

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

TERMS FOR THE SCIENTIFIC AMERICAN.

(Established 1845.)

One copy, one year, for the U. S., Canada or Mexico, \$3.00... One copy, six months, for the U. S., Canada or Mexico, 1.50... One copy, one year, to any foreign country, postage prepaid 4.00

The Scientific American Supplement

(Established 1876)

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year, for the U. S., Canada or Mexico, \$6.00 a year, or £1 4s. 8d., to foreign countries belonging to the Postal Union. Single copies 10 cents.

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(Established 1885.)

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(Established 1878)

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MUNN & CO., Publishers, 361 Broadway, New York.

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NEW YORK, SATURDAY, OCTOBER 31, 1896.

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THE SERIOUS SIDE OF THE AMERICAN CHARACTER.

It is a common fault of all who undertake to write and speak critically about the American people that they dwell too much upon the impulsiveness and feverish activity of our character, and overlook its less obtrusive and more serious side—its capacity for quiet reflection and sober second thought. It always will be, as it always was, a fact that essayists, novelists, journalists, every one indeed of that crowd, more curious than competent, that returns to Europe, after a brief visit to this country, to write "impressions," has proved how superficial those impressions were by losing sight altogether of that underlying spirit of reflection, that power and passion for the exercise of individual judgment, which is the fundamental fact upon which much of our social and national stability depends.

We have often had occasion to point out that our remarkable progress in the arts and manufactures is due to the inborn genius for invention which is possessed by the average American, and that this inventive faculty results largely from the active intelligence—"inquisitiveness" if you will—of the national character; the widespread interest which is taken by the individual in matters which may not come directly within the sphere of his daily life. The clerk in the store, the accountant at his desk, the farmer at the plow, always find time to follow with more or less attention the progress of science and discovery. The columns of the daily papers—the true mirror of a people's tastes and habits—are always freely sprinkled with scientific and technical matter and illustrations to an extent which finds no parallel in the press of any foreign country. It is not sufficient to state that the X rays can penetrate opaque bodies; the apparatus must be shown and its action explained. If Langley or Maxim has built a flying machine, the principles upon which it is designed must be stated and the mechanical forms in which they are embodied described.

If the American temperament is enthusiastic and impulsive, the American mind is thoughtful, logical and practical, and delights to get down to first principles. It is slow to accept any proposition on the mere ipse dixit of the speaker, however silver tongued he may be. This is abundantly manifest in matters of social and political economy, where questions which would ordinarily be considered as purely academic become the subject of careful study by the individual voter; and, although for want of time or opportunity he may not master the details, he will be pretty sure to get such a general grasp of the question that his vote will be based upon his personal convictions, and not upon the mere say so of a political candidate.

It is just here, in the thoughtful intelligence, the sober sense of responsibility of the individual citizen, that the guarantee of the permanence of our institutions is found, and it is in the combination of this serious intelligence with an unbounded enthusiasm and activity that the future rapid growth in wealth, power, and stability of the nation is seen to be assured. Herein we differ from the French nation, with whom we are so frequently compared. The Frenchman has the same freedom from the restraints of tradition, the same enthusiasm, the same active temperament; but he lacks the strong individualism, the power of independent judgment, the patient determination to study the merits of a question and get at the foundation truth. As a consequence the French people have been ever at the mercy of a Robespierre or a Marat, quick to rush into the excesses of a Reign of Terror or the bloodshed and pillage of a Commune. Our liberality and our level-headedness are at once the life and death of the demagogue in America. We are ready to listen to the man who comes with a plausible theory, and if at first sight it be in any degree reasonable, he will get a thoughtful, intelligent hearing. We have a passion for improvement, not merely in our mechanical industries but in our social life and in our municipal and national government.

