YANKEE'S DIRIGIBLE AIRSHIP OF SIXTY YEARS AGO

Rufus Porter Had to Tackle the Same Problems of Aerial Inventors of To-day, Including the Raising of Capital

IS Count Zeppelin only an imitator? At least, is that what Rufus Porter would call him if Rufus were alive? Perhaps you don't know who Rufus Porter was, and if that be the case, you, as a patriotic American, will be interested in learning that he has some right to be described as the father of the dirigible airship. It is not necessary to emphasize the fact that he was of the genus Yankee, for his imaginative powers stamped him with that hallmark.

This is not to be a biographical sketch of Rufus Porter, but merely another reminder that there is nothing new under the sun, provided one does not go too far back for a historical beginning. This time we shall limit our delving into the past to the year 1850.

In March of that year—now something more than sixty-three years ago—Porter exhibited his dirigible aircraft before admiring Americans in both Boston and New York. The newspapers of the time described his achievements in the direction of aerial navigation. This is what was said of them in the Boston *Bee*:

"Mr. Porter's 'flying machine' did all that it promised on Wednesday evening. It rose above the audience and went around the hall, exactly as he said it would, and the spectators gave three cheers for the successful experiment."

In the New York *True Sun* was printed this fuller praise of the work of Rufus:

"The aerial steamer model was again tried at the Merchants Exchange yesterday afternoon, and with brilliant success. It described the circle of the rotunda eleven times in succession, following its rudder like a thing instinct with life. With its description of each circle burst after burst of applause arose from the excited throng, and followed it throughout its journey. At the close of the performance three loud cheers were given for the steamer and the auditors quitted the rotunda with every manifestation of pleasure and delight."

Just whether the papers of the day grew to look upon these performances as commonplace, as is unfortunately the practice toward things originally marvellous, the records do not show, but it is a fact that Mr. Porter instituted a paper of his own about the first of June of 1852, and as it was to deal preferably with flying craft he dubbed it the *Aerial Reporter*, and set out to publish it at Washington semi-monthly. The second issue of this periodical shows that the imaginative Rufus had not been idle since his model demonstrations two years previously. He had been able to win substantial encouragement, and with reasonable preference he devoted his paper principally to the satisfying of his shareholders.

After outlining briefly the state of the work of building one of his flying ships, which he called an aeroport, he informed his people that "a third machine is nearly completed, to be employed in inflating the float. Twenty-eight copper cylinders for the boiler, each furnished with conical perforated heads, have been received from New York, and the boiler is in progress of completion in Georgetown. The engine cylinders of brass have been finished and the valves and connections are in progress at a finishing shop in this city. There has been considerable delay, however, in consequence of the breaking of the engines in two of the shops, in which different branches of the work is in progress."

To do Mr. Porter justice, it does not seem that he was getting much out of the treasury of the enterprise, for in his detailed statement of expenditures he has the modest item of $21 due him for his personal services during a period of twelve days. He was certainly deserving of generous compensation, because he combined the dual faculties of the inventor and the man of seductive speech. This gem from his paper will give you an inkling of his convincing power.

"Under present circumstances, I cannot encourage subscribers to expect the completion of this first aeroport so early as was first anticipated; but they may rest assured there will be no want of effort in putting it forward. And I would encourage the anticipation that within a few months these aerial machines may be seen soaring in various directions and at different elevations, some apparently among or above the clouds, and others, like swallows, sailing leisurely just above the surface of the earth. The sides of the most lofty and rugged mountains, and the fertile valleys, will be alike reconnoitered.

"Let the gentle readers hereof imagine themselves to be visiting the pleasant and excellent literary establishment on the summit of Mount Holyoke, on a sunny morning in this balmy month of June, and gently descending thence toward the verdant plains which border the meandering Connecticut, and then, at an elevation of only eight or ten feet from the ground, sailing moderately over the rich fields of broom and grain, and over the flower spangled fields of grass, waving to the western breeze, and conversing by the way with the merry farmers, as they follow their recreative avocation of hay making; then ascending with accelerated velocity to the altitude of refreshing temperature, and returning to Washington to dine."

Possibly fearing that he had limited the range too much to suit the excitement loving populace, Mr. Porter swept figuratively into wider fields when he came to his peroration. He concluded in the following language:

"Or, suppose yourselves leisurely cruising along by the steep and rugged sides of the Rocky Mountains, and laughing at the astonished countenance of the harmless grizzly bear, or at the agility of the frightened antelope, and then descending to the extensive prairies to watch the prancing of the wild horses, or the furious rushing of hordes of buffaloes. These things are indeed but fancies at present, but in a few months these fancies may become pleasant realities in America, while the proud nations of Europe are staring and wondering at the soaring enterprise of the independent citizens of the United States."

