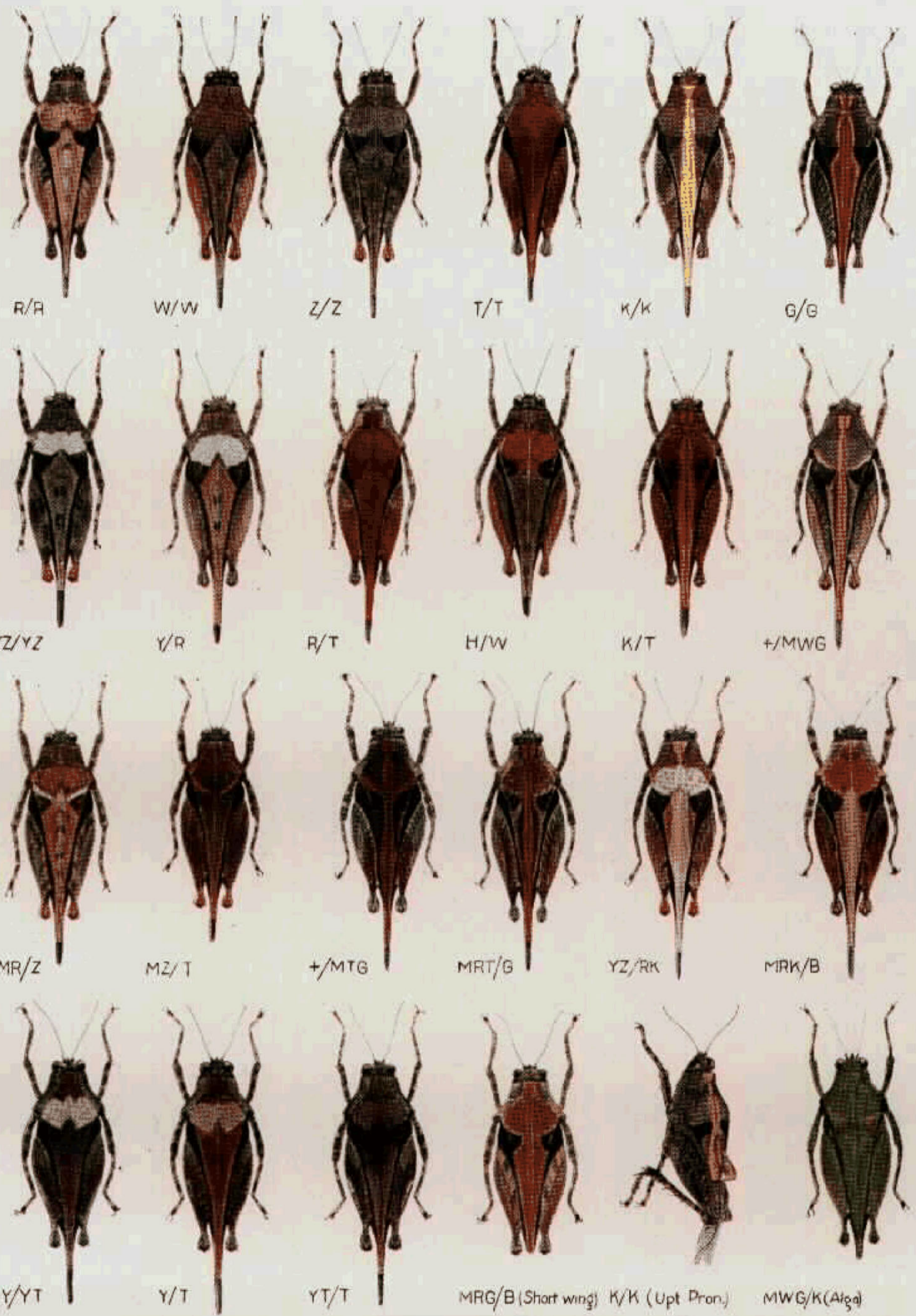
DISCUSSION OF THE DATA

GENERAL

Doctor Bateson's suggestion that breeding cages and pens are to the geneticist instruments analogous to the test tubes and mortars of the chemist has been the guide in technique throughout the progress of this work. The factors of the first easily recognized characters discovered became the reagents with which new factors and combinations were analyzed, and those first discovered were thus themselves further tested.

In order that persons interested may make their own analyses, all other considerations have been subordinated to the arrangement of the data to the end that *the ancestry of the parents and the further performance of the offspring of any mating may be ascertained with facility* as far as there are any records. It is intended that the 499,458 reactions among the factors noted, of both males and females, such as segregation, coupling and repulsion, be made as unbiasedly available as possible.[4]

CONTAMINATIONS AND MUTATIONS

As already suggested, under the conditions of the laboratory, it would be extremely difficult to recognize the occurrence of a mutant, or an unexpected new combination, if it were similar in appearance to any of those already in use. Two examples illustrate:

(1) When the MTG/R individual was discovered in mating 1614, indicating that G had crossed over to the right of T, there existed much uncertainty as to her actual composition. T and G had come together by crossing over only once before in many hundreds of opportunities, and there were in the greenhouse, contemporaneously, some MRT/G individuals of exactly similar appearance. However, complete verification of the fact that G had crossed over to the right of, and linked with T came in mating 1561, and subsequently. Merely to have recorded an individual in mating 1614 showing M, T, G and R, under the circumstances, would not have sufficed.