The man with a new theory, who aims at the solution of a pressing difficulty, at the relief of a burden, the righting of a wrong, is likely at the first blush of its announcement to attract a ready following. It is in the tendency of the people to believe that there are few things so good but what they may be bettered that the political demagogue finds his vantage ground. Fortunately, however, the average American citizen has a way of getting off alone by himself and cracking the problematical nut upon the anvil of his own mind, and he generally finds the kernel of truth. History could furnish many a case in point. The greenback movement threatened at one time to roll across the country with the force of a tidal wave; but it fell harmlessly against the breakwater of the individual common sense of the people. To-day we are threatened, or, to speak more correctly, have been threatened, with a similar inundation of subversive and perilous teaching; and again, in spite of a temporary wavering, the calm judgment of the farming and artisan class is asserting itself. The crude, impracticable, and, indeed, fatal nature of the remedies which are being proposed for our financial distress is being disclosed to the judgment of the people.

The agitation will not have been without its lessons.

It will have served to teach them that underlying all the forms and functions of government there are certain economic laws which belong to the very nature and essence of things, and can no more be changed, added to, or diminished than the height of a man's stature or the color of his skin.

And this thought suggests another. In our freedom from the trammels of tradition, are we not in danger of despising, or at least discounting, that great storehouse of the experience of other and older nations, the grain whereof has been garnered from civilizations whose centuries of life are measured by the score? We are not the only race that has wrestled with the problems of national existence. It is not written across the heavens by day or by night that national wisdom belongeth to us alone. Our peril indeed is the peril of youth, which, as it feels the rush of the fresh life blood through its veins, is ever prone to look pitifully upon age because it is old, and believe that its precepts must be worn out because the voice which utters them is so.

And side by side with this instinctive distrust of those lessons of national life which come from sources distinctly foreign, there is a danger lest our people should grow restless under the authoritative teaching of those specialists who have made a life study of the more difficult problems of government, such, for instance, as belong to the financial and diplomatic world. But, however great may be our belief in the right of individual judgment, it would be the blindest form of conceit to suppose that the average work-a-day citizen is independent of the ripe wisdom, the accumulated experience of those specialists who have devoted a lifetime to their own particular sphere of work.

Not the least alarming feature of the present political movement is the suicidal efforts of its leaders to divorce the affections of the people from those institutions and principles which have stood the test of time, not alone in this republic, but in the great republics and kingdoms of history.

Better the most cast iron conservatism than a liberalism which is lawlessness; that pulls down where it should build up; that sets man against man, class against class, and ultimately loosens those bonds, light as air yet strong as steel, which bind our great country into a union where we have proved that it is possible to have unity without uniformity.

M. Berthelot on Chemistry.

The International Congress of Applied Chemistry was held recently in Paris under the presidency of M. Berthelot, one of the most eminent chemists in the world, says the Humanitarian. M. Berthelot reviewed the whole history of chemistry in a masterly and lucid way and touched on microbes, mining chemistry and metallurgy. In dwelling on the astounding results of the alliance between chemistry and physics he discussed the whole problem of light and had some curious things to say on the new gas acetylene, which, however, he said, was even sixty years ago one of the coryphæi of chemical synthesis when it was formed by the direct union of carbon and hydrogen in the electric arc. By far the most important and suggestive portion of M. Berthelot's speech, however, was that in which he insisted on the difference between the modern era of applied science during the last three-quarters of a century and the whole development of the race during the last 6,000 years, a difference so marked that a new man was being created in a new earth and the entire social organization was being transformed amid conditions for the comprehension of which the past offered no suggestive precedents or data. That the continuous intervention of science is an unprecedented fact in human history is a point to which the great chemist again and again reverted, and it is in developing this idea that he is most convincing.

Paper Making in Corea.

It is not generally known that the best kinds of paper met with in China and Japan are the produce of Corea. Varat says that "the Corean paper excels the very best that is made in China and Japan." It is produced entirely by manual labor and without the use of any machinery. The raw material used for the better kinds is obtained from the bark of Broussonetia papyrifera, which is collected in spring and beaten in water containing a large admixture of wood ashes until reduced to thick pulp. This is taken in large ladles and spread upon frames of bamboo, so as to form thin sheets. Another kind of paper is made from old scraps trodden into pulp much in the same way that grape juice is expressed in some countries, and though this process of pulping is slow, it has the advantage of not breaking the fiber so much as when machinery is used. After the pulp has been made into paper the sheets are piled up to a height of six feet and then cut into pieces, to be again subjected to the stamping with the feet. At the same time the roots and seeds of a plant called "tack-poul" are added, the soluble parts of which are supposed to give tenacity and toughness to the paper.—Apotheker Zeitung.

