THE TRANSVAAL MINES UNDER THE NEW REGIME.

WHAT PRODUCTION MAY BE EXPECTED—ESTIMATE THAT ORE WILL LAST FOR TWENTY-FIVE YEARS.

BY JOHN HAYS HAMMOND, IN "THE ENGINEERING MAGAZINE" FOR JULY.

The Transvaal comprises about one hundred and twenty thousand square miles, and includes three gold mining districts of importance—the famous Witwatersrand, and the quartz mining districts of Lydenburg and De Kaap. The entire mineral development of the country has taken place within thirty years, for mining in the Transvaal was prohibited up to 1868, at which time the government, being in dire financial straits, threw open the gold fields to exploration and exploitation, even going so far as to offer a bonus for the discovery of profitable mines. The resultant prospecting in the early seventies led to the discovery of quartz veins and the inauguration of mining in several parts of the Northern Transvaal. The Lydenburg district first attracted attention in 1876, when exploration of the alluvial deposits began, followed later by vein mining. The De Kaap gold fields were discovered in 1884, and the conglomerate or "banket" beds of the Witwatersrand—destined to supersede all others in importance—in 1885. In that year a small stamp battery was erected to crush quartz from a vein a few miles west of Johannesburg, and in this a crushing of conglomerate was made; but it was not until April, 1887, that a battery of three stamps was erected to treat the ore of the Witwatersrand banket. This was followed by the erection of other batteries, and the output of gold for 1887 was 22,000 ounces. For 1898, the last complete year before the war, it was 4,295,659 ounces, valued at £15,141,376, and for nine months of 1899 it was 4,008,326 ounces. There were at the end of 1898 seventy-nine mines, which in 1898 produced 7,331,446 tons of ore, crushed by 4,765 stamps. They employed 9,476 whites, with an average monthly wage of £26, and 88,627 native workmen, receiving on an average £2 9s. 6d. each a month. During the same year in the Lydenburg district five companies, running 137 stamps, produced 154,560 tons of ore, yielding 108,884 ounces of crude gold, valued at £392,378, and in the De Kaap gold fields seven companies, running two hundred stamps, produced 89,760 ounces of crude gold, valued at £314,792.

The companies ceased working in October, 1899, by reason of the declaration of war, but the late Transvaal Government continued operations upon its own account in some of the richest mines up to May, 1900. In May, 1901, crushing operations were resumed by the companies themselves, though upon a very small scale, only 150 stamps being run at three mines. The number was steadily increased, and by the end of 1901 653 stamps were running, representing twelve mines; during the eight months ending with the year 412,006 tons of ore were milled, 238,995 ounces of fine gold, valued at £1,014,687, were produced, and £415,812 was paid in dividends. . . .

Notwithstanding the change in the political status of the Transvaal which will follow the recently concluded peace and final establishment of British rule, it may be confidently assumed that the main features of the mining law of the South African Republic will be retained, and certain oppressive features of monopolies, etc., bearing with special weight on the mining industry, will be abolished. The dynamite monopoly was one that bore most heavily on the mining industry; and, according to the reports of the State Mining Engineer, explosives, including fuse and detonators, amounted to nearly 10 per cent of the total working costs of the mines. Furthermore, it was impossible to obtain the proper quality for the most economical working, and often 30 per cent or 40 per cent gelatine had to be used in many instances where 60 per cent gelatine would have been much cheaper. These, indeed, form no part of the mining law proper—that is, the law regulating the tenure of mining titles. It is to be expected, both in the nature of the case and in view of the declarations already made by British statesmen, that the "ancient laws and customs" of the Transvaal will be retained under British rule, as far as possible. At all events, the principles of the English common law and the immemorial precedents of English practice will undoubtedly require the determination of present rights according to the statute in force at the time of their inception. The mine operators of the Transvaal whose titles were acquired from the republic will therefore be secured in the position thus defined.