Having carried his reader through the realms of the sky Mr. Porter switched them without the quiver of an eyelid to earth and things material, for he ends up by announcing that "the demand for shares in the large aeroport continues brisk and it is apparent that I might readily dispose of several hundred more if so disposed, but having but few blanks remaining I have decided to sell only twenty more at the original price of $5 each. I am still sanguine that they will command at least $100 as soon as the first aeroport is completed."

Rufus Porter was not unmindful of the critics of the day, and he went to some pains to prepare a description of his steam driven dirigible airship, and he realized some of the difficulties of getting back to terra firma deliberately. While he did not master aerial navigation after the fashion he promised, still his imaginative anticipation of conditions is amply in evidence. This feature of the problem he disposes of in the following language, and please keep in mind what others have only lately accomplished:

"Whenever it is requisite to come to land, to moor the machine, or to land or receive passengers, the rudder will be depressed until the saloon is brought sufficiently near to the earth to send down the elevator. It has been already stated that the saloon is furnished with duplicate engines, but should both of them by any means become impaired at the same time a grapple may be thrown out and will infallibly take to the shrubbery, fences or rocks, and by this the machine may be hauled down. If occasion should so require, however, a part of the hydrogen may be allowed to escape through a valve.

"The saloon will be furnished with rubber cloth cylinders inflated with air sufficient to render it a safety boat of the best kind, in case of an accidental descent into a lake or ocean."

The thought of dropping through space full tilt is a bit disquieting to most people. The man in the street felt the same way when Mr. Porter was floating his project but before he floated his aeroport. To dissipate fear upon this score, the inventor had this to say:

"It is supposed by some that if a rent should by any means occur in any part of the float the whole apparatus would rapidly descend. But to prevent the possibility of such an event the float will be furnished with several transverse partitions, so that if a rent should occur in any part the descent of the machine would be so moderate that the pilot will have time enough to select his ground to land upon." This is clearly an anticipation of the Zeppelin of to-day and other kindred dirigibles.

An inventor, especially during the period of promotion, would not be worth his salt if he could not evolve improvements at the right moment, this moment generally occurring when stockholders get restless and funds run low. Therefore, just see how Rufus Porter measured up to requirements:

"I have improved the invention in several points. By one improvement the float, after being inflated and filled with hydrogen, admits of the expansion of the gas to double its original volume if so required, thus preserving a uniformity of buoyancy at different altitudes.

"I have discovered a novel and accurate apparatus for measuring the altitude and ascertaining the direction and velocity of the motion of the aeroport. I may also mention an improved engine and boiler, of four fold the ordinary power in proportion to its weight."

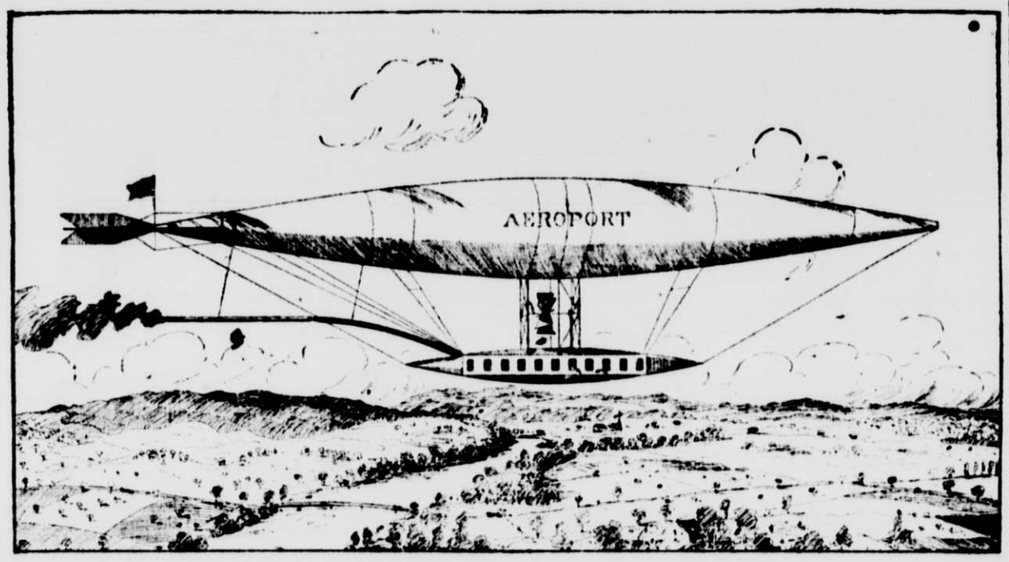
Mr. Porter's fertile mind pictured phases of the art with which his rivals of to-day are still battling, but his lot was not altogether a happy one, and he has left the following record of that fact:

"The principles and construction of this invention have been explained to several thousands of persons, most of whom have been apparently convinced of the practicability of its successful operation; and among them several of the most scientific men in the United States. Every obstacle and difficulty that could be imagined have been brought up by those strongly opposed to its success; these have been duly considered, discussed, and obviated.

