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10 East 44th St., N. Y. C.

BETELGEUSE, GIANT STAR, IS SHRINKING

Research Shows Variable
Character of the Great
Red Body.

DATA AT MT. WILSON

Diameter Exceeding Orbit
of Mars May Dwindle to
That of Earth.

DISCOVERIES REPORTED

Observations at Australia
Said to Uphold Einstein
Still Further.

Special Dispatch to THE NEW YORK HERALD.
CAMBRIDGE, Mass., Dec. 27.—The
opening meeting to-day of the astro-
nomical section of the American As-
sociation for the Advancement of Science
was attended by famous astro-
nomers representing practically all
the leading observatories of this coun-
try.

The first paper presented was on
the result of the research of Ralph E.
Wilson of the Dudley Observatory in
Albany and had to do with the dis-
tances and motions on the sky of a
class of variable stars known as
Cepheids. They are stars of giant
mass and giant brightness, but pos-
sess the peculiar property of fading
out and growing brighter at regular
intervals varying from but a few
hours to more than two weeks. The
cause of this variation is not certain,
but it appears to be due to an actual
change in the size of the star.

The stars of this type are so large
that the system is probably not very
stable and tends first to contract under
the force of gravity and then expand
again as a result of the ensuing pres-
sure. The better and brighter the stars
are the more marked is the change both
in magnitude and the period of pulsa-
tion.

Two stars of the same pulsation pe-
riod would have essentially the same
candle power at the surface and al-
though differing in actual brightness, all
are not the same distance away, a
study of the light variation would give
us the means of indirectly estimating
how far the star is from us.

Dr. Shapley's Results.
The results obtained by Dr. Shapley
or the Harvard College Observatory
while at Mount Wilson have been much
discussed and criticized. He showed,
using these variables as a criterion, that
the size of the universe is two or three
hundred thousand light years across. A
light year is six million million miles
and this stupendous distance was
thought at first to be impossible, but
the present paper indicated that the
factor of change for the results is no-
where near that urged by many astro-
nomers.

When approached on the subject Dr.
Shapley showed that some of the data
used in preparing the paper was not
definite and that the correction would
be even less than that predicted by
Wilson, as these stars are moving at
huge speed, many of them exceeding
100 kilometers a second.
From Mount Wilson Observatory

have the usual important papers. Van
Maanen, who is recognized as an au-
thority in his line of work, has been
attempting to measure the distances of
certain important celestial objects.

A year ago the scientific world was
astounded to hear that the diameter
of the giant red star Betelgeuse in the
constellation of Orion had been mea-
sured. Actually what had been mea-
sured was not the diameter in miles but
the angle subtended by the diameter of
the star at the surface of the earth. In
order to translate this into miles it was
necessary to have the distance of the
star and this was only partly known
at that time.

Van Maanen shows that the star has
a parallel of only eleven thousandths
of a second or about three hundred light
years. Mention is made also of a very
queer circumstance. The diameters of
the few stars previously determined have
been remeasured and in all the cases
but Betelgeuse give the same value. It
appears that this star, however, has ac-
tually shrunk.

It has been known for a long time
that this star was irregularly variable
and whether this apparent shrinkage, if
real and not the result of faulty in-
struments, as related to the change of size
is not known as yet. As was remarked
at the meeting, "it will be necessary to
continue our observations of this star
for several years or perhaps several
hundred before we can decide definitely."

Orbit as Small as Earth's.
If this variation is real it means that
at times Betelgeuse has a diameter ex-
ceeding that of the orbit of Mars and
at other times might shrink to as small
as the orbit of the earth.

Dr. Bridgman of Harvard dis-
cussed the physical meaning of rela-
tivity. To the physicist matter is
only a form of electricity and as the
speed of the particle changes we
would expect the electro-magnetic mass
of the particle to vary also. This is
possible in relativity. However, Dr.
Bridgman predicted that possibly Ein-
stein was not final and that as the
laws of Einstein were a correction to
Newton's law of gravity in the same
way we might have a secondary cor-
rection to Einstein.

The values of the shift in the light of
the stars which will be obtained from
the photographic plates of the recent
eclipse in Australia are yet not ready,
although during the discussion one
scientist said that he had seen the
plates and thought that the variation
was there, confirming Einstein.

TEACHER CALLS ENERGY "GREAT NEED OF RACE"

Dr. Baker Urges More Intel-
lectual Effort.

CAMBRIDGE, Mass., Dec. 27.—The
maintenance of the energy of the race
is the real task of civilization, Dr.
Thomas S. Baker of the Carnegie Insti-
tute of Technology, Pittsburgh, said in
an address to-day at a sectional meet-
ing of the American Association for the
Advancement of Science.

"The energy of the race can only be
conserved" through new ideas, dis-
coveries and the application of these
discoveries. Man's mind will degenerate
unless there is a continuous flow of new
ideas from the brains of great thinkers
to fertilize and inspire the actions and
the lives of the unthinking masses.

"We often mistake restlessness for
energy. We may be making great dis-
play of energy on enterprises that have
no permanent value. The rapid in-
crease of interest in sports and recrea-
tion is a natural corollary to the height-
ened feverishness of our age. If we be-
lieve that the conservation of man's
energy depends on high thinking he
should attach more importance to re-
pose and contemplation than we do at
present.

"We have no assurance that our
civilization will be permanent. But so
long as we believe that our culture and
our ideals of living ought to be con-
served, our chief means of testing our
success in maintaining them will be the
amount of energy and especially intel-
lectual energy that is being produced."