(2) A few males appeared among parthenogenetic individuals, but those that grew to adult and were mated failed to function, In all cases individuals of similar appearance were in contemporaneous cultures. Therefore, for four years, there was no critically experimental proof of parthenogenetically produced potent males, until

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4. The following have been previously reported (Nabours '19): Matings 99, 195 (corrected, K/K 7-7) 196, 197, 207, 215, 217 (Y and T are linked) 353, 697, 698, 806 (corrected, M/T 11-12, YK/T 14-14) 924, 5010, 5012, 5016, 5017, 5059, 5060, 5063, 5069, 5105-5107, 5109, 5110, 5112, 5119-5121, 5123-5127, 5131, 5137, 5138, 5140, 5151, 5159, 5294, 5298-5310, 5312-5316, 5318-5320, 5329, 5333-5337, 5339, 5342-5346, 5381, 5383.

mating 5027, when the MRK/MRK male from the parthenogenetic female of 5327 proved himself to be such. (Two of the females of 5027 were proven Z/Z, matings 148 and 149, thus confirming their parthenogenetic origin and eliminating the possibility that the male parent was +/MRK.) As no male homozygous for MRK had been possible among the cultures for more than a year, this test is thought to be acceptable.

No proven mutation has occurred during this investigation. In the pedigrees, in parentheses with questions, there are occasional individuals unaccounted for. However, as each was similar in appearance to contemporaries, under the circumstances described above, none can be accepted as mutants. On the other hand, there is no assurance that mutants have not occurred and have failed to be recognized because of the following: (1) Too subtle to be observed and followed; (2) of a kind similar to some of the members of the stocks in which they might have occurred; (3) possibly some of those suspected as having been contaminants. Therefore, in our situation, the possibility of recognizing mutants is strictly limited, as only adequately tested characters, or combinations, entirely foreign to anything contemporaneous may be designated as such.

THE FACTOR RELATIONS
The Three- and Four-point Data

The factors O, R, W and Z appear to be strictly allelomorphic, or alternative, each to the other, as determined by considerable numbers, ranging from 2,876 opportunities for crossing over between O and W to 9,418 between R and W. (W and Z cannot be compared directly because the pattern Z falls in, or blends with, that of W. The pattern of M falls in that of Y, so that MY is not easily distinguished from Y.)

M and Y are certainly close together. In fact most cultures show no crossing over, as illustrated in matings 960, 1854, 1862, 1920, 1959, 1961 and 1970. In certain cultures (1926, 1434, 1856 and 1987), however, there was crossing over between M and Y, and the nature of the cross-over offspring shows that Y lies to the right of M. In a similar way, as shown in matings 1411-30, B does not cross over with M. H has not yet been tested thoroughly in this way, but, as indicated in matings 938, 939, 941, 950, 954, 1403, 1405, and 1407, it is situated to the left of the ORWZ locus, and is probably closely linked, if not alternate with B and M.

G is clearly at the right of T, as shown in mating 1614 and verified in 1561 and subsequently. Similarly, K has been found to the

right of T, as indicated in mating 1899, and verified in matings 1376, 1901, and others, most of them too recent to be included in the tables. There has been no crossing over between G and K in 6,600 chances. Although definitely located at the right of T, G and K are closely linked with it (average .03 per cent). This close linkage of G and K, respectively, with T and their mutual alternateness are further emphasized in matings 1553, 1555, 1556, 1559, 1581, 1611, 1612, 1614, 1628, 1657, 1659, 1664, 1670, 1783, 1793, 1796, 1802, 1820, 1833, 1842, 1906, 1910, 1920, 1924, 1959, 1973, and others.

How may the relations of these individual factors and groups be determined? Perhaps the so-called three-point and four-point experiments are of most service. It appears reasonable to make that arrangement of the factors which, with the least resort to double crossing over, gives consistently the results recorded. On this basis the following matings indicate the relative positions of the factors:

Matings 938, 941, indicate that Z lies between H and T; 950, 951, Z between H and G; 954, R between H and G, 982-4, O between M and T. It is consistent with this arrangement that in matings 985-9, + and MOT gametes did not appear. Matings 1008-1031, ensemble, require R between M and T, with two double crossovers, 1020 and 1026. Numbers 1033-40 indicate that R is between M and G; 1042-57, R between M and K; 1060, 1061, W between M and T; 1071-1072, W between M and K; 1073-89, Z between M and T; 1095-1105, Z between M and K, with a double crossover in 1905; 1143, O between Y and T; 1158-77, 0 between Y and G; 1180, 1183, O between Y and K; 1201, 1202, R between Y and G; 1203-1219, R between Y and K, with two double crossovers. On the hypothesis that Z is between Y and the GK locus, double crossing over occurred in 1269 and 1276. In 1361 T and K came together by crossing over; 1403, 1405, 1407, R and Z are between H and K; 1411-29, R between BM and G.

In 1434 there is a double crossover between MY and O, but this mating is under question. In matings 1435-45, O and R are between M and K, with crossing over in the male in 1438. (This individual was tested, mating 1586, and as there were no contemporaries of her composition, it appears consistent to accept this as a case of crossing over in a male.) In matings 1447-59, O and W are between M and G; 1462-71, O and Z between M and K; 1473, O and Z between M and T; 1475-86, R and W between M and G; 1488, 1490, 1503, 1505, R and Z between M and K; 1528, 1529, R and W between M and T; 1539, 1542, R and Z between M and T; 1545-60, R between M and TG, with G at the right of T in 1557. R is between M and

T K in 1581; 1586-1603, R and W between M and K; 1611-16, W between M and TG.