**Princeton and Politics.**

It was surely something more than a coincidence that the distinguished speakers in the various exercises of Princeton's anniversary laid strong emphasis upon the political sphere and duties of our colleges and universities. It showed that the din of the present political strife had disturbed the quiet of academic life, and that the tremendous issues at stake were weighing heavily upon every heart, even amid the festivities of a sesqui-centennial celebration. From the opening sermon by President Patton of the university to the closing address by the President of the United States, the speakers with unanimous voice urged the necessity for our colleges and universities exerting an active influence in the political affairs of the country—not the professional politics of the day, but the politics of Witherspoon and Madison, self-denying, patriotic, ennobling.

Very fitting and timely were the words of the president of the college, such, indeed, as might have come from Dr. Witherspoon himself:

"The essential morality of the people of our land as it finds expression in the pulpit and the press is a great source of comfort in a time of national peril. And yet, when fundamental authority is assailed, when revolutionary views of government are publicly expounded, when socialistic theories find plausible advocates, it will not do to rely altogether upon popular sentiment or the native common sense of the American people. We must do something to keep the common sense from being corrupted, and this must consist of something more than popular harangue and the florid iteration of the commonplaces of morality. There must be deep philosophical discussion of great public questions by men of acknowledged authority on political, social and economic science. This work can be done better in the universities than anywhere else. This is what I mean when I say that the university should be a school of patriotism."

In a similar strain were the words of Prof. Woodrow Wilson, the orator of the day:

"It has never been natural, it has seldom been possible, in this country for learning to seek a place apart and hold aloof from affairs. It is only when society is old, long settled to its ways, confident in habit and without self-questionings upon any vital point of conduct, that study can affect seclusion and despise the passing interests of the day. America has never yet had a season of leisured quiet in which students could seek a life apart without sharp rigors of conscience, or college instructors easily forget that they were training citizens as well as drilling pupils, and Princeton is not likely to forget that sharp schooling of her youth when she first learned the lesson of public service. She will not easily get John Witherspoon out of her constitution. It is not learning, but the spirit of service, that will give a college place in the public annals of the nation. It is indispensable, it seems to me, if it is to do its right service, that the air of affairs should be admitted to all its classrooms. I do not mean the air of party politics, but the air of the world's transactions, the consciousness of the solidarity of the race, the sense of the duty of man toward man, of the presence of men in every problem, of the significance of truth for guidance as well as for knowledge, of the potency of ideas, of the promise and the hope that shine in the face of all knowledge. There is laid upon us the compulsion of the national life."

So again on the following day, when the President of the United States commenced his address it was at once evident that its burden was the same: the political obligations of our colleges and universities:

"In a nation like ours, charged with the care of numerous and widely varied interests, a spirit of conservatism and toleration is absolutely essential. A collegiate training, the study of principles unvexed by distracting and misleading influences, and a correct apprehension of the theories upon which our republic is established, ought to constitute the college graduate a constant monitor, warning against popular rashness and excess.

"When the excitement of party warfare presses dangerously near our national safeguards, I would have the intelligent conservatism of our universities and colleges warn the contestants in impressive tones against the perils of a breach impossible to repair.

"When popular discontent and passion are stimulated by the arts of designing partisans to a pitch perilously near to class hatred or sectional anger, I would have our universities and colleges sound the alarm in the name of American brotherhood and fraternal dependence.

"When the attempt is made to delude the people into the belief that their suffrages can change the operation of natural laws, I would have our universities and colleges proclaim that those laws are inexorable and far removed from political control.

"When selfish interest seeks undue private benefits through governmental aid, and public places are claimed as rewards of party service, I would have our universities and colleges persuade the people to a relinquishment of the demand for party spoils and exhort them to a disinterested and patriotic love of their government for its own sake, and because in its true

adjustment and unperverted operation it secures to every citizen his just share of the safety and prosperity it holds in store for all.