Addressing the American Psychologi-
cal Association, Dr. Harry D. Kilstrom,
professor of psychology at Indiana
University, said that a popular theory
that tall men and heavy men made the
best salesmen had been disproved by
scientific analysis of the earnings of 600
salesmen.

PENNIMAN U. OF P. PROVOST.
PHILADELPHIA, Dec. 27.—Dr. Josiah H.
Penniman to-day was elected provost, or
educational or academic head of the
University of Pennsylvania. He had
been acting provost since the resigna-
tion of Dr. Edgar Fahs Smith, three
years ago. The board of trustees
created an executive administration of-
fice, its holder to have the title, Presi-
dent of the University.

PASTEUR RESEARCH TO GIVE 'FLU' CURE

Army Officer Tells of Results
at Centenary of Noted
Physician.

The centenary of Louis Pasteur, the
father of bacteriology, was observed
last night with a dinner at the Ameri-
can Museum of Natural History. The
museum, the Mineralogical Club, the
Academy of Science and the Academy
of Medicine cooperated in the affair.

Major John Nichols of the medical
department of the army, a speaker, de-
clared that army bacteriologists are
making progress toward the discovery
of a vaccine for the treatment of in-
fluenza largely through the foundation
work of Pasteur.

Other speakers who gave biographical
sketches of Pasteur and told of the
significance of his work included Gaston
Lieber, French Consul-General at New
York; Prof. Henry Fairchild Osborn,
president of the American Museum of
Natural History; Dr. Hermann M.
Biggs, State Commissioner of Health;
Dr. George F. Kuntz, president of the
Mineralogical Club, and Prof. C. E. A.
Winslow of Yale University.

BERGDOLL ONE OF CREW OF VESSEL DUE HERE

PENSACOLA, Fla., Dec. 27.—With the
telegraphic announcement that Grover
C. Bergdoll, slacker, of Philadelphia had
left Germany on a merchant vessel and
was en route to a Gulf port, every
ship and its crew was questioned here
to-day.

It was later learned that the Ger-
man steamship Jupiter was about to
arrive and that Bergdoll is a member
of that crew. That he sailed is dog-
matically announced by German authori-
ties.

The New York Herald is the recognized
source for securing high grade domestic
workmen. Telephone Worth 10000.—Ad.



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Men's and Young Men's Tuxedo Or Full Dress Suits—Special At \$45

(Coat and trousers)

Kirschbaum Evening
clothes have all the ele-
gance and finish of jour-
neyman workmanship.
Select unfinished worsted
fabrics. Pure dye-warp
silk linings and satin fac-
ings.

You may appear at any func-
tion in Kirschbaum evening
clothes with the ease and
confidence of a man who
knows he is dressed in the
best metropolitan fashion.
Authentic style; flawless fit;
the real custom quality look.

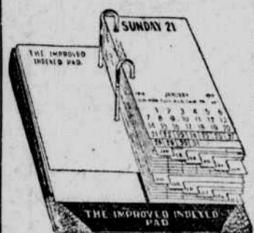
Evening Dress Vests—\$6 and upward

No charge for alterations.

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America's Burial Park—
460 Acres
Office 103 Park Avenue
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The Mount Royal
MONTREAL
Here you will find Mirth, Music
Joy—all that makes a Real
New Year's Fete in the center
of winter sports—
WIRE FOR RESERVATION AND BROCHURE
PROGRAM TO Vernon G. Cardy, Mgr.
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An Exceptional Sale of Misses'

Coats, Capes and Wraps

for all daytime occasions

AT GREAT REDUCTIONS

EVERY coat in this sale has been taken directly
from our comprehensive stocks and reduced for
immediate disposal. Each coat is designed along
the newest modes of a season rich in youthful crea-
tions—the materials in each case are the very finest
obtainable anywhere at their respective prices—and
the workmanship is such as to preclude comparisons.

All Sales Final. None Sent C. O. D., or on Approval.

Street and Sports Coats, . . . Regularly 29.75 to 35.00, Now 20.00

Coats of surprising distinction in their materials, fit and fin-
ish—developed in plain or plaid-back double faced coatings,
fleck fleeces and tweeds—with smart emphasis on pockets, belts
and sleeves.

Fur Collared Coats, . . . Regularly 49.75 to 59.50, Now 35.00

Coats of soft, velvety fabrics, fashioned in the bloused or straight
line silhouette, with large fur collars of caracul, beaverette or
raccoon. Some with cuffs, too. Wonderful values!

Fur Trimmed Coats, . . . Regularly 69.50 to 79.50, Now 49.75

Coats fashioned on the newest lines for mid-season wear, of
excellent quality soft, deep-pile fabrics—and trimmed with
large collars and cuffs of beaver, squirrel, wolf, fox or caracul.

Distinctive Fur Trimmed Coats, Regularly 98.50 to 125.00, Now 75.00

Coats of superb qualities of gerona, lustrosa, fashona, fedora,
arabella and broadtail cloth, combined with panelaine, youth-
fully styled in straight line, belted or modified bloused effects.
All have luxurious collars, and many have cuffs of beaver,
squirrel, mole, caracul or fox.

Sizes 14 to 20 years



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A VERY UNUSUAL PRESENTATION of

"PADDINGTON" London-Tailored OVERCOATS

Special at 50.00

—the first time this season that "Paddington"
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COMPLETE assortments, excellent color
and size ranges, single and double-
breasted models. "Paddington"
overcoats are the standard by which all
others are judged—those in this special
offering are of typical "Paddington"
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