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NEGOTIABLE PAPER FOR PATENT RIGHTS.

In our correspondence column will be found a communication regarding an enactment spread upon the statute books of Tennessee, making it a felony to receive any negotiable paper given in purchase of a patent, or interest therein, unless said paper carries upon its face a statement of the purpose for which it was originally uttered.

This is, apparently, the last outcome of a form of special legislation, begun in Ohio, in 1886, and which has been in greater or less degree emulated by thirteen Western and Middle States. The original enactment in Ohio has undergone considerable modification, so that it is much less objectionable than the statute in Tennessee.

Per contra, these statutes have been respectively upheld in the courts of last resort in five States. Therefore, considering the conflict of legal authorities, it is desirable the questions involved be brought before the Supreme Bench of the United States for final adjudication.

Unfortunately, any hardship arising from this form of legislation is prone to fall upon innocent shoulders, especially in the case of the Tennessee statute, which makes the holding of a note of ordinary form, given for a patent consideration, an absolute felony.

HOW THE AX MAY BE MADE THE PRESERVER OF THE FOREST.

In a recent address before the Lumber Exchange of Baltimore, Dr. B. E. Fernow, chief of the Forestry Division of the United States Department of Agriculture, presented many important facts. The title of his address, "The Ax the True Preserver of the Forest," does not appear at first sight to be a topic which would naturally suggest itself to a friend of trees, but Dr. Fernow showed that it was in line with the true principle of forestry.

Trees must be cut down and ought to be cut down, not only for commercial and industrial uses, but also for the good of other growing trees, and all that the scientific forester asks is that the cutting should be done judiciously. The ignorant lumberman who does not look to the future cuts down all of his forests at once, while the forester cuts the trees so as to make it a permanent investment.

We have a remarkable object lesson in forestry in Germany, where it has become almost an exact science. In this country about 11,000,000 acres of forest lands are owned by the state and the yearly revenue is not less than \$20,000,000.

Of course, forestry can only be practiced successfully in a country where forests properly receive adequate protection from fire. In the last few years many farms in New England have been abandoned because the land was no longer regarded as productive, though they would be considered so in other countries where people are less used to an abundant fertility.

DIVER'S PARALYSIS.

Every profession that entails extraordinary conditions and surroundings exacts, ultimately, some penalty, if the warnings of nature are not heeded, and that of divers is by no means exempt. Diver's paralysis has long been recognized, though its occurrence is comparatively infrequent, and divers themselves hold it is directly induced by abrupt change in air and body pressure.

Recently, in The Clinical Journal, Frederick Taylor reported a case of this paralysis—the third seizure in the same individual since 1890, the two former, however, being of ephemeral character, exciting no alarm or apprehension. On the last occasion the paralysis came on during operations conducted at a depth of 162 feet.

After about five minutes, intense pains and noises in the head were experienced, along with evidences of suffocation and a tendency to lose consciousness. In the meantime those on the lighter observed the air-tube was not working, and another diver went down, who by following the life line was able to clear the air pipe, and also to relieve his fellow diver, the latter being at once and rapidly drawn to the surface, the ascent occupying less than a minute.

Nine weeks later, there having been no improvement in the meantime, he was admitted to hospital, when it was observed there was notable loss of power in both legs and partial anæsthesia of the inner surfaces thereof from a point three inches above the ankle to about the same distance above the knees, the areas being roughly symmetrical.

The sufferer ascribed his condition solely to being hauled to the surface suddenly—to abrupt change in bodily pressure, aided by lack of proper oxygen, resultant upon fouling of the air tube. The degree of immersion he seemed to regard as of little account, even while admitting that a descent beyond one hundred and fifty feet usually caused a sense of "fullness in the head, buzzing in the ears, flashes of light before the eyes, succeeded, perhaps, on coming to the surface, by bleeding from the mouth, nose and ears, and more rarely a condition known to divers as the 'bends,'"

Hitherto, this form of paralysis has attracted little attention, probably because of its generally ephemeral nature; but it appears probable, in the light afforded by the foregoing, that it is cumulative in effects; i. e., each succeeding attack predisposes in progressive ratio to another, until the individual, if he persists in adhering to a diver's calling, especially if he essays unusual or dangerous depths, becomes a permanent and incurable paralytic.

RUSSIA'S STRATEGIC CANAL.