During the eight months ending in August, 1899, after which the commencement of active hostilities interfered with the active working of the mines, the Witwatersrand produced £12,485,032. At this rate the year's production would have been £18,727,548. As a matter of fact, it would have amounted to some £20,000,000, by reason of the progressive increase in the monthly production already shown during that year. Of this output 71 per cent was derived from what is known as the central section, extending about one and five-tenths miles west and about eight miles east of Johannesburg, and 24 per cent was derived from the deep level properties within that section. The total gold product of the Witwatersrand was 25.5 per cent of that of the entire world. Notwithstanding the increased production of gold elsewhere, this ratio would have been more than maintained had mining operations not been interfered with by the South African war. Within one year after the resumption of mining operations, upon the scale existing immediately prior to the war, an output of gold at the rate of over £20,000,000 annually may be reasonably estimated; and this rate of production will be steadily increased, partly by the increase in the crushing plants of some of the companies, but more especially by the starting of many of the deep level properties which will then reach the producing stage. Within the next three or four years, after operations have been resumed on a large scale, the annual gold production from the Witwatersrand may reach £25,000,000. Beyond this amount there should be a further increase, the amount of which it is impossible to estimate. In from six to eight years some of the important gold producers among the outcrop companies will fall out of line, by reason of the exhaustion of their mining areas. To what extent this deficit will be counterbalanced by increased yield in the deeper level properties cannot be as yet determined. Much depends upon the policy adopted by the larger companies owning these properties.

In the reliability of its ore bearing formation the Rand is unique in the history of gold mining, but in the minds of many an exaggerated importance is attached to the persistency of payable ore bodies in strike and in dip. There is, indeed, considerable fluctuation in the value of the ore within the same reef, even within short distances; but a remarkably even grade of ore has been maintained since the inception of the industry. Where there has been an apparent falling off in yield a ton during any year, the fact is to be attributed rather to the working of lower grade ores, made possible by improved economic conditions, than to a depreciation in the ore values of the reefs themselves. With the exception of the additional costs of haulage, pumping and ventilation, there are no factors operating against mining on the Witwatersrand to a depth of at least eight thousand feet vertically. These costs will not afford any insuperable obstacle to profitable mining, provided, of course, the geological character of the deposit is not adversely changed. So reliable is the formation, from a geological point of view, as regards its mining potentialities, that engineers have felt justified in assuming the existence of payable ore at depths of one thousand feet vertically and upward beyond the extent in depth of any mining operations. Thus far the results of actual operations upon these areas have justified their position. It is estimated that for every mile in length along the course of the reefs, down to a vertical depth of one thousand feet for the dip of these reefs, gold to the value of about £10,000,000 will be extracted. This is a conservative estimate—at least as applied to the central section of the Rand. If we assume these conditions to obtain to a depth of six thousand feet vertically, we have the enormous sum of £60,000,000 for each mile in length. It is not unreasonable to suppose that these conditions will be maintained along most of the central section, say for a distance of ten miles, in which case we would have an auriferous area, within practicable mining depths, containing upward of £600,000,000 value of gold.

It is less safe to make any prediction of the gold produced to be expected from the east and west sections; but it is perfectly safe to say that the output of these sections would very greatly augment the amount I have named. Messrs. Hatch and Chalmers, well known engineers of extensive South African experience, compute the available gold from these portions of the Rand at £200,000,000.

It is impossible to predict with any accuracy the duration of mining in the Witwatersrand district, by reason, especially, of the indeterminate factor of the rate at which exploitation will be carried on. It may be observed, however, that the tendency is to exploit the auriferous areas as rapidly as possible, and that engineering methods are all adopted with that end in view. If the exploitation of the deeper levels is not delayed pending the proving of the ground lying above, but is carried on concurrently with the exploitation of the higher horizons of the reefs, the industrial life of the district will, of course, be correspondingly shortened. The working of lower grade ores, made possible by improved economic conditions or other circumstances, would tend to increased longevity of the industry. But, were I called upon to express an opinion, I would estimate the future duration of profitable operations on a large scale in the district at less, rather than more, than twenty-five years.