"The only circumstance which has hitherto prevented this invention from successful operation has been the want of requisite funds; for unfortunately capitalists are generally either shamefully ignorant of scientific principles or are such slaves to pride and popularity as to be ashamed to patronize a new invention, or are so enviously averse to the fortunes of inventors as to refuse to aid, unless on such conditions as to grasp the invention and ruin its author.

"But this important invention is destined to succeed eventually, and constitute the principal and general instrument of transportation of merchandise, as well as mails and passengers, throughout the world."

Rufus Porter's Dirigible Airship of 1850



CHESS FOR PLAYER, LOVER AND STUDENT

Last week a reader of THE SUN suggested that in the forthcoming championship chess match between Lasker and Rubinstein they should, in turn, offer gambits, and thus make things more interesting for the chess world at large. The reader was told that one could scarcely expect the masters to adopt unsound openings in a championship match. It is rather interesting to see what an eminent expert, namely I. Gunsberg, has to say on this subject. This writer contributed the following essay to one of the London papers at his command:

"Gambits were first produced in Italy. The word itself is of Italian derivation. To have to analyze a gambit nowadays, played by two great masters of a former generation, makes one naturally feel inclined to moralize on comparisons. I do not know whether it has occurred to any one else, but I should imagine that Verdi's, Bellini's or the other Italian composers' early works would, by musical critics, be looked upon much in the same light as chess critics look upon the early play of Steinitz and Zukertort and other masters of a former generation. The change that has taken place in style and method of play is in harmony with changes that have equally taken place in all other imaginative arts, the result of progress in the perception of that which is true and sound leading to a higher standard of both power and beauty.

"We no more get enraptured by simple catchy melodies than we think that the highest chess play is attained when one player plays a risky and unsound opening and the other player, through an equally unwholesome desire to win quickly, accepts the unsound opening and gives his opponent a cheap opportunity to indulge in fireworks at his expense. A higher imagination, both in chess as well as in music, is exerted nowadays to produce a composition which, though less catchy, contains more of orchestration and art pleasing to the higher intellect than was the case in former compositions, referred to above.

"Let it not be understood, however, that I wish to condemn gambits root and crop. On the contrary, I wish to remark that the student of chess who is desirous of improving his play would do wrong, as a great many players actually do, by playing only so-called sound openings, such as the Ruy Lopez or Queen's Gambit. The art of playing chess requires preeminently two qualities—imagination and soundness. Of the two, I unhesitatingly put imagination first; therefore my advice to students would be, practise gambits or imaginative play before devoting exclusive attention to soundness. To put soundness first is a common mistake made by English players.

"With reference to gambits I have to state the following propositions: I believe the Bishop's Gambit, namely 2. B—B4, may be played with good effect. When the Bishop's Gambit is not resorted to then I think that very good play may be got out of the continuation of 3. P—KR4, P—Kt5; 4. Kt—Kt5, &c. Finally, if I should play 3. B—B4, then I should have no hesitation if black replies with P—Kt5 to play the Muzio by 4. Castles, as I think this is a very strong game. Players taking my advice practising any of the three gambits, hereby indicated, will find that the risks they run are small, but the possibilities of attack and combination leading to success are very great, while at the same time they will receive a general benefit by practising combination play."

Appended are two games from the recent match at Vienna, the first game being annotated by Spielmann, the other by Dr. Tartakower. The games:

GIUOCO PIANO.

Dr. S. Tartakower. White.	R. Spielmann. Black.	Dr. S. Tartakower. White.	R. Spielmann. Black.
1 P—K4	P—K4	31 Q—Q	R—B6
2 Kt—KB3	Kt—QB3	32 Q—QB	R—K2
3 B—B4	B—B4	33 Q—Kt2	QR—R4
4 P—B3	Kt—B3	34 B—Q	P—Kt5g
5 P—Q4	PxP	35 PxP	P—R6
6 P—K5a	P—Q4	36 Q—B2d	RxR
7 B—QKt5	Kt—K5	37 PxR	RxP
8 PxP	B—Kt2b	38 R—Kt3	R—R6
9 Kt—B3	Castles	39 RxP	BxR
10 Castles	B—KKt5	40 P—R4	R—K2
11 P—KR3	BxKt	41 Q—Kt3c	BxP
12 PxB	KtxKt	42 B—B3	Kt—B2d
13 PxKt	Q—R5	43 Q—Kt8 ch	K—Kt2
14 K—R2	Kt—Q	44 Q—QB8f	P—R7m
15 R—KKt	P—KR4	45 BxP	QxB6
16 B—Q3	Kt—K3	46 QxKt ch	K—Kt3
17 Q—B2	K—R	47 QxP	Q—B6
18 P—KR4d	P—KKt3	48 Q—Q2	Q—Q4
19 B—K3	P—QR4	49 Q—Q	K—Kt2
20 Q—K2	P—B5	50 Q—KR	Q—R5o
21 B—B2	P—QE4	51 Q—B3	B—K2
22 Q—B3	Q—Q2	52 Q—K17	K—B2
23 R—Kt2	B—R5e	53 P—Q5	Q—K7
24 QR—KKt	B—B2f	54 Q—Kt3p	K—Kt2
25 R—Kt	QR—Kt	55 P—Q6	B—R5
26 P—R4	P—QR3	56 Q—K17 ch	K—B3
27 PxP	PxP	57 Q—Kt2	Q—Q8
28 R—QR	Q—B3	58 Q—R3	K—R4
29 KR—Kt	R—R	59 K—Kt2	Resignsq
30 KR—Kt	KR—R2		