Mating 1614 is of extraordinary significance, as it unequivocally lines up M, W, T and G at four points, respectively.

There is double crossing over in 1616. In 1628, W is between M and GK; 1654, 1655, Z between M and TK, with K at the right, of T in 1655; 1657-1659,1661,1664, Z between M and TK (Alternation, or reciprocation, among T, G and K is frequent in these matings); 1669-1670, Z between M and GK; 1671, 1673, 1674, 1679-89, O and R between Y and K; 1699-1702, O and W between Y and K; 1708, 1709, O and Z between Y and K; 1741, 1742, 1745-49, 1753, 1755,1757-60, R and Z between Y and K. In 1761-91, R is between Y and TK, with double crossing over in 1777 and 1788. In matings 1796-1803, R is between Y and GK; 1816, 1820, W between Y and GK; 1832-36, Z between Y and GK; 1847, G to the right of T; 1850, MR and TG, respectively, crossing over in blocks, or sections; 1853, O and Z between MY and T; 1854,.1855, O and R between MY and G. In 1856, M appears to have crossed out, on the left, from what appeared to be a YT/ZK individual. In 1863,1865,1867, R and W are between M and TG; 1871-75, R and Z between M and TK; 1885-89, R and Z between M and GK; 1891,1894,1895,1897-1901, R and W between M and TK; 1902-19, R and W between M and GK; 1920, R between MY and TK; 1926, R and W between MY and K, with M to the left of Y; 1951, 1952, O and Z between Y and TK; 1953, R and W between BM and GK; 1959,1961, RZ between MY and TK; 1965, 1967, 1968, R and Z between MY and GK, with a double crossover in 1967; 1970, 1972-74, R and W between MY and TGK, with crossing over between M and Y in 1987.

In mating 5048 a double crossing over accounts for the YWK/T individual. In 5054, W appears to be between Y and K.

In parthenogenesis, numbers 5410 and 5412, together, indicate that R and W are between M and GK.

The Crossing Over Percentage Data

The direct evidence in respect to crossing over between M and Y is most, unsatisfactory. As already stated, the pattern of M falls in that of Y in such combination as to make MY uncertainly distinguishable from Y alone. In matings 960-963, 1852-55, 1857-62, 1920-26, 1954-74, any number of the gametes containing Y might also have had M included and the difference not have been detected. In fact, note was made in the records several times that Y appeared to be "underscored, as if by M." Therefore, these thirty matings offering opportunity for the repulsion of M and Y are of no actual

value as far as the relations of these factors are concerned. At various times in the laboratory, and certainly in nature, chances had been given the Y's used in matings 1434, 1856 and 1926 to have had M linked on them. Therefore the 2.3 per cent of crossing over, (separations only) exhibited between M and Y in other matings, is significant, though the numbers are not sufficient. The average of the calculated percentage from M to the ORWZ locus is 6.4 per cent, while the position of Y, on the same basis, is only 4.8 per cent or 1.6 points nearer than M. Although differing considerably in percentage, both figures agree in suggesting that Y is at the right of M and between it and the ORWZ group.

There has been no crossing over among B, H, M and Y, except as noted for M and Y; therefore these form at least a very closely linked group. If it be granted that the three- and four-point data place this group BHM first, arbitrarily to the left, with Y second, slightly to the right of M; the group of alternatives, ORWZ third, T fourth, and G and K fifth, the next problem is to determine the distances between loci. For this there are available data which may be presented in two ways: (1) Primary, that secured by counting the crossing over from locus to locus, and (2) primary plus secondary, that obtained by counting the crossing over among all the factors, each with the other, regardless of the number, or the duplication of distances.

As an example of the use of the primary data, take mating 1906. There are considered only the relations of M to R, R to W, W to G, and G to K, in the female. Among 89 individuals there were four crossovers between M and R, and four between W and G, with none between R and W, and G and K, respectively. This measures, when there are sufficient numbers, the respective distances. Since the pairs, RW and GK, respectively, are alternatives, the two distances measured are those from M to RW and RW to GK. A summary of the data of this paper, which may be considered primary, is given in Table VI. In this table the numbers with the symbol $\wedge$ before them indicate those individuals produced by females in which the factors were separate, one on each of the respective chromosomes of the homologous pair. The second figure to the right indicates the number of crossovers. The numbers with the symbol X before them represent those individuals produced by females in which both factors were on one of the pair of homologous chromosomes. The second figure to the right indicates the number of crossovers. The third figure in the line refers to the percentage of crossing over. The totals are below the lines,

TABLE VI.—Showing the locus to locus crossing over data (primary).

(Explanation in the text: X = coupling; Λ = repulsion.)