The expenditure for naval work in many countries is far greater than ever before, and the effect of this is shown not only in the laying down of new ships and the building of ordnance, but also in the creation of naval stations at home and naval bases of supply and repair abroad, and the field of activity has even been enlarged so as to admit of the construction of extensive engineering works in the shape of canals for the purpose of the rapid concentration of fleets of war vessels.

of over 1,000 miles, and the primary object is for strategic purposes, but at the same time it will be of great commercial importance. Beginning at the Riga, the canal follows the course of the river Duna as far as Dunaburg, and from there an excavation is to carry it from Lepel to the Beresina, along this watercourse to the Dneiper and then down this river to the Baltic Sea—over a total length of 1,080 miles. By using the rivers, the artificial construction has been reduced to some 125 miles. At the ends of this canal are the cities of Riga on the north and Cherson on the south. The latter is to become a great naval arsenal. Active operations along the route were to be begun during the last week of June, and it is expected the canal will be completed and open to traffic in four years, at an expense of \$97,000,000. The canal is to have a depth throughout its whole extent sufficient to take the largest battleships, and the construction will be of such a character that a speed of six knots an hour can be obtained without eroding the banks by the wash of the steamers. It is estimated that a vessel can pass through the canal in less than a week, and this time may even be decreased, as a much higher speed can be maintained in that part of the canal which follows the natural watercourses. Along its entire length the canal will be lighted by electric lamps so as to permit of travel by day or night.

Strategically this canal will be of the greatest importance to Russia, as it will enable the combined Black Sea fleet, which now has no outlet, as it is forbidden to pass through the Dardanelles, to be united with the fleets of the Baltic Sea without passing through foreign territory. Russia has now ten armored and nine unarmored ships in her Black Sea fleet which in war time could reinforce the ships in the Baltic Sea; so that in less than seven days her entire fleet could be concentrated in either sea without being exposed at any time to the warships of the enemy.

The commencement of this great strategic canal again brings to notice the necessity for the Nicaragua Canal. The recent feat of the "Oregon" in making the long trip from San Francisco to Key West is remarkable, and it is a powerful object lesson and brief for the construction of a great interoceanic canal under the control of the United States of America, which would bring our Atlantic and Pacific coasts within about one-third of the distance each of the other that they are now. Admiral Walker promises the report of the Nicaragua Canal Commission in the near future. His statement that the project is feasible and that the cost will be about \$125,000,000 will help prepare the public mind for the report, which will find American citizens more interested in an isthmian canal than ever before.

OUR COMMERCE WITH CHINA.

The rapid growth of our commerce with China, a subject just now attracting special attention, is shown somewhat in detail by a series of tables in the latest number of The Summary of Finance and Commerce issued by the Bureau of Statistics. These tables show that our exports to China in the year just ending will be about four times as much as in the fiscal year 1890 and more than three times as much as in 1895. The exports from the United States to China in 1895 were \$3,603,340, and in the fiscal year which ends with this month promise to be in round numbers \$11,000,000. But for the fact that there has been a reduction during the past year in the values of many articles exported, the figures for the present year would be considerably greater than the sum named. The exports of mineral oils, for instance, have increased this year more than 4,000,000 gallons over last year, but by reason of the decrease in price the total cash value falls considerably below that of last year. In nearly all the articles exported from this country to China there has been an increase in quantity in the fiscal year 1898 compared with 1897 or any preceding year. In bicycles, for instance, the exports to China for ten months of the present fiscal year amount to \$24,605 against \$11,444 in the corresponding months of last year. In telegraph, telephone and other instruments of this class the exports of the ten months are \$22,374 against \$3,940 in the same time last year. Carriages and cars increased from \$1,632 in the first ten months of last year to \$28,603 in the corresponding months of this year; fruits and nuts from \$13,004 last year to \$28,591 this year; canned beef from 90,984 pounds in ten months of last year to 156,718 pounds in the same time this year; bacon from 18,002 pounds to 30,375 pounds; hams from 46,033 pounds to 58,859 pounds; butter from 16,311 pounds to 20,085 pounds, and other articles in like proportion. In cotton cloth there is a reduction of about 12 per cent compared with last year, though the total number of yards this year will be nearly double that of 1896 and more than three times as much as in 1895.