"When a design is apparent to lure the people from their honest thoughts and to blind their eyes to the sad plight of national dishonor and bad faith, I would have Princeton University, panoplied in her patriotic traditions and glorious memories, and joined by all the other universities and colleges of our land, cry out against the infliction of this treacherous and fatal wound."

And thus the opening and the closing words of Princeton's anniversary were fitting alike to the urgent need of the present and the glorious traditions of the past. In their eloquent appeals for a closer identification of the college life with the national life, the presidents of a college and a nation have reminded us that a man is his brother's keeper even if he live within the quiet seclusion of college walls. Dr. Witherspoon and his pupils thought so; and he himself assisted in the framing of the constitution of a nation which he had helped to liberate. It is for the successors of those early patriots to throw around that constitution those earthworks and defenses of an enlightened public opinion which are the best guarantee of its future integrity.

**The Heavens for November.**

BY WILLIAM B. BROOKS, M.A., F.R.A.S.

**THE SUN.**

The sun's right ascension at noon on November 1 is 14 h. 29 m. 35 s.; and its declination south of the equator is 14° 45' 44".

On the last day of the month, at noon, it is in right ascension 16 h. 29 m. 44 s.; declination south, 21° 49' 18", or within about 2° of its greatest southern declination.

Although the sun spots are near their minimum stage of periodicity, an occasional large group may be seen with the telescope, always, be it remembered, properly protected by a smoked or colored glass. Neglect of this precaution, even with small telescopes, let me say to the amateur observer, may lead to serious injury to the eye. In large telescopes, more elaborate methods for reducing the light and heat are imperative. The most refined method in direct observation of the sun is that of the polarizing eyepiece. With this apparatus the writer has observed the sun for long periods of time with perfect ease and comfort.

**MERCURY.**

The shy little planet Mercury is morning star at the beginning of the month, being then about one hour west and seven degrees north of the sun. It comes into superior conjunction with the sun on November 28, when it changes to evening star. Mercury is in conjunction with Saturn on November 19, at 3 o'clock in the afternoon, when Mercury will be 1° 50' south of Saturn. On the twentieth of the month, at midnight, Mercury will be in conjunction with Uranus, being then only thirteen minutes of arc south of that planet.

**VENUS.**

Venus is evening star. It is rapidly increasing its apparent distance from the sun, on the first of the month being two hours east of the great central luminary. Its southern declination, however, offsets to a great degree this otherwise favorable relation. The best telescopic observations of Venus are made in the daytime. This is partly because of its higher altitude and partly to the cutting off of much of the dazzling brilliancy which the planet has on a dark sky—a shimmering radiance which renders Venus a glorious celestial gem to the naked eye, but exceedingly trying to telescopic definition.

On the twelfth of the month Venus is in aphelion, or at its greatest distance from the sun.

On November 1 Venus crosses the meridian at 1 h. 46 m. P. M., and sets at 6 h. 15 m. P. M. On the last of the month it crosses the meridian at 2 h. 27 m. P. M., and sets at 6 h. 57 m. P. M.

**MARS.**

Mars is now in good position for telescopic observation. Rising in the early hours of evening, it is at a good altitude before midnight. Its high northern declination—twenty-four degrees above the celestial equator—is also favorable for telescopic work upon this exceedingly interesting member of our planetary family.

Mars is apparently stationary in the northwestern confines of Gemini, on the first of the month being about one degree northward of the star Eta in that constellation. Throughout the month the planet will appear to slowly retrograde, or move westward among the stars. This is because the earth moves more rapidly in its orbit than Mars in its orbit. These relative orbital motions are made more evident near opposition than at other times. Mars is in conjunction with the moon on November 22, twelve minutes before noon, the planet being 2° 10' south of the moon. Mars rises on November 1 at 7 h. 38 m. P. M., and is on the meridian at 3 h. 13 m. A. M. On the last of the month it rises at 6 P. M., and crosses the meridian at forty-nine minutes past midnight. The right ascen-

sion of Mars at the middle of the month, November 15, is 5 h. 51 m. 4 s., and its declination north 24° 55'.

