Astounding SCIENCE FICTION

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BY L. RON HUBBARD

THE END IS NOT YET

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Reg. U. S. Pat. Off.

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AST—1U

***We haven't** got there just yet—but maybe if we figure the thing out beforehand, we can set up a Martian colony with a sensible calendar, instead of winding up with a "jest growed" hodgepodge such as Earth's present job!*

CALENDAR FOR MARS

BY R. S. RICHARDSON

Xix, the Martian Zygote, scanned the message eagerly.

"And so the date of invasion is set at last!" he cried, in hoarse guttural accents.

"So it would appear," the chief gymnosperm replied. He consulted the pages of the perpetual loose-leaf calendar reposing upon the top of his coelostat. "Our troops will start for Terra on Friday the 42nd, of the third autumnal period."

The preceding remarks are a bit on the irrational side except for the last statement. Incredible as it may seem, from a distance of 40,000,000 miles we can devise a calendar for Mars that is much superior to our own. Our terrestrial calendar has been patched and repatched through the centuries as one generation after another strove to keep the dates in step with the seasons. In addition, so much sentiment and tradition have become attached to the calendar that the prospect of adopting a perpetual simplified form is pretty slim. But in planning for Mars we can start with a clean slate.

It is interesting to note that Earth and Mars are the only planets for which a calendar is needed. Mercury and probably Venus have a day equal in length to the year. Jupiter and Saturn rotate at different rates in different latitudes. Uranus, Neptune, and Pluto are so far from the Sun that time must be of little concern on those lonely worlds. But a calendar would certainly be as necessary on Mars as on Earth. And since we know the length of the Martian day and year

with a high degree of accuracy, it is entirely possible to construct a calendar good not merely for a year at a time but perpetually—one that could be used for ten thousand years without requiring correction.

The following calendar scheme is one designed by Dr. Robert G. Aitken, Director Emeritus of the Lick Observatory, Mount Hamilton, California. It is a splendid example of rational calendar planning. After studying it carefully maybe you would like to try your hand at making one, too. For it is only one of many that might be suitable for the Red Planet.

The chief source of trouble in any calendar scheme is the fact that there are not an exact number of days in the so-called tropical year, or year of the seasons. Take our present calendar, for instance. If Earth made a revolution around the Sun once in exactly 365 days there would be no problem at all. The difficulty lies in the fact that one revolution requires about 365.25 days, so that if we call the year 365 days we would be losing one-quarter of a day per annum. The result would be to make the seasons gradually work through the months. Eventually the words of the popular song would come true and we would be having June in January, not figuratively but literally.

In Roman times the calendar was regulated by the priesthood and got so confused that as Voltaire remarked, "The Roman generals always triumphed, but they didn't know on what day they triumphed!" To bring order out of this chronological chaos, Julius Caesar acting upon the advice of the astronomer Sosigenes decreed that henceforth there should be three years of 365 days followed by one of 366 days known as a *leap* year. This system of reckoning is known as the Julian calendar and went into effect in 45 B. C.

The Julian calendar relieved the symptoms without actually correcting them. For the length of the tropical year is not exactly 365.25 days, but falls short of it by 11 minutes and 14.0 seconds. This might seem to be cutting it pretty fine and for many years the Julian calendar was satisfactory. But after 400 years it was off by 3 days, and by 1582 A.D. spring was coming on March 11th instead of March 21st. A new reform was urgently needed.

This time the distinguished astronomer Clavius recommended that in the future only such century years as are evenly divisible by 400 should be leap years. Thus 1600 and 2000 are leap years but 1700, 1800, and 1900 are not. The reform was inaugurated by Pope Gregory and constitutes the Gregorian calendar. That calendar on the wall in front of you with the girl in the bathing suit above it is a Gregorian calendar.

But even the Gregorian calendar is not perfect but will be in error by a day in the year 4782 A. D.

Mars makes one rotation on its axis in 24 hours 37 minutes and 22.58 seconds of terrestrial time, and makes one revolution around

the Sun in 686.9797 terrestrial days. But naturally on Mars we would hardly measure the day and year in terrestrial units any more than we would think of using Arean units on Earth. Translated into Martian time, therefore, the calendar consists of 686.600 Martian days of 24 Martian hours each.

The question now arises: how to deal with this odd 0.600 part of a day?

We can think of several schemes at once. Five Martian years contain 5×686.600 or 3343 days exactly. We might have four years of 669 days followed by one of 667 days. Or four years of 668 days followed by one of 671 days. Both of these, however, would seem inferior to the following:

Suppose we have the years run alternately 668 and 669 days each. This would mean that the first year we would lose 6/10 of a day and the second year gain 4/10 of a day, so that in two years we would be out by 2/10 of a day. In ten years we would be short by five times this amount or one entire day. Consequently, leap year on Mars would come every ten years instead of every four as on Earth. With this scheme we can make the Martian dates agree with the seasons for ten thousand years.