Our sales to China this year will show an increase of more than 300 per cent over those of 1889, while our imports from that country show an increase of but 35 per cent in the same time. Our exports of merchandise to China in the present fiscal year are ten-fold those of the fiscal year 1880, the total for that year being \$1,101,383, while that of 1898 is likely to be \$11,000,000 in round

numbers. Our total exports to all Asia this year will amount to about \$45,000,000, being a gain of 10 per cent over last year, more than double what they were in 1890, four times what they were in 1880, and more than ten times what they were in 1870. Of this total of \$45,000,000, about one-third goes to China (in part by way of Hong-Kong), one-third to Japan, and the bulk of the remaining third to India and the East Indies. In this calculation of distribution it is assumed that the bulk of the imports into Hong-Kong, which are always heavy, are for China, the Statesman's Year Book saying of the business of that port that it is "virtually a part of the commerce of China."

The following table shows the leading articles exported from the United States to China in the last fiscal year compared with those of the preceding year:

	1897.	1896.
Clocks and watches.....	\$31,242	\$13,068
Provisions.....	45,640	50,191
Wheat flour.....	72,100	45,815
Wood and manufactures of.....	113,499	154,945
Tobacco, manufactures of.....	229,956	192,138
Iron and steel, manufactures of.....	333,007	84,398
Mineral oils.....	3,371,937	2,166,978
Cotton cloths.....	7,438,203	3,851,146
All other articles.....	281,304	359,467
Total.....	\$11,916,888	\$6,921,136

The following table shows the total importations into China from all parts of the world by leading articles in the year 1896:

Cotton, raw.....	\$1,056,844
Flour.....	1,216,568
Ginseng.....	1,308,578
Machinery.....	1,668,078
Fish and fishery products.....	2,527,623
Coal.....	2,863,701
Woolen goods.....	4,333,420
Iron and steel, manufactures of.....	4,961,516
Sugar.....	5,657,318
Mineral oils.....	6,751,281
Rice.....	12,137,759
Opium.....	23,150,486
Cotton goods.....	64,028,692
All other articles.....	39,309,520
Total.....	\$170,991,384

THE HEAVENS IN JULY.

BY GARRETT P. SERVISS.

In the evenings of July the Milky Way becomes again a conspicuous phenomenon, giving splendor to the eastern half of the star dome, which it crosses from north to south like a broad band of sprinkled silver dust. Along its course, beginning nearly under the pole, lie the constellations of Cassiopeia; Cygnus (or the Northern Cross); Lyra, with its great gem of the first magnitude, Vega; Aquila and its curious follower, Delphinus, often called Job's Coffin; Scutum Sobieskii, a famous nest of star clouds; and Sagittarius. As it approaches the southern horizon the vast misty stream breaks into separate wandering channels, inclosing here and there luminous knots, formed by the intertwined radiations of stars too faint and too numerous to be individually seen, and which resemble distant comets, and sometimes are mistaken for them. A very pleasant hour may be spent with a large opera glass exploring the wonders of these brighter parts of the Milky Way. With a telescope the views presented are indescribably magnificent.

"And I said to the Form at my side, 'O Spirit! has, then, this Universe no end?'

"And the Form answered and said: 'Lo! also, it has no beginning.'

The red star Antares, in Scorpio, crosses the meridian in the south about 9 P. M. in the middle of July. At present it is robbed of its precedence in that quarter of the heavens by the presence of the planet Saturn a few degrees north of it. Nearly overhead at the same hour are Hercules, marked by an irregular square, and the Northern Crown, easily recognizable from its characteristic shape. West of the Northern Crown is the brilliant Arcturus, in the constellation Boötes, and farther toward the horizon glimmers Berenice's Hair.

THE PLANETS.

Mercury having passed superior conjunction with the sun late in June, becomes, in July, an evening star; but it will not be easily visible in the sunset sky until early in August. On the 27th, at 5 o'clock in the morning, Mercury will be in very close conjunction with the first magnitude star Alpha Leonis. Unfortunately, the phenomenon occurs at an hour when it cannot be observed. During the month Mercury moves from Gemini across Cancer into Leo.