The future looks from all points of view encouraging. We may reasonably anticipate important improvements in economic conditions as the result of the establishment of a better government. I believe that, as the result of economic reforms, there will be an ultimate saving of 6s. a ton of ore treated, as compared with the conditions under which mining has been carried on under the government of the late South African Republic. This refers to all savings, both direct and indirect, and especially to economy resulting from increased efficiency of labor due to the betterment of living conditions. Positions formerly commanding a salary of $15,000 a year will be satisfactorily filled for $10,000. For the tonnage of ore crushed in 1898, this would result in an increase of annual dividends of £2,199,495.

THE RUSSIAN STUDENTS.

SEVERE MEASURES BY THE POLICE.

Correspondence of The London Standard.

The Police Department of Moscow have published for the first time on such an occasion the names of some two hundred and fifty persons who have been arrested and committed to prison for periods varying from three months to seven days without any form of trial whatsoever, and for offences alleged to have been committed during the two days in which Moscow was in the hands of the military and the police. The charges are brought under the general heading of not showing prompt obedience to the police orders to move on. Fifty-six persons, including six women, will be confined for three months, and ninety-eight for two months, only nine suffering the minimum penalty of a fortnight's and one week's imprisonment. The majority of those arrested are students of all the higher educational establishments of Moscow, and a number of schoolboys from the middle class educational establishments. There is likewise a fair sprinkling of peasants and work people, and one foreigner is named in the list—an employe of the American Rubber Company's works here.

These arrests are, of course, quite distinct from the wholesale arrests of the demonstrating students at the university, and are in accordance with the very strict orders issued by the Governor General with a view to strengthening the hands of the police during the expected outbreak. The charges were entered even against persons who lingered in natural curiosity to see what was going on, and did not at once obey the police orders to go right away from the places where anything of interest was going on. The list issued does not include large numbers of perfectly innocent persons who likewise fell victims to police severity, and were incarcerated for several hours, but allowed later to return to their homes on proving their identity. This accounts for the large proportion of students among those arrested, for in times like these every student is liable to suspicion, and is not treated with much consideration, except under the pressure of very powerful protection from authoritative friends or connections. The publication of the lists is calculated to have a sobering effect upon the curiosity of the citizens of Moscow, who are naturally grumbling at this further restriction of the little liberty ever enjoyed by the subject in Russia.

Of the four thousand students of the Moscow University, it appears that about half left Moscow in anticipation of the events which have just taken place. About four hundred were "administratively" expelled from the town, between six hundred and seven hundred are in the convict jail, and, in accordance with the special orders of the Minister of Education, will be expelled from the university, while forty of their number, who declared themselves not "academical" demonstrators, but "political," a new distinction which has not previously been formulated in words, will doubtless suffer the severest penalties in the way of imprisonment and deportation to Siberia. Two hundred odd arrested in the streets will be imprisoned for varying terms, and probably expelled on the expiry of them; and the remainder, as things seem now, will, no doubt, be allowed to continue their studies. Among the demonstrators arrested in the university buildings were no less than seventy women, who spent the night of Saturday last in the Manège, surrounded by soldiers, and in the company of the students taken with them. I am unable to say whether any special arrangements were made for the protection and comfort of these seventy girls between the hours of midnight and 5 a. m., but the Manège is well known to every inhabitant of Moscow, and its arrangements are not such as to allow of any approach to common decency on these occasions, which appear to be now of annual occurrence. The stories which leaked out last year of the straits to which these poor women students, or "kursistki" were put during their enforced imprisonment in the midst of thousands of military and police, along with their male companions, were a disgrace to any nation calling themselves civilized.

A BLIND CABINET OFFICER.

From The London Chronicle.