The sensible thing to do on Earth would be to make January 1st come on the day the Sun crosses the equator from south to north called the vernal equinox when spring begins in the northern hemisphere. So let us without hesitation start the arean year when the spring begins in the northern hemisphere of Mars. Then divide the year into four quarters and insert an extra decennial day between the second and third quarters, in this way:

Days in	Spring	Summer	Autumn	Winter	Total
Odd years	167	167	167	167	668
Even years	167	167	167	168	669
Decennial years	167	167 (1)	167	168	670

On Earth the month arose in connection with the period of 29½ days from new moon to new moon. Phobos and Deimos have given Mars a lot of publicity but they are not very well adapted for calendar purposes. As it seems desirable to have one day in seven as a rest day, the different quarters could be broken up into periods of 41 and 42 days. We have no idea what these days would be called on Mars, but since we have to call them something, suppose we continue to use the old names familiar to us on Earth.

Now we are ready to form our perpetual Martian calendar—the calendar that will endure for 10×10×10×10 Martian years.

We make the first day of all *odd* numbered years begin on a *Sunday;* and the first day of all *even* numbered years begin on a *Wednesday.* The midyear day interpolated every ten years has no week day name. On this scheme the calendar is cyclical on a two-year basis.

PERPETUAL MARTIAN CALENDAR

ODD-NUMBERED YEARS

SPRING

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35
36	37	38	39	40	41	42

II

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35
36	37	38	39	40	41	42

III

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35
36	37	38	39	40	41	42

IV

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35
36	37	38	39	40	41	

SUMMER

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
28	24	25	26	27	28	29
30	31	32	33	34	35	36
37	38	39	40	41	42	

II

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	32	33	34	35	36
37	38	39	40	41	42	

III

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	32	33	34	35	36
37	38	39	40	41	42	

IV

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	32	33	34	35	36
37	38	39	40	41		

AUTUMN

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	32	33	34	35	36	37
38	39	40	41	42		

II

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	32	33	34	35	36	37
38	39	40	41	42		

III

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	32	33	34	35	36	37
38	39	40	41	42		

IV

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	32	33	34	35	36	37
38	39	40	41			

WINTER

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
32	33	34	35	36	37	38
39	40	41	42			

II

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
32	33	34	35	36	37	38
39	40	41	42			

III

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
32	33	34	35	36	37	38
39	40	41	42			

IV

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
32	33	34	35	36	37	38
39	40	41				

EVEN-NUMBERED YEARS

SPRING

I

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	32
33	34	35	36	37	38	39
40	41	42				

II

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	32
33	34	35	36	37	38	39
40	41	42				

III

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	32
33	34	35	36	37	38	39
40	41	42				

IV

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	32
33	34	35	36	37	38	39
40	41					

SUMMER

I

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	32	33
34	35	36	37	38	39	40
41	42					

II

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	32	33
34	35	36	37	38	39	40
41	42					

III

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	32	33
34	35	36	37	38	39	40
41	42					

IV

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	32	33
34	35	36	37	38	39	40
41						

AUTUMN

I

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	32	33	34
35	36	37	38	39	40	41
42						

II

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	32	33	34
35	36	37	38	39	40	41
42						

III

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	32	33	34
35	36	37	38	39	40	41
42						

IV

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	32	33	34
35	36	37	38	39	40	41

WINTER

I

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
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22	23	24	25	26	27	28
29	30	31	32	33	34	35
36	37	38	39	40	41	42

★ MID YEAR DAY INSERT IN ALL YEARS WHOSE NUMBERS IS DIVISIBLE BY TEN----

In addition to being perpetual, this calendar has the advantage that the number of working days in each quarter are divided as evenly as possible, and any set holiday such as Christmas would always fall upon the same week day in the odd- and even-numbered years.

Dr. Aitken's calendar is a model of simplicity, easy to master and three times as accurate as our terrestrial method of calculating when taxes come due.

Now you can go ahead and figure out a calendar of your own for Mars. It is a fascinating pastime with plenty of opportunity for originality and imagination.

You, too, can become a World Planner!

THE END.

IN TIMES TO COME

The September issue of Science Fiction is going to have a number of interesting items to offer, but this column, for this time, is going to be devoted to art work primarily.

Item the first is Astounding's cover for September. It's different. It's unique. And it's more than good. It came about in the following way; Alejandro Canedo, who did our last cover, was in, and invited me to come up to his studio where he had some paintings he was about to ship to a showing. I did. And he had some strikingly beautiful, and wholly unique art work. I had never seen anything like it—and immediately demanded why he hadn't done one like *that* for Astounding.

It seems that Canedo doing what he likes, and Canedo doing what he thinks someone else wants are quite, quite different. I think you'll want a lot more of the type he's done. And I can't describe it.

Item the second concerns our sister magazine. *Air Trails and Science Frontier*. The August issue contains a full-page color photograph of MIT's cyclotron in action, and a brief article on cyclotrons. It's an unusually beautiful color shot. But the September *Air Trails* will carry three of four Chesley Bonestell paintings of the planets. The cover, and *Air Trails and Science Frontier's* two full-color pages will carry paintings of Jupiter, Venus and Mars. They're magnificent jobs; they'd fit Astounding Science Fiction perfectly except that the larger size makes them better in AT. They illustrate R. S. Richardson's article. "New Paths to New Planets."

The fourth picture—the Sun with Mercury in Transit—will be on our October cover. It would be a mistake to miss any of these four genuinely magnificent paintings.

THE EDITOR.