(a) An old book variation, which is just as playable as the usual PxP.

(b) It is doubtful whether B—Kt3 is the stronger move.

(c) In order to tear up the king's side position, 11 B—R4; 12 P—KKt4, B x Kt3; 13 Q—Kt3 would be of advantage to white.

(d) On account of KtxQP, BxBP could not be played.

(e) In order to block the advance of the KRP. If for instance 23 P—QKt4; 24 P—KR4, BxRP (better than Kt—Kt2); 25 Q—R3, Q—K7; 26 R—R threatening K—Kt, which would be rather unpleasant.

(f) Because of white's chance threat of taking the KKtP. Also into consideration here came R—Kt1, as he need not have feared the sacrifice of BxKBP.

(g) Rather weak. He ought to have played Q—R3.

(h) Not 36, BxR, PxQ, 37 RxR on account of BxKtP and B—B6.

(i) The beginning of the deeply laid trap. It is scarcely to be believed that in view of the few pieces on the board there should be a possibility of a mating combination by means of a sacrifice of a piece.

(j) More cautious would have been K—Kt2 which might have given black a draw.

(k) Black is still unconscious of the coming storm. With 42 P—B7 he could still have saved himself, as for instance 43 BxQP, P—R8 (Q); 44 BxQ (if 44 BxQ (B8), QxQ; 45 P—Q5, Q—R2, 46 PxKt, B—K2 or 43 QxQP, QxQ; 44 BxQ, BxKBP (not 44 KtxQP on account of 45 BxKt, P—R8 (Q); 46 P—K6ch, K—Kt; 47 P—K7 mate); 46 B—B1, Kt—B2; 46 B—Kt3, BxQP; 47 BxBP in both instances drawing.

(l) A most painful surprise. White threatens BxQP and QxKt.

(m) Or 44 BxBP, 45 BxB, P—B7; 46 BxQP, P—B8 (Q); 47 Q—Kt8 ch, K—B3; 48 BxQ, QxP; 49 Q—B8 ch, K—R4; 50 Q—KB6, QxQ; 51 PxQ with a won end game.

(n) If 45 P—B8 (Q) instead, 46 Q—Kt8 ch, K—R3, 47 BxQ, QxB, 49 Q—B8 ch, K—R4; 49 B—B3 mate. This whole combination was seen by white when he played 41 Q—Kt3.

(o) The exchange of queens would also have led to a win for white.

(p) 54 P—Q6 cannot be played on account of everlasting check.

(q) Resigns, since white wins easily by means of 60 B—B5 or B—h16.

CARO-KANN OPENING

R. Spielmann. White.	Dr. S. Tartakower. Black.	R. Spielmann. White.	Dr. S. Tartakower. Black.
1 P—K4	P—QB3	21 Q—Q2	B—Kt5f
2 P—Q4	P—Q4	22 Castles	QR m Kt—R4
3 P—K5d	B—B4	23 K—Kt	Kt—B5
4 B—Q3	BxB	24 KtxP/e	KtxQch
5 QxB	P—K3	25 BxKt	QxQP
6 P—KB4g	Q—Kt3c	26 KtxKtch	QxKt
7 P—B5	PxP	27 BxB	R—Q
8 QxP	Kt—K2	28 QR—K	Q—B4ch
9 Q—B2	K—Kt2	29 K—R	Q—Kt5p
10 P—KRtd	B—K2	30 B—K7	R—K
11 P—R5e	Kt—B	31 B—B3	RxRch
12 Kt—K2	Kt—K3	32 RxR	QxKtP
13 P—B3	P—QB4f	33 K—Kt	Q—Q7
14 Kt—B4	KtxKtg	34 R—Rsch	K—B2
15 BxKt	PxP	35 R—K7ch	K—B3
16 PxP	Kt—B3	36 P—QKt3	Q—Q8ch
17 B—K3h	Castles	37 K—Kt2	Q—Q7ch
18 P—R6	P—KKt3	38 K—Kt	QxKRPq
19 Kt—B3	P—B3i	Resigns	
20 PxP j	RxP k		

(a) This move, which was formerly considered weak, is now looked upon as the most energetic one at the command of white.