The new government just formed by Mr. Irvine in Melbourne is noteworthy as containing the first blind minister since the death of our own Professor Fawcett, whom Mr. Gladstone placed in charge of the postoffice. Like Fawcett, Mr. McKenzie has triumphed over his affliction in a remarkable manner. From his keenness in debate and his ready information, a stranger would never suspect that he was deprived of the power of reading. His memory is so good that he can roll off statistics by the yard, and ministers have had to acknowledge themselves corrected by him in the quotation of figures. Mr. Shields is an ex-Premier, and one of the oldest of Melbourne Parliamentary hands. His name is principally associated with a divorce law that approximates more closely to Earl Russell's ideas than that of any other British community. Mr. Murray, another member of the new ministerial combination, has been the most pronounced pro-Boer in the Melbourne Parliament, but as we are all pro-Boers now he will probably receive an amnesty from his constituents.

BRAIN AND INTELLECT.

From The London Chronicle.

The exact seat in the brain of the highest intellectual faculties has formed a moot point in science since the functions of the organ of mind began to be investigated with accuracy. The general consensus of opinion localizes what we term "mind" in the prefrontal lobes of the brain, but by another school of thinkers the hinder lobes have been credited with performing our highest cerebral duties. The balance of evidence, I should say, is decidedly in favor of the former view, and recent researches and observations by Dr. Phelps, an American investigator, would appear to assist in strengthening the opinion that the most important portion of the brain is its anterior region. In the course of the investigations in question some 225 cases of brain injury and disease were examined. In all save two it was noted that interference of extensive nature with the prefrontal region resulted in serious disturbance of the mental faculties. Less severe injury produced less marked effects. These facts parallel the researches of other investigators, and they are further substantiated by what is observed in cases of idiocy connected with a want of development of the frontal lobes of the brain.

As to the relative importance of the two lobes or halves of the cerebrum, or chief brain mass, most of us know that each half governs the opposite side of the body, and that, as we are right handed so we may be called left brained. The superiority in functional importance of our left brain is not questioned, and it is therefore interesting to find Dr. Phelps insisting, from the results of his investigations, that our left brain lobe is really the intellectual half. The right half, it is added, is capable of sustaining severe injury without marked mental effects supervening, and cases are quoted in support of this fact. Indeed, such cases have frequently puzzled physiologists, seeing that the disturbance of the intellect has in no sense been commensurate with the injury to the brain. On the notion of the greater importance of our left brain, and on the theory that severe injuries which do not produce utter mental breakdown really involve the right lobe, the puzzling constitution of the brain may be explained in part at least. But the last word has not yet been said concerning the brain's ways and work. Injuries of the left half do not always produce serious effects as regards the mental life, while we have had some physiologists insisting that we have really two brains, and that while the left lobe is the Jekyll of the intellect the right, on occasion at least, is apt to play the part of Hyde. A fascinating theory this, but one to which sober science is not likely to append its imprimatur.

A NEW APE.

From The London Chronicle.

I observe there has been deposited in the London Zoo a specimen of a chimpanzee which is said to represent a new form, or it may be a mere variety only, of that species of manlike ape. It figures under the scientific name of Anthropopithecus troglodytes, is said to have been brought from the Gold Coast, and has been presented to the Zoological Society by Captain D. A. Donovan. The creature is described as singularly tame and intelligent, and possibly in it we may find a successor to that highly educated ape, the late lamented Sally. Unhappily, the manlike apes are all delicate of constitution, that is, are represented by a life spent in captivity, and subject to marked variations in temperature. Whether this new specimen is to be referred to the ordinary chimpanzee species or not will no doubt be duly determined by the authorities at the Zoo. The question of specific differences in the chimpanzee branch of the ape stock is not settled. Hartmann remarks that it is a difficult question to decide, though he himself adds that he is inclined to admit a certain constancy in the varieties he has examined. The new ape at the Zoo may possibly turn out to represent one of the varieties. It is notoriously a difficult matter to decide where we leave the limits of a mere variety behind, and where the boundary line of a new species begins.

EXPORTS OF MANUFACTURES

INCREASE FOR ELEVEN MONTHS IN ALL SAVE IRON AND STEEL.