Venus becomes every night more admirable as she hangs glowing above the horizon, considerably north of the west point, but gradually approaching true west as the month draws near its close. Venus continues to present a mystery that ought to be solved. Does she rotate on her axis in nearly the same period required by the earth, or is it true, as originally asserted by Schiaparelli and later by Percival Lowell, that her periods of revolution around the sun and rotation about her axis are identical, so that one side of the planet always faces the sun, while the opposite side

never sees the solar orb? Upon the solution of this problem appears to depend the answer to the question whether Venus—in size the nearest of all the planets to the earth—is or is not a globe suited to contain inhabitants. There is a fact concerning Venus, revealed by the spectroscope, which seems to militate strongly against the conclusions of Schiaparelli and Lowell, and that is the presence of an abundant atmosphere, containing plenty of watery vapor, surrounding the planet. It has been shown that one consequence arising from the peculiar rotation ascribed to Venus would be that all the water and watery vapor of the planet would be withdrawn to the dark and cold side and there condensed into eternal ice. Recent experiments in the liquefaction of air suggest that the entire atmosphere of a planet having one of its hemispheres always exposed to the unmitigated cold of space might be liquefied, or turned into a snowlike solid, on the sunless hemisphere. But, unless the revelations of the spectroscope have been sadly misread, such a condition of airlessness does not exist on Venus.

Jupiter remains in the constellation Virgo, and Venus gradually approaches him until, at the end of July, they will be not much more than fifteen degrees apart. Between them they share the honors of the evening sky, but while Venus outshines her greater brother, as a telescopic object she is far inferior in interest. Many persons are unaware that with a powerful field glass some (and, in favorable circumstances, all four) of Jupiter's satellites can be seen. They appear as minute specks of light, frequently arranged in a striking row, with the big planet in the midst of them or at one end of their array.

Saturn, in Ophiuchus, near Scorpio, crosses the meridian early in the evening, and is therefore well placed for observation. Its brightest satellite, Titan, is at greatest eastern elongation about 11 P. M., July 9, and at greatest western elongation about 1 A. M., July 18. Its change of place from night to night can be easily followed with a small telescope.

Uranus is on the borders of Scorpio and Libra, preceding Saturn between half and three-quarters of an hour.

Mars, which passes from Aries into Taurus during the month, rises long enough before the sun to be visible as a morning star, but is so remote from the earth that it possesses little interest as an object for amateur star gazers. It can be readily found at the end of the month just above the V-shaped figure of the Hyades and nearly in line with the right-hand branch of the letter.

Neptune is near the star Zeta, in Taurus.

THE MOON.

New moon occurs on the afternoon of the 18th, first quarter on the morning of the 26th, full moon on the afternoon of the 3d, and last quarter near noon on the 10th. It thus appears that July both opens and closes with a waxing moon.

The lunar conjunctions with the planets occur as follows: Mars the 13th, Neptune the 15th, Mercury the 20th, Venus the 21st, Jupiter the 24th, Uranus the 28th, Saturn the 28th.

ECLIPSES.

Two eclipses occur in July, a partial eclipse of the moon, invisible in America, on the 3d, and an annular eclipse of the sun, visible in the South Pacific Ocean and Patagonia, on the 18th.

Meteors radiating from the constellation Aquarius are due on the night of the 28th.

The earth is at its greatest distance from the sun one hour before noon on July 2.

NEW LIGHT WEIGHT UNIFORMS.

The first uniforms of the new style adopted by the War Department for use by the troops in the tropics have been completed and are now on exhibition in the windows of a manufacturing clothier of New York. Thirty thousand of these uniforms are now being made and will be delivered to the army within ten days, and they will continue to be made until the armies for Cuba, Porto Rico and the Philippines are all equipped. The uniforms are made of brown duck woven of a special yarn. The jackets are fashioned after the English hunting jackets, with heavily plaited backs and wide belts which are detachable. They are single breasted, with five buttons, and have two large pockets on each side held by button flaps. In these pockets, where the hunter with a similar suit would carry birds, the soldier can, if necessary, carry a day's rations. The cuffs, shoulder straps and pocket flaps are of the color required to designate the arms of service to which the wearer belongs; blue for the infantry, yellow for the cavalry and red for the artillery. The style of uniform is adapted in part from the uniform of the English army in Egypt, but is better in appearance than any uniform worn by European troops in the tropics, while the material is unique. Ordinary duck used in the trade varies in weight from 8 to 12 ounces to the yard, while the material in the uniforms weighs only 6½ ounces to the yard. The seams are extra lapped and stayed. The material is steam shrunk, so that the wearers may wash their uniforms at any time and will be able to get into them afterward.