(b) More solid is Kt—KB3, to which Niemzowitsch generally replies with Q—Kt3 (not P—QR4 on account of 7. Q—Kt5, Q—Q2; 8. Kt—QB3); 7. Castles, Q—R3, which gives black an even game.

(c) Now P—QR4 would have been better, for Spielmann has a chance of breaking up the position, which an aggressive player like Spielmann wants, the more so as his adversary only needed a draw to win the match.

(d) More aggressive than 10. Kt—K2, B—K2, 11. Castles, Castles, and black has a pretty safe position.

(e) Not to be recommended, as it drives the Kt to a better square, that is to say, to one where it stands better for the defense. Better would have been 11. Kt—K2, whereupon black, of course, could have replied with P—KR4; 12. Castles, R—KB and black might later have castled on the Queen's side. Less good would have been (after 11. Kt—K2), Castles; 12. P—R5, Kt—R; 13. Kt—Kt3 and black has a very difficult game.

(f) Black proceeds quietly with his combinations.

(g) Simple and good. After 14. PxP; 15. KtxP, Q—B4; 16. KtxB, QxP ch; 17. K—Q, KxKt; 18. P—R6, P—KKt3; 19. R—K white might have accomplished something.

(h) Of no good would have been 17. Castles QxQP; 18. B—K3, QxKP; 19. QxP ch, K—Q2, &c.

(i) White could not prevent this strong move, which breaks up his whole centre position.

(j) Now the best move (not KtxP on account of Q—R4ch).

(k) Strong would also have been BxP.

(l) Black is already master of the situation.

(m) Forced.

(n) Now white sees a last chance. After 24. Q—Q3, BxKt (not KtxP); 25. KtxP); QxB, R—K and white's position would have been hopeless, for instance 26. KR—K, KR—K3; 27. B—Q2 (if B—B, BxR; 28. RxR, RxR; 29. QxR, Kt—R6 ch; 30. K—R, Kt—B7 ch, R—K7, &c.

(o) More "swindling" would perhaps have been 26. BxB, Q—K5 ch; 27. K—R, R—B2; 28. KR—K. Totally lost, however, for white would have been the continuation QxKtP; 29. Kt—K7 ch, BxKt; 30. RxR, &c. Black, however, carefully replies with 28. Q—Kt5 and by degrees he gets, by means of his material advantage, the win.

(p) Wins a pawn and the fate of white is sealed.

(q) 38 Q—R4 was also very forceful.

CORRESPONDENCE.

William Runk, Ridgewood, N. J.—Up to date we have not received a report on the position referred to by you.

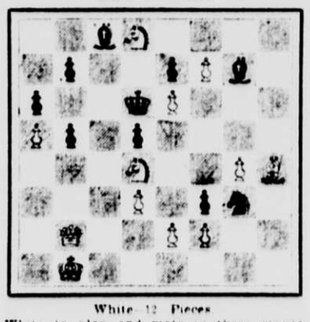
Maurice Shoemaker, New York city. A player may at any stage of the game advance a pawn, when first moved, to a fourth square; that is to say, he can at any time play P—QR4 or P—QKt4 or P—QR4, &c.

Dr. Lasker and Capablanca never played a serious game of chess. In a rapid transit tourney at the Manhattan Chess Club some years ago Lasker met Capablanca in the final round, the latter winning the game and the first prize.

PROBLEM NO. 413. BY K. ERLIN.

(Third Prize Winner in a Recent International Tourney.)

Black—10 Pieces.

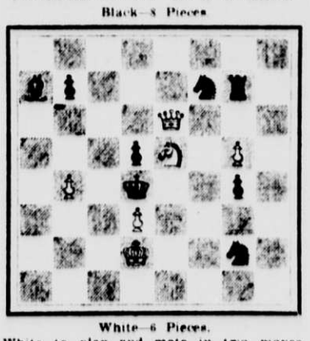


White—12 Pieces.

White to play and mate in three moves.

PROBLEM NO. 414. BY H. KUEHNE.

Black—8 Pieces.



White—6 Pieces.

White to play and mate in two moves.

SOLUTION TO PROBLEM No. 411.

1. Q—B2, RxQ; 2. R—K18, &c.
1. Q—B2, PxQ; 2. B—Q2, &c.
1. Q—B2, RxR; 2. QxR, &c.

SOLUTION TO PROBLEM No. 412.