Washington, June 28 (Special).—The exportation of manufactures in the eleven months ending with May, 1902, is greater than that of any preceding year, except in iron and steel. The total exports of manufactures for the eleven months ending with May amount to $371,647,609, against $378,533,496 in the eleven months of 1901, or only $6,885,887 less than those of last year. The exports of iron and steel manufactures for the eleven months are $90,780,571, against $109,483,827 in the corresponding months of last year, a reduction of $18,703,256. From this it would appear that the exports of manufactures other than iron and steel are $11,817,369 greater than in the corresponding months of the preceding year. The exports of manufactures other than iron and steel are, for the eleven months ending with May, 1902, $280,867,038. For the eleven months ending with May, 1901, they were $269,049,669. For the eleven months ending with May, 1900, they were $283,050,704, but when it is remembered that these figures included the exports to Porto Rico and Hawaii, which are not included in those of 1901 and 1902, it becomes apparent that the exports of manufactures other than iron and steel in the eleven months of the present fiscal year are greater than those for the same period in any preceding year in the history of our commerce.

While the exports of iron and steel have been decreasing, importations of iron and steel have been increasing. The following table shows the imports and exports of iron and steel manufactures in eleven months of each of the fiscal years 1900, 1901 and 1902:

Eleven months.	Imports. Iron and steel.	Exports. Iron and steel.
1900	$18,089,857	$110,038,875
1901	16,408,996	109,483,827
1902	23,544,325	90,780,571

From this it will be seen that the importations of iron and steel manufactures have materially increased in the three years, and the exportations of iron and steel materially decreased. The cause of this change in the condition of the foreign commerce in iron and steel is discussed in the report of the Iron and Steel Association, just received by the Treasury Bureau of Statistics, as follows:

A marked change has taken place in our foreign trade in iron and steel since this subject was prominently referred to in our annual reports in 1899 and 1900. In 1899 and immediately preceding years the iron and steel industries of Europe were exceptionally prosperous; there was an active demand and prices were high. In the years just prior to 1899 the prices of iron and steel in the United States were lower than they had ever been. Under these conditions we naturally found opportunities to dispose of our surplus iron and steel products in neutral markets, and even in the home markets of our European competitors. But these conditions have materially changed; the European demand and European prices have declined, and the home demand upon our own iron and steel works has greatly increased, while our prices have advanced; hence sharper competition in neutral and all foreign markets, and increased foreign competition in our own markets.

The figures of increased imports and decreased exports of iron and steel should not be hastily dismissed by our iron and steel manufacturers. We hope that they will lead them instead to dismiss the thought that the world's markets for iron and steel are to be easily captured and held. The activity in our export trade in iron and steel in the last few years was exceptional and abnormal. Not only is Europe adopting our improved methods of manufacture, but it will always have cheap labor, and by these agencies it can hold its own markets and actively and aggressively contend for the possession of neutral markets. For our iron and steel industries, as well as for all other domestic manufacturing industries, our home market must always be our best market.

The following table shows the exports by principal classes during the eleven months ending with May, 1901 and 1902, respectively:

Products of—	1901.	1902.
Agriculture	$884,424,916	$805,622,656
Manufactures	378,533,496	371,647,609
Mining	35,626,488	36,190,756
Forests	49,472,249	48,830,726
Fisheries	7,454,347	7,440,629
Miscellaneous	4,447,939	5,069,192
Totals, domestic	$1,359,959,435	$1,269,310,568
Foreign exports	25,031,293	23,467,850
Totals, exports	$1,384,990,728	$1,292,778,418

HYPNOTISM AND MORAL CURES.

RESULT OF EXPERIMENTS IN AN INSANE ASYLUM.

From The London Hospital.

In a lecture delivered before the King's College Medical Society Dr. Milne Bramwell gave an interesting sketch of the subject of hypnotism. Describing the experiments of Forel, who till recently was medical director of the Burghölzi Asylum and one of the professors of the University of Zurich, he said that he succeeded in hypnotizing nearly all his asylum attendants, both male and female, a large proportion of them becoming profound somnambules. For ten years experiments were made in regard to the use of hypnotism in the night watching of dangerous lunatics. Warders were hypnotized and trained to sleep by the bedside of these patients and to awake the instant they heard them attempt to get out of bed, the hypnotic suggestion being made use of to inhibit all sounds which had no reference to the duty laid upon them, and it was found that warders so hypnotized could perform night duty for six months and work hard all day without showing signs of fatigue. The results of these experiments were, it is said, uniformly successful, and no accident of any kind occurred.