**JUPITER.**

Jupiter is in the morning sky and may be well observed telescopically at five o'clock.

It is in the constellation Leo, about nine degrees eastward from the bright star Regulus in that constellation.

Jupiter is in conjunction with the moon on the morning of the twenty-eighth at 4 h. 18 m., when the planet will be 3° 8' north of the moon. Jupiter is in quadrature with the sun on the last day of the month.

On November 1, Jupiter rises at 1 h. 12 m. A. M. and passes the meridian at 7 h. 48 m. A. M. On the last day of the month it rises at midnight, and passes the meridian at 6 o'clock in the morning. The right ascension of Jupiter on November 15 is 10 h. 39 m. 43 s. and its declination north 9° 29' 43".

**SATURN, URANUS, AND NEPTUNE.**

Saturn is in conjunction with the sun on November 13, at 9 A. M.

Uranus is also in conjunction with the sun on the morning of November 16, at 10 o'clock; and hence both these planets are invisible.

Neptune is in the morning sky in the constellation Taurus.

Its right ascension on November 1 is 5 h. 16 m. 24 s.; declination north, 21° 37' 58". Its apparent motion is slowly retrograde.

**THE NOVEMBER METEORS.**

A display of the November meteors should be watched for on the mornings of the thirteenth and fourteenth. The grandest shower is expected to occur in 1899, being the recurrence of the great showers of 1833 and 1866; but good displays are expected for the next few years as we approach the maximum period. The radiant point of these meteors is in the constellation Leo, and from this fact they are often called the Leonids. The weather proving favorable, an attempt will be made by the writer to photograph this shower of meteors every year, until after 1899 at least, and should he succeed, reproductions of the plates will be laid before the readers of the SCIENTIFIC AMERICAN.

Smith Observatory, Geneva, N. Y.

**Production of Chrome Ore in Turkey.**

Mining industry in Turkey has hitherto been much neglected, and it is only during the last few years that permission to sink shafts has been granted. This has led to a considerable increase in the output of ores of all kinds. The *Montan und Metall Industrie Zeitung* says this is especially the case with respect to chrome ore, which is worked on a large scale in the vilayet of Kossovo, where it exists in considerable quantity, being chiefly exported to Germany and Great Britain, and in a less degree to Austria-Hungary, where it is treated especially at Hrastugg, in Carinthia. Up to 1894 the chrome mines were worked by the Ottoman government without firman—that is, without special authorization from the Porte; and the small quantity of ore raised found a ready market. At the present time the chances in favor of working chrome mines are improved, on account of the concessions granted by the Turkish government, which authorizes the extraction, without firman, of two hundred ten ton wagon loads on payment of a government tax of nine Turkish pounds, with an export duty of half a Turkish pound per wagon (Turkish pound equals \$4.50). When there is a firman the government tax is reduced one-half, and there is no limit to the quantity which may be extracted. In 1895 Germany received from Turkey, through Hungary, more than 8,000 tons of chrome ore.

**The Danube Ship Canal.**

The great engineering work of removing what is known as the "Iron Gates," in the River Danube, has been completed, and on September 27 the new canal was formally thrown open to navigation, with elaborate ceremonies, by Emperor Francis Joseph. His Majesty was accompanied by King Carol, of Roumania, and King Alexander, of Servia. The procession of steamboats which passed through the Iron Gates showed how successfully the work of removing the obstacles to navigation has been accomplished. For forty years the passage of the Iron Gates has been difficult and possible only on an average of 117 out of the 225 days during which navigation is open. The obstruction between Bazias and the Iron Gates has been removed and a canal has been excavated through the Prigada and other reefs of the Iron Gates along the southern or Servian side of the river. The canal through the rocks is about two miles long, 260 feet wide, and 10 feet deep, so that the Danube will now be navigable for the largest river steamers from Vienna to the Black Sea. The whole work cost nearly \$10,000,000, and owing to carelessness in blasting operations, some 200 workmen lost their lives. The opening of the Danube to easy navigation will doubtless develop the Danube traffic to a tremendous extent. The formal opening of the canal was the crowning feature of the Hungarian millennium festival.