1. Q—R3, &c.

Correct solutions to both these problems received from C. H. O'Connor, Montclair, N. J.; James Roberts, Philadelphia, Pa.; Charles Willing, Philadelphia, Pa.; William Runk, Ridgewood, N. J.; N. J. Lane, New York city; Right You Are, Brooklyn, N. Y.; R. P. Marquardt, Jersey City, N. J.; O. S. Lampfield, Orange, N. J.; A. T. Messenger, Brooklyn, N. Y.; A. D. Cameron, Boston, Mass.; H. T. Longwitt, Baltimore, Md.; James F. Court, New York city.

Correct solutions received to No. 412 from Miner Trowbridge, Brooklyn, N. Y.; M. Heineman, New York city; Fred H. Linton, Scranton, Pa.; Gibbons, Brooklyn, N. Y.; W. D. L. R., New York city.

Additional correct solution received to No. 408 from C. J. Winchester, Colorado Springs, Col.

GARDENING NOTES

FOR THE SUBURBAN AND COUNTRY HOME

What Is the Sago Palm?

Cycas revoluta, from the southern part of Japan, is a palmlike low tree, commonly classed with palms in conservatories and called the sago palm. It is grown extensively in Japan and China for the pith contained in its trunk, which is prepared by the natives into an article of food, similar to the sago, but the cycas furnishes none of the sago of commerce.

The cultivation of this plant in the house is the same as required for all the palms, or it may also be nurtured in a low temperature and the new growth retarded for the lawn next summer. This plant, by the way, was first introduced into England from China in 1737.

A reader who has seen moving pictures of natives cutting palms and making sago wants to know what palm the sago of commerce is made from.

Oreodoxa oleracea is the West Indian cabbage palm and sometimes attains a height of over 150 feet, with a small, straight, cylindrical trunk. The heart of the young leaves is cooked like cabbage and the pith affords sago. Oil in considerable quantities is obtained from the fruit.

The greatest part of the sago is derived from the two palms, Sagus levis and Sagus rumphii. The word sagus is derived from sago or sagu, which in the language of the Tapuan race signifies bread. It is the Sagus levis that produces the bulk of the sago. This beautiful palm grows from twenty-five to fifty feet high and has a rather thick trunk marked with the scars left by fallen leaves. These trees produce their flower spikes when about fifteen years old and the fruit is ripened nearly three years after, when the tree dies. In order to procure the greatest quantity of sago the tree must be cut down as soon as the flower spike makes its appearance.

The sago is prepared from the soft inner portion of the trunks of the trees, which are sociable palms, growing together in large masses in swampy places.

The trunks of the trees are cut into short lengths and filed or shredded into small bits by means of a gigantic file, which is made by driving small pieces of metal through a board. The shreds are pounded in water until the starchy matter separates, when it is drained off with the water, allowed to settle and is then purified by washing. It is then in the form of sago meal, but before being sent to this country it is made into what is termed pearl sago. The rough meal after washing is spread out to dry and is then broken into small pieces, which when sufficiently hard are pounded and sifted until they are of regular size. Small quantities are then placed in a large bag and suspended from the ceiling and shaken backward and forward for a few minutes, when it becomes granulated or pearled, and is thoroughly dried for exportation.

Spraying Trees for Scale Insects.

Scale insects are more easily controlled between the time the foliage drops in the autumn and the buds begin to burst in the spring.

On trees most seriously infected, and especially the rough bark trees, the oil compounds are more effective than the sulphur mixtures. The oils have a tendency to spread and work in among the crevices of the bark, destroying the scales hidden underneath. With lime and sulphur it is necessary to strike the scale with spray to kill it.

On smooth bark or young trees lime and sulphur are preferable, as there are no crevices to hide insects, and this spray will also destroy various fungus diseases such as black rot, scab, &c.

Oyster shell scale in ash, walnut, lilac and other trees and shrubs may be destroyed by spraying with oil compounds during mild weather in winter when it is not freezing. The spray may be safely made quite strong with oil.

Rock maples cannot be sprayed with oils, as it is sure to injure and possibly kill the trees. Other varieties of maples take oil with good results.

Petroleum Compounds and Oils Unsafe on Sugar Maples.

Dr. E. P. Felt, State Entomologist, says that many sugar maples have been sprayed in New York State with oil preparations represented by the manufacturers and agents as both effective and moderately safe. Several hundred trees were nearly dead a few months after the treatment and numerous others show signs of severe injury.

The injury following oil treatments usually appears first on the smaller maples or on the lower branches of moderate sized trees, the tops of the latter remaining in a vigorous condition for one or more seasons. The foliage of affected limbs discolors and dries in midsummer and is followed by cracking of the thinner bark on portions of the trunk and limbs in the late summer or fall of the succeeding season, and finally by the death of the tree.