Factors.	Num.	Co.	Per cent.	Factors.	Num.	Co.	Per cent.
ΛHY	323 —	0 =	0	ΛMG	140 —	20 =	14.3
ΛHO	463 —	80 =	17.2	ΛMK	722 —	13 =	1.8
ΛHR	1,546 —	237 =	15.3	ΛYO	3,470 —	70 =	2.0
XHR	596 —	11 =	1.8	XYO	4,917 —	328 =	6.7
	2,142 —	248 =	11.6		8,387 —	398 =	4.7
ΛHZ	228 —	23 =	1.0	ΛYR	4,923 —	110 =	2.2
XHZ	1,066 —	41 =	3.8	XYR	4,927 —	320 =	6.5
	1,294 —	64 =	4.9		9,850 —	430 =	4.4
XHG	42 —	1 =	2.4	ΛYW	1,871 —	140 =	7.5
ΛHK	483 —	3 =	.6	XYW	2,169 —	104 =	4.8
ΛBM	2,141 —	0 =	0		4,040 —	244 =	6.0
ΛBY	386 —	0 =	0	ΛYZ	508 —	40 =	7.9
ΛBO	395 —	18 =	4.5	XYZ	5,352 —	241 =	4.5
ΛBW	737 —	64 =	8.7		5,860 —	281 =	4.8
ΛBZ	125 —	7 =	5.6	ΛYT	1,773 —	194 =	10.8
ΛMY	3,160 —	3 =	(?) .09	XYT	665 —	19 =	2.8
XMY	260 —	6 =	2.3		2,438 —	213 =	8.7
	3,420 —	9 =	.3	ΛYG	236 —	9 =	3.8
ΛMO	2,784 —	475 =	17.1	XYG	23 —	1 =	4.3
XMO	1,551 —	50 =	3.2		259 —	10 =	3.9
	4,335 —	525 =	12.1	ΛYK	547 —	56 =	10.2
ΛMR	2,541 —	337 =	12.9	XYK	289 —	0 =	0
XMR	13,758 —	597 =	4.3		836 —	56 =	6.7
	16,299 —	934 =	5.7	ΛOR	3,138 —	0	
ΛMW	1,106 —	12 =	1.1	ΛOW	2,876 —	0	
XMW	1,231 —	61 =	4.9	ΛOZ	3,530 —	0	
	2,337 —	73 =	3.1	ΛOT	2,582 —	14 =	.5
ΛMZ	768 —	48 =	6.2	XOT	801 —	6 =	.7
XMZ	3,326 —	177 =	5.3		3,383 —	20 =	.6
	4,094 —	225 =	5.4	ΛOG	1,470 —	6 =	.4
ΛMT	415 —	13 =	3.1	XOG	1,316 —	1 =	.08
XMT	1,088 —	52 =	4.8		2,786 —	7 =	.2
	1,503 —	65 =	4.3				

TABLE VI.—CONCLUDED.

(Explanation in the text: X = coupling; Λ = repulsion.)

Factors.	Num.		Co.		Per cent.	Factors.	Num.		Co.		Per cent.
ΛOK............	1,136	—	6	=	.5	ΛWK............	3,960	—	9	=	.2
XOK............	86	—	2	=	2.3	XWK............	1,020	—	6	=	.6
	1,222	—	8	=	.6		4,980	—	15	=	.3
ΛRW............	9,418	—	0			ΛZT.............	6,655	—	62	=	.9
						XZT.............	2,258	—	10	=	.4
ΛRZ.............	8,469	—	0				8,913	—	72	=	.8
ΛRT.............	7,193	—	24	=	.3						
XRT............	2,093	—	8	=	.4	ΛZG............,..	3,866	—	30	=	.8
						XZG.............	104	—	0	=	.0
	9,286	—	32	=	.3		3,970	—	30	=	.8
ΛRG............	1,675	—	8	=	.5						
XRG............	2,276	—	59	=	2.6	ΛZK.............	3,944	—	23	=	.6
						XZK............	4,635	—	10	=	.2
	3,951	—	67	=	1.7		8,579	—	33	=	.4
ΛRK............	1,794	—	20	=	1.1						
XRK............	4,817	—	11	=	.2	ΛTG.............	3,830	—	2	=	.05
						XTG.............	4,516	—	1	=	.02
	6,611	—	31	=	.5		8,346	—	3	=	.03
ΛWZ............	187	—	0								
						ΛTK.............	11,295	—	3	=	.03
ΛWT............	4,800	—	12	=	.2	XTK............	357	—	0	=	.0
XWT............	2,564	—	14	=	.5		11,652	—	3	=	.02
	7,364	—	26	=	.3						
						ΛGK............	6,600	—	0		
ΛWG............	1,185	—	6	=	.5						
XWG............	5,640	—	66	=	1.2						
	6,825	—	72	=	1.0						

To illustrate the method of compilation of the total data (primary plus secondary data), mating 1906 will be used again, as it was for the primary data. In this case there were ten opportunities for reactions, one factor with another; M with R, K, W and G; R with K, W and G; K with W and G, and W with G. According to this arrangement the following crossings over took place in mating 1906: M crossed over from R and K and joined W and G four times; G crossed over from W and joined M and R four times, while, reciprocally, K crossed over from M and R and took position with W the same number of times. This makes four crossovers each between M and R, and M and W; eight between M and K, and M and G; four between R and K, R and G, W and K, W and G, respectively, and none between R and W, or K and G. The situation may be diagramed as follows:
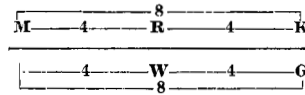
These total data may not be employed in making a map, since this method differs from that of the primary data in that in measuring the distances from M to K and M to G, respectively, the single set of data would be used twice. These data are summarized in Table VII. (See directions in text for Table VI.)

TABLE VII.—Showing the total crossing over data (primary plus secondary).

(X = coupling; Λ = repulsion.)