In regard to this and other applications of hypnotism Dr. Bramwell refers to the method of Wetterstrand, who, instead of restricting himself to suggestions made in the course of a short hypnotic trance, advocated the use of the curative effects of prolonged hypnotic sleep. Wetterstrand treated epilepsy and grave forms of nervous disorder by keeping the patients in the hypnotic trance for three or four weeks. Without rousing them the patients were fed at stated intervals, and the actions of the bowels and bladder were regulated by suggestion, and thus mental as well as physical rest was given, in addition to such therapeutic advantages as might be gained by aid of suggestion.

Dr. Milne Bramwell says that, although every one cannot be deeply hypnotized, profound states are not necessary for the successful employment of suggestion, and the number of persons insusceptible to some degree of hypnotic influence is extremely small. Among other diseases he gives the following as those in which hypnotism has given good results: "Hysteria, neurasthenia, dipsomania and other drug habits, obsessions, moral perversities and nervous tricks in children." We may add that, as far as the treatment of dipsomania is concerned, it seems not entirely impossible that some of the startling results which are said to have been obtained at certain institutions for the treatment of this condition may have been the outcome of an unacknowledged but none the less effectual application of hypnotic suggestion.

GUARDING CASTE IN ENGLAND.

ELABORATE PRECAUTIONS TAKEN BY THE MAHARAJAH OF JAIPUR.

From The Pall Mall Gazette.

To persons interested to any extent in the matter, who have kept themselves, however slightly, in touch with the religious, social and other changes going on in India, the details of the jealous and elaborate precautions taken to safeguard the caste of the Maharajah of Jaipur during his absence from home on the loyal errand he has undertaken to fulfil in connection with the approaching coronation, will come as somewhat of a surprise. It may also be that such surprise will not be unmingled with a sort of admiration for a faithfulness to the doctrine of perpetuity so exemplary and so eminent even in a land which is characteristically a stronghold of conservatism. The circumstance is recalled, by force of contrast, of the gleeful and spontaneous assurance given to his friends four or five years ago by a native publicist on a mission to this country, as one among other symptoms of progress in India, "that caste was going to pieces." His opinion was all the more valid because he was himself a member of that bluest-of-the-blue sections of the highest caste, known as the Kulin Brahmans, and he had therefore more to lose than others by the dilapidations of an order in which his ancestors must have had the most exalted titular distinction for nearly a thousand years.

A specious objection to the precautions in question is founded on the circumstance that caste is capable of recovery as well as of forfeiture, and that his highness might on certain terms be reinstated in his religious and other privileges. In the face of such a conditional but practicable reconciliation and recovery it has seemed strange that the Maharajah should have preferred to have his whole period of absence from India hampered, fretted and almost embittered by restrictions, for the transgression of which he might, on his return, have commanded a retrospective dispensation. But considerations of piety apart, it would not be wonderful if the Maharajah or any other orthodox Hindoo shrank from an ordeal of reconciliation which is accredited with involving penances of an intolerable ignominy and repulsiveness. A few years ago it was known in certain sections of temple society that a young zamindar of Bengal, who, after having studied law and been called to the bar in London, returned to India, was in due course required to perform the disciplinary ceremonies necessary to reconcile himself to his caste community. On the eve of the day when he was to have begun the series of penances and expiations which were to qualify him for restoration he was found drowned in his tank—a pool, or lake—not without suspicion of suicide as seeming to present the only honorable way of evading the disgusting and degrading particulars of the ordeal of rehabilitation.

Turning a Joke.—"Some of those actors are too fresh," said the bald-headed party in the front row. "Yes," rejoined his companion, "but the gymnasts make up for it." "How's that?" queried the b. h. p. "Somersault," answered the other, with a fiendish grin.—(Chicago News.