Dr. Felt strongly advises against the use of such materials on dormant sugar maples.

Propagating Privet, Grapes and Currants.

California privet can be propagated by means of cuttings of stout one year wood, made now. Make the cuttings five or six inches long, strip off all the leaves and tie the cuttings up in small bundles. Use tarred hemp cords for this purpose, as ordinary cord will rot.

Bury the cuttings, tops up, in the garden over winter. Dig them up in the spring before growth starts and plant in a well prepared bed, in rows eight inches apart and four inches apart in the rows.

Grape cuttings should be made about December 1, making the cuttings about eight inches long, with a bud near the top and bottom of the cutting. Tie the cuttings in bundles as suggested for California privet and bury them for the winter with the bottom ends up. Dig up the cuttings in the early spring and plant in rows in well prepared beds.

Currant cuttings should be cut about eight inches long and can be treated as recommended for California privet or they may be planted deeply now, so that not more than two or three buds will be above the ground.

Four new sweet peas will be offered by seedsmen next spring: King White, the white pure and opaque, immense frilled petals on long stems, frequently producing four flowers on a stem.

Illuminator, a warm salmon orange ground color overlaid with bright cerise pink. It makes a strong growth and blooms profusely.

Empress Eugenie, a light gray flaked with light lavender, large flowers, beautifully waved and crimped.

Wedgwood, a unique shade of Wedgwood blue.

The crop is short of all these new peas and orders should therefore be placed early. They will be sold only in packets.

Look Out for the New Rhododendron Pest.

E. P. Felt, State Entomologist, Albany, N. Y., states that a small ambrosia beetle has recently been found boring in rhododendron stems near New York city. The sides of the shoots are entered near the surface of the ground through round holes about a sixteenth of an inch in diameter. A series of blackened, circular, nearly horizontal galleries are made by the insect opening into vertical, cellike chambers. Affected branches wilt and a slight pull usually causes them to break at the point of greatest injury and reveal the borers, cylindrical, shining black beetles, about an eighth of an inch long.

The insect appears to be local in habit and shows a preference for shaded localities and is probably widely distributed. Information respecting its occurrence and abundance, especially if accompanied by specimens, is much desired.

The remedy is to cut out the wilting, infected stems and burn them. Care should be taken to avoid breaking the shoots at the point of injury and thus allowing a number of active beetles to drop out and make their way to nearby stems.

Liquid manure for house plants can be made by placing two or three tablespoonfuls of prepared stable manure in a fruit jar of water, fastening on the top and shaking vigorously. Prepared stable manure is odorless and is sold by florists and seedsmen. Plant fertilizers sold by florists in small packages may answer equally as well, applying a little fertilizer to the soil in the pot according to directions on the package.

To induce winter flowering of Hydrangea hortensis, the plants should be kept in a light cool place where the temperature will be about the same as out of doors. Let the plants have a touch of frosty weather, to check growth and start their season of rest. Then keep them cool, just above freezing, for a few weeks, when growth may be again started by bringing the plants into a good light window, in moderate temperature.

Sweetened Water for Cut Flowers.

The *Florists' Exchange* says that in some recent experiments by two professors of the School of Agriculture at Rennes, France, to prolong the life of cut flowers some interesting results were obtained. One Hundred different kinds of flowers were used in the experiments and it was found that sugar helped in keeping most of them fresh but was positively injurious to lilies and sweet peas. It hastened the opening of roses and orchids but was no help to tulips, daisies or chrysanthemums.

Experiments were made with small quantities of chloral, ether, glycerine, alcohol, lime water and ammonia salts, each of which served to lengthen the life of various kinds of flowers. Some of the flowers kept in sugar and water lived four times as long as they would ordinarily. The amount of sugar varies. Carnations seem to like 15 per cent., roses 8 to 10 per cent.

According to the professors "flowers will because of the collapse of the individual cells of which they are composed. They remain fresh as long as the pressure of fluid within and without stays uniform. This balance of pressure depends upon a liquid containing substances in solution and by modifying the water the requisite substances may be artificially furnished."

Calla lilies from dormant bulbs in a temperature of 60 degrees will flower in twelve weeks. Narcissus flower in about twelve weeks. Tulips and hyacinths will flower in about fourteen weeks after planting.

Solanum or Jerusalem cherries are raised from seed sown in March. As soon as the weather permits the plants should be planted out in the open ground in a good rich bed, thoroughly prepared. Early in September dig up the plants and pot them, keeping them outdoors, and finally remove to a cool conservatory or put in a cold frame. Use liquid manure freely as soon as the pots are well filled with roots as solanum are gross feeders. This treatment will give plants of fine large size covered with bright red berries.