Factors.	Num.		Co.		Per cent.
ΛHY	323	—	0	=	0
ΛHO	463	—	80	=	17.3
ΛHR	1,869	—	237	=	12.7
XHR	596	—	11	=	1.8
	2,465	—	248	=	10.0
ΛHZ	586	—	28	=	4.8
XHZ	2,810	—	195	=	6.9
	3,396	—	223	=	6.6
ΛHT	491	—	16	=	3.2
ΛHG	262	—	35	=	13.3
XHG	782	—	202	=	25.8
	1,044	—	237	=	22.7
ΛHK	1,602	—	11	=	.7
ΛBM	2,141	—	0		
ΛBY	386	—	0		
ΛBO	395	—	18	=	4.5
ΛBR	2,385	—	62	=	2.6
ΛBW	879	—	81	=	9.2
XBW	146	—	1	=	.7
	1,025	—	82	=	8.
ΛBZ	125	—	7	=	5.6
ΛBG	2,682	—	152	=	5.7
XBG	146	—	3	=	2.0
	2,828	—	155	=	5.5
ΛBK	707	—	51	=	7.2
ΛMY	3,171	—	3	=	.09
XMY	260	—	6	=	2.3
	3,431	—	9	=	.3
ΛMO	3,291	—	480	=	14.6
XMO	1,722	—	58	=	3.4
	5,013	—	538	=	10.7

Factors.	Num.		Co.		Per cent.
ΛMR	3,121	—	350	=	11.2
XMR	15,910	—	844	=	5.3
	19,031	—	1,194	=	6.3
ΛMW	6,916	—	133	=	1.9
XMW	2,415	—	233	=	9.6
	9,331	—	366	=	3.9
ΛMZ	4,671	—	243	=	5.2
XMZ	5,153	—	410	=	7.9
	9,824	—	653	=	6.6
ΛMT	5,985	—	280	=	4.7
XMT	10,495	—	614	=	5.8
	16,480	—	894	=	5.4
ΛMG	3,949	—	443	=	11.2
XMG	8,395	—	504	=	6.0
	12,344	—	947	=	7.6
ΛMK	6,877	—	390	=	5.7
XMK	8,100	—	570	=	7.0
	14,977	—	960	=	6.4
ΛYO	3,470	—	70	=	2.0
XYO	4,917	—	328	=	6.7
	8,387	—	398	=	4.7
ΛYR	5,384	—	121	=	2.2
XYR	5,928	—	337	=	5.7
	11,312	—	458	=	4.0
ΛYW	5,347	—	417	=	7.8
XYW	3,453	—	126	=	3.6
	8,800	—	543	=	6.2
ΛYZ	1,657	—	73	=	4.4
XYZ	8,148	—	319	=	3.9
	9,805	—	392	=	4.0
ΛYT	7,594	—	533	=	7.1
XYT	2,886	—	128	=	4.4
	10,480	—	661	=	6.3

TABLE VII.—CONCLUDED.

(X = coupling; Λ = repulsion.)

Factors.	Num.	Co.	Per cent.
ΛYG	5,081 —	260 =	5.1
XYG	3,597 —	272 =	7.5
	8,678 —	532 =	6.1
ΛYK	4,593 —	230 =	5.0
XYK	13,206 —	737 =	5.6
	17,799 —	967 =	5.4
ΛOR	3,138 —	0	0
ΛOW	2,876 —	0	0
ΛOZ	3,530 —	0	0
ΛOT	3,563 —	15 =	.4
XOT	1,923 —	11 =	.6
	5,486 —	26 =	.5
ΛOG	3,313 —	13 =	.4
XOG	2,080 —	1 =	.05
	5,393 —	14 =	.2
ΛOK	5,353 —	22 =	.4
XOK	86 —	2 =	2.3
	5,439 —	24 =	.4
ΛRW	9,418 —	0	
ΛRZ	8,469 —	0	
ΛRT	9,568 —	41 =	.4
XRT	3,902 —	19 =	.5
	13,470 —	60 =	.4
ΛRG	6,669 —	69 =	1.0
XRG	3,319 —	76 =	2.3
	9,988 —	145 =	1.4
ΛRK	4,922 —	45 =	.9
XRK	18,790 —	106 =	.6
	23,712 —	151 =	.6

Factors.	Num.	Co.	Per cent.
ΛWZ	187 —	0	
ΛWT	4,800 —	12 =	.2
XWT	2,564 —	14 =	.5
	7,364 —	26 =	.3
ΛWG	2,337 —	6 =	.2
XWG	6,693 —	75 =	1.1
	9,030 —	81 =	.9
ΛWK	7,913 —	73 =	.9
XWK	2,217 —	10 =	.4
	10,130 —	83 =	.8
ΛZT	6,655 —	62 =	.9
XZT	2,258 —	10 =	.4
	8,913 —	72 =	.8
ΛZG	5,036 —	56 =	1.1
XZG	143 —	0 =	0
	5,179 —	56 =	1.08
ΛZK	4,678 —	25 =	.5
XZK	10,246 —	63 =	.6
	14,924 —	88 =	.6
ΛTG	3,830 —	2 =	.05
XTG	4,516 —	1 =	.02
	8,346 —	3 =	.03
ΛTK	12,459 —	3 =	.02
XTK	357 —	0 =	.0
	12,816 —	3 =	.02
ΛGK	6,600 —	0	

Discussion of the Primary Data

It is from the primary data that the factor diagram, or map, should be made, as the primary plus secondary data would obviously involve the frequent use of the same data twice, and would unduly weight those cases. There is an average of 6.9 per cent of crossing over between the alternatives H, B and M and the group of alternatives O, R, W, Z. From Y to the O, R, W, Z locus the average is 4.8 per cent. This would place H, B, M 2.1 per cent to the left, of Y. The meager data (repulsion between M and Y not usable) on direct crossing over between the group H, B, M and Y places this distance at .6 per cent. Roughly, then, the locus of Y is 1.3± (average) units to the right of H, B, M , and H, B, M is 6.9 units to the left of the ORWZ group. The average from the ORWZ locus to T is **.5** per cent. G and K are, respectively, .03 and .02 per cent only, but unmistakably to the right of T. There was no crossing over recorded between G and K in 6,600 opportunities.

These averages of crossing over percentage data, considering the extremely close linkage, are therefore quite consistent with the data from the three- and four-point experiments in lining up the factors as already indicated, BHM first,; Y second; the ORWZ alternatives third; T fourth; and G and K fifth. A factor diagram, or chromosome map, represents the arrangement as follows:
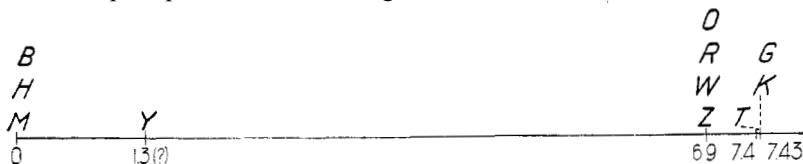
INCONSISTENCIES AND OBJECTIONS

A number of questions suggest themselves: Why are there such enormous difference between the percentage of the coupling, on the one hand, and the repulsion on the other? M and O have a repulsion percentage, in the primary data, more than five times that of coupling. The percentage for repulsion of M and R was about three times as high as the percentage for coupling. Between M and W, the situation was reversed, as the coupling percentage was four times as high as the repulsion. Some others are almost as inconsistent. Since O, R, W, Z are apparently alternatives, why is there such wide variation in the percentage of crossing over between M and O, and M and R? However, between Y and the O, R, W, Z group there are not such wide divergences.

The supposition of double crossing over must be resorted to in a few cases for the purpose of retaining the order of the genes suggested by a large majority of the reactions. Among genes so closely linked as these, is the assumption of double crossing over ever justified?

Perhaps the variability in linkage shown above is due to such factors "as age, temperature, genetic factors. The variability due to these causes far outweighs that due to random sampling. It is, therefore, inadmissible to compare data from different experiments, however extensive, in establishing the order of the loci, or in testing the validity of the hypothesis of linear arrangement. For such purposes, . . . it is essential to use data in which all the loci are followed at once." (Morgan, Sturtevant, Bridges '20). This statement probably covers the causes of the variabilities noted, though neither these, nor any others,. interfere with the consistent linear arrangement, on the average, of these genes as established by the three- and four-point data. Extending over twelve years, with extremes of temperatures from freezing to more than 120° F. in the sun, under glass, with all the conditions of moisture, from saturation to extreme aridity, the experiment has met practically all conditions which might cause variations of as great extent as those observed in the data. The widely separated sources of the material, coming as it did from the regions of Tampico, tropical Mexico, Houston and Sugarland, Texas, may also have contributed variation factors. Moreover, specimens from nature have been added on eight different occasions, a year or more apart. They have also bred at ages ranging from the youth of three weeks to those of the advanced age of five to seven months.

More careful analyses of the pedigrees may be expected to show that the main source of the linkage variations observed consists of genetic factors which are transmitted along definite lines. In such event a separate map will have to be constructed corresponding to the distinct linkage modifications revealed.

PARTHENOGENESIS

In matings 5000-54 offspring appeared with occasional aberrant individuals. These were nearly all females, and, whenever tested, showed themselves homozygous for the factor, or factors of a non-crossover, or crossover gamete of the female parents, and never exhibited any results of the factors of the parent males. Such individuals are now considered as having developed from unfertilized eggs.

Numbers 5055-5102 represent cases where males were present but did not function. The offspring are thought to have been of parthenogenetic origin for the following reasons: (1) The characteristics of the male did not develop in the offspring as they should have done had he functioned. (2) All but two of the offspring were females. (3) The offspring, when bred further, were homozygous for those factors for which they should have been heterozygous had the eggs been fertilized. At least two, or sometimes all of these criteria have been applied in the determination of each case.

Numbers 5103-5419 represent reproduction in females that had never been exposed to males after reaching maturity, with the exceptions noted (Nos. 5136, 5298-5314, 5316, 5337-9, 5352, 5354, 5355, where the females were exposed to males of *Paratettix texanus,* a distinct genus, with which *Apotettix eurycephalus* does not mate). As will be noted later, many of these females were never exposed to males of any kind at any time.

Several of the females that gave offspring parthenogenetically were afterwards mated, some of them reproducing exclusively bisexually and others both bisexually and parthenogenetically. Some examples are: The K/K female of 5137 which had never been exposed to a male of any kind gave 68 offspring, all K/K females. She was then mated to a Y/Y male, number 5016, and produced Y/K 20-28 and K/K 0-10. The history of this female is as follows: She was hatched parthenogenetically, May 6-8; became adult, June 13-15; hatched 68 parthenogenetic offspring between July 13 and August 20 from eggs which must have been laid in a period of about 38 days, allowing three weeks for hatching, June 22-July 20. She was removed from the cage July 26, and mated to the Y/Y male, 5016. Approximately 26 days after being mated on August 21, about the time the last of her exclusively parthenogenetic offspring hatched, she produced K/K 10 females and Y/K 11 males and 12 females. She died and was preserved September 3. On September 17, 9 males; 16 females, all Y/K were hatched. It appears that after being mated her parthenogenicity began to decline from some unknown cause, possibly the presence of the male elements, or old age.

Other cases of females producing parthenogenetically and then, after being mated, bisexually, are the following: Becoming adult at the same time as the sister described above the K/K female of 5138 without exposure to a male at any time, gave 41 offspring, all K/K females, hatching from July 20 to August 20. On July 30, she

was mated to an M/K male (195) and gave M/K 13-10: K/K 7-7. (Obviously, on account of the poor choice of a male in this case the only criterion as to parthenogenesis is that of the sexes of the K/K offspring, which are equal in numbers, indicating the cessation of parthenogenesis after mating.) The K/K female of 5299 was exposed to two *P. texanus* males but gave 14 K/K females, hatching from May 8 to 21. On May 13, she was mated to an M/M male (196) and during the period, May 31-June 9, gave M/K 12-16. The female +/W of 5328 gave parthenogenetically, +/+ 0-1, W/W (presumably not +/W) 0-1, and then after mating with a +/W male (312) gave +/+ 1-3: +/W, W/W 7-5. The Y/R female of 5340 gave parthenogenetically Y/Y 0-5, R/R 0-8, YR/YR 0-2 (one YR/YR tested, 5317). Then she was mated to a K/K male (5029) and gave Y/K 9-9, R/K 7-5, R/R 0-3. The parthenogenetic Y/K female of 5344 was mated in 739. The following YZ/K females procreated parthenogenetically and then bisexually : 5381, parthenogenetically, and in 5045, both ways; 5382, parthenogenetically, and in 5044, both ways; 5384, by parthenogenesis, and in 1276, bisexually; 5385, by parthenogenesis, and in 5046, both ways.

A female K/K (207) was mated June 14, to an R/R male, and hatched, July 10-August 20, R/K 49-39. The male had been removed on July 9. On July 24, the female was placed in a new cage, 5142, where she hatched, August 21-26, five individuals, only one, a K/K female (tested 5175) was recorded. It is believed that this is the only case where a female, after having procreated exclusively bisexually, produced parthenogenetically, though a number were tried. This interesting phase of parthenogenesis must be submitted to further experimentation.

In a few cases females produced several successive generations parthenogenetically, without exposure to males at any time. One such strain may be followed for seven generations as follows: Number 5366 as F1; 5245, 5246, as F2; 5261, 5262, 5264 as F3; 5267, 5270, 5271 as F4; 5285, 5287 as Fs; 5288, 5289 as FS; and 5290, 5291, 5292, 5293 as F7. One of the F5 progeny from 5285, of this line, was mated out., 223, and the K factor may be followed several generations through many combinations (Table V and matings).

Females are not nearly so prolific in parthenogenesis as when mated, as shown in Table VIII where the mated females gave more than three times as many offspring as their unmated sisters. In

this table, it is noted that a much higher percentage of the total offspring of the unmated females was recorded than of the mated sisters, 73 and 57 per cent, respectively. This was undoubtedly due to the greater crowding of the offspring of the mated individuals in the cages, and also possibly to greater promptness in making records of the offspring of the unmated females, as parthenogenesis then (1917-'18) was a novel feature.

TABLE VIII.—Numbers of offspring produced by unmated, as compared with mated sisters, 1917–1918.

(Prepared by Ruth H. West.)

MONTH.	Parthenogenetic Females.					Mated Sisters.				
	Number.	Offspring transferred.	Average.	Recorded.	Average.	Number.	Offspring transferred.	Average.	Recorded.	Average.
January......	6	60	10	50	8.33	4	....	....	111	27.8
February.....	16	166	10.4	163	10.2	4	95	23.8	38	9.5
March........	11	383	34.8	262	23.8	5	424	84.8	323	64.6
April........	16	401	25	252	15.8	6	598	99.6	359	59.8
May........	18	198	11	137	7.6	6	393	65.5	55	9.2
June........	15	291	19.4	235	15.7	10	822	82.2	418	41.8
July........	6	95	15.8	58	9.7	5	570	114	351	70.2
August.......	1	3	3	3	3	2	145	72.5	119	59.5
September....	6	57	9.5	41	6.8	7	362	51.7	192	27.4
October......	15	231	15.4	159	10.6	15	721	48	441	29.4
November....	....	....	....	....	....	....	....	....	....	....
December.....	4	9	2.25	7	1.75	....	....	....	....	....
Totals....	114	1,894	16.6	1,367	11.99	64	4,213	65.8	2,407	37.6

Thirteen among 5326 offspring produced parthenogenetically have been males. However, only one of these (male parent in 5027) was definitely proved to be potent by a breeding test.. Some of the others became adult and were mated, but did not take part in parentage.

It has been hoped that cytological examination of the ova might reveal the situation responsible for this predominantly gynogenetic parthenogenesis, but as yet, so far as has been ascertained, the difficulty of proper fixation, for one thing, has baffled all attempts. The diploid number of chromosomes in the *A. eurycephalm* females derived bisexually was found to be fourteen, and in an imperfect preparation from a female derived parthenogenetically, nine ap-

parently whole chromosomes and some fragments were observed. (A. H. Hersh, unpublished, '17, Nabours '19.)

Dr. W. R. B Roberhon definitely determined that some parthenogenetically derived females from these stocks, which he has examined, have fourteen chromosomes in the soma cells. Later, Robertson found that "The number of the chromosomes in some of the soma cells and also oögonial cells alternate between seven and fourteen and that in those cells where fourteen occur the members of pairs always lie together in such a manner as to suggest that in some previous cell generation a division of the chromosomes (seven) may have taken place which was followed by a reorganization of the nucleus and without a division of the cell body" (Robertson, unpublished, '21 and '23).

The inheritance results in parthenogenesis indicate that segregation and crossing over occur before the inception of the parthenogenetic processes, and that up to this stage in gametogenesis there is no essential departure from the procedure in bisexual reproduction. Parthenogenetic development of female offspring homozygous for all the factors carried, and the occasional homozygous male, may be accounted for according to some of the following hypotheses:

1. The chemical situation developed through the nonarrival of the fertilizing sperm may inhibit the completion of the last maturation division, or if completed, the last polar body (resulting from the equational division) may fuse with the pronucleus, thus retaining, or restoring, the diploid number composed of two sister sets of chromosomes (Seiler '23, and suggested by several persons previously).

2. If no mate arrives for the female pronucleus, chemical changes occur which cause each of its seven chromosomes to divide before there is any cell division. The initiation of development is a resulting event. If occasionally (13 times in 5326, p. 227), the X-chromosome does not divide with the others, a male results.

3. Doubling of the number of chromosomes may be due to fusion of nuclei after the beginning of segmentation (Seiler '23).
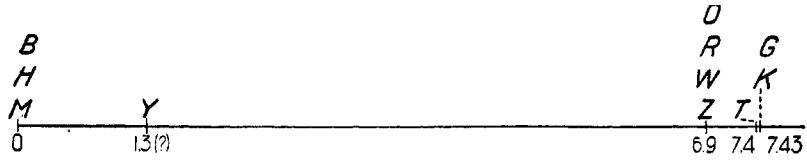
4. The chemical changes which take place during the wait of the pronucleus, in the absence of the fertilizing sperm, furnish the stimulus to parthenogenesis. This development cannot go far unless there is also a doubling of the chromosomes, brought about probably by division of the chromosomes without division of the nucleus. In other cases the nucleus also divides, thus continuing the supply of 1, nuclei. The comparatively low productivity of individuals producing parthenogenetically may be ascribed to a pre-

ponderance of 1_n nuclei which causes the death of the embryo; whereas, complete development depends upon a preponderance of the 2, nuclei. This accounts for the 7 chromosome and 14 chromosome nuclei which Robertson (cited above) has observed in some parthenogenetically produced females. In Drosophila and other forms, the X-chromosome is more subject to aberrations than are the autosomes, Possibly the mechanism is such that in some cases all the autosomes divide, but the X-chromosome does not; or, if the X-chromosome divides, one is lost through an elimination process. The sterile males probably have a large enough admixture of $(2X - 2A)$ cells to make intersexes of them. Many of the parthenogenetic individuals may be "emulsions" (instead of mosaics, or gynandromorphs) of haploid and diploid nuclei (Bridges, '22, and in a letter).

CONCLUSIONS

1. The members of the species *Apotettix eurycephalus* Hancock are bisexual, the fertilized eggs producing males and females in equal numbers, and parthenogenetic, the unfertilized eggs, with rare exceptions, hatching females. The females are on the average more than three times as prolific when mated as when unmated.

2. A mated female may have part of her ova fertilized, and also produce from the unfertilized ova, by parthenogenesis, an additional number of offspring which are nearly always females.

3. The segregation of factors occurs in individuals producing parthenogenetically apparently to the same extent as in those reproducing. bisexually.

4. Crossing over of factors occurs in females reproducing parthenogenetically apparently to the same extent as in those reproducing bisexually. Crossing over occurs in males, but very rarely,

5. These dominant color characters appear to have their factors, or genes, confined in one series, or to one pair of chromosomes.

6. A linear arrangement of the factors, with B, H, and M first, arbitrarily to the left; Y second, the group of alternatives O, R, W and Z third; T fourth; G and K fifth, seems to be justified as follows: (1) It requires very few double crossovers in the three- and four-point experiments. (2) It is the most logical development of the averaged crossing over percentages derived from the primary data.

7. It is deferred to a later time with more available data, or to others, to estimate more exactly the distances between loci. The

following diagram is believed to represent the relations of the factors, but with their distances apart grossly approximated:

```
                                                      O
    B                                                 R   G
    H                                                 W   K
    M          Y                                       Z  T
    |----------|--------------------------------------|--|-|
    0         1.3 (?)                                 6.9 7.4 7.43
```

8. It is also deferred to a later time, or to others, to indicate specifically in what measure and adequacy this work supports the hypothesis of a linear arrangement based upon the chromosomal mechanism (McClung, Wilson, Morgan, Sturtevant, Muller, Bridges and others). Genetically the data appear to support, certainly not to detract from this hypothesis which is employed here because of its availability and explicitness.

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