PETROLEUM PRODUCTION

GREAT INCREASE IN THIS COUNTRY IN 1901—MANY STOCK COMPANIES FORMED.

Washington, June 28 (Special).—In his report on petroleum in "Mineral Resources of the United States, 1901," now in press, published by the United States Geological Survey, F. H. Oliphant invites attention to the following conspicuous features in the production and sale of petroleum in the United States during the year 1901. He notes that the production of crude petroleum was greater than that of any previous year, and that there was a very remarkable increase in the production in the States of Texas and California, a decrease in the production of the Appalachian or Eastern petroleum fields, and a slight gain in the output of the Lima-Indiana region. Of the total production in the United States 80 per cent came from the older Appalachian and Lima-Indiana fields, leaving 20 per cent to be made up from all the other fields; this amount is 11½ per cent greater than the proportion furnished in 1900 by the other fields. There was a slight decrease in the number of wells completed in most of the important fields, and stocks held in the Appalachian and the Lima-Indiana fields were also slightly decreased. There was an average decline of about 24 cents a barrel for crude petroleum at the wells in 1901, as compared with 1900. The exports of petroleum and its products increased and were larger than ever before recorded, although there was a slight decrease in their total value. The year was conspicuous for the new pools found, and for the new production in the Southern and Western States, which was followed by the organization of an immense number of petroleum stock companies representing many millions of capital.

The total production of crude petroleum in the United States in 1901 was 69,380,194 barrels, being larger than that of any previous year. It was larger by 5,768,665 barrels, or 9 per cent, than the production of the year 1900. The increase in the production of 1900 over 1899 was 6,291,854 barrels, or 11 per cent, and the increase in 1899 over 1898 was 3 per cent, or an average gain of 7.7 per cent for the last three years.

As compared with the value of the total production of 1900, 63,620,529 barrels, valued at $75,989,313, the total production of 1901, 69,389,194 barrels, valued at $66,417,335, shows a decline of $9,571,987. In the order of production Ohio comes first, with over 21,000,000 barrels; West Virginia second, with over 14,000,000 barrels; Pennsylvania third, with over 12,000,000 barrels; California fourth, with over 8,000,000 barrels; Indiana fifth, with over 5,000,000 barrels; Texas sixth, with over 4,000,000 barrels, a loss in production, as compared with 1900, for Ohio, West Virginia and Pennsylvania, and a gain of nearly 4,500,000 barrels for California, of a little over 3,500,000 barrels for Texas, and of nearly 900,000 barrels for Indiana. This production for 1901, by fields, was in round numbers, for the Appalachian field, 33,600,000 barrels; the Lima-Indiana field, 21,900,000 barrels; the Southern California field, 8,800,000 barrels, and for the Texas field, 4,400,000 barrels.

The quality of the petroleum produced from these new sections is generally much inferior to that produced in the old fields, but the greater part of it is valuable as a fuel in its natural state, or after some of the more volatile products have been removed, and is particularly acceptable as fuel in the absence of available coal deposits in the Southwest and West. In 1901 the Appalachian field produced 48.45 per cent of the total output, the Lima-Indiana field 31.61 per cent and all other fields 19.94 per cent, as compared, respectively, with 57.5 per cent, 34.34 per cent and 8.61 per cent in 1900. The new fields of California, Colorado, Kansas, Wyoming and Texas, it is observed, produced practically 20 per cent of the total production of 1901, a gain of 11.4 in percentage over 1900, with the probability that the Southwest and West will produce 35 per cent of the total output in 1902.

The average price paid for all the petroleum marketed in the United States during 1901 was 95.7 cents a barrel, as compared with $1.194 in 1900, showing a decrease of 23.7 cents a barrel, or 20 per cent, the lowest price since 1898. The gross decrease in value for 1901, as compared with 1900, was nearly 13 per cent, notwithstanding that the quantity increased for the same period a little over 9 per cent. The average price paid for Pennsylvania petroleum, which represents 48.5 per cent of the total production, was $1.21 a barrel in 1901, as compared with 57