A gardener near Austin, Tex., last winter had 500 acres planted to spinach and this year has trebled the acreage. It is the largest spinach farm in the world. Shipping is started the middle of November and from that time until late in the spring several carloads are shipped every day. The net returns last year averaged about $150 per acre.

Some people suppose that because plants are expensive they must be good and will surely thrive. Sometimes we hear that a florist is a downright humbug because a camelia purchased a few weeks previously has not a leaf on the stock. Or perhaps it is a maranta or some other plant requiring careful attention or special treatment which it has not received. Plants never do well for people who never do well for plants. As a matter of fact it is usually the cheaper plants that thrive best with the least attention. Strong, healthy, rapid growing plants are increased rapidly and make it possible to sell them cheaply, so the beginner should start with these, and as experience warrants gradually add plants requiring special care and careful handling.

Thornless Roses.

Considerable speculation has been indulged in both by the press and the public as to the possibility of a thornless rose being produced, unaware of the fact that back in 1873 or before that date the thornless rose (zephrine drouhin) was raised, but it never became popular. It is a charming variety with flowers of bright carmine pink and deliciously fragrant. It is vigorous and the stems thornless. It is a hybrid raised from Bourbon stock. The Bourbon roses are almost spineless and perfectly hardy. Madam Plantier is a well known variety of this type.

Aspidistra lurida is a plant of erect habit with handsome foliage, for which it is cultivated. It is one of the few plants that thrive with house culture. In winter it should have but little water and be kept in as low a temperature as possible, that is, not exceeding about 50 degrees. As spring approaches it will start into new growth and will need more water, and during the summer cannot be oversupplied, even if it stands in a saucer of it. A white margined variety is called aspidistra lurida variegata. Both are very satisfactory house plants to associate with palms and ferns.

This plant does well in dusty, smoky towns, where few other plants will thrive. It is quite popular in London. It makes a good vase plant and thrives in the moisture and spray of a fountain.

If plants are frozen or frosted remove them at once to the cellar or to some place where the temperature is just about freezing and sprinkle them thoroughly with cold water; cut off the wilted parts and keep the plants in a cool place for two or three days. In some desperate cases it may be necessary to cut off the entire plant so that growth may start from the root.

The importation of plants by mail has been prohibited. This is to prevent the importation of insects and disease. All plants imported are now subjected to inspection by the agents of the Agricultural Department and it is necessary to obtain a permit before plants can pass the custom house.

How to Tell When to Use Lime.

In response to several inquiries from readers wishing to know how to tell when soil requires liming, the simplest way is to take a little soil from the surface of the field or garden and add sufficient water to make a paste. Next take a piece of blue litmus paper to be obtained of any druggist, and put on each side of it a thick coating of the paste or thick mud made from the soil to be tested and let it stand for about three-quarters of an hour. At the end of that time take the paper carefully from the ball of mud. If the paper has turned red or pink the soil needs lime. The lime should be applied in the autumn and harrowed in on a large field or raked in on a garden plot. Where lime is used in the autumn no manure should be used until the following spring, as the lime will set free into the air the nitrogen, a most valuable element of the manure.

Never use lime where azaleas or rhododendrons are growing.

A thousand pounds to the acre is generally sufficient, though in some sour soils as much as 3,000 pounds to the acre may be used.

Gardening Notes of October 19 referred to fruit and vegetables that are permitted to go to waste in various parts of the country because growers at times are unable to obtain a price that pays for handling the crops.

In response to the article Wells A. Sherman, acting chief, office of markets of the Department of Agriculture, says: "The article describes, although possibly with some degree of exaggeration, conditions which exist almost every year in some part of the country, and it was with the hope of relieving these conditions to some extent that the organization of this office was undertaken.

"This organization began with the present fiscal year and is still far from complete. A number of men who will in the near future be added to its force are, however, specialists in the various branches of food handling and marketing, and it is hoped that by improving the system of city distribution it may be possible in many cases to enable the smaller producers to market their products at nearby points with more profit than at present. The problem is by no means simple, as the majority of the consumers of to-day are so situated that it is almost impossible for the producer to come into direct contact with them."

A case recently reported occurred in February of this year. Henry Goldfrath of South Lima, Livingston county, New York, dumped 8,000 bushels of onions on the manure heap, as there was no market for them. He had been offered 25 cents a bushel in the field and this would not begin to pay the cost of seed, cultivation and fertilizer. There were thousands of poor people in New York who would have been glad to purchase onions at a fair price.

Growers having crops that cannot be profitably marketed can greatly benefit the poor by donating the crop to some charitable institution, and the institution no doubt will be glad to pay the cost of handling and transporting. A transaction of this kind will not add to the bank account but it will add very materially to the general satisfaction of the donor with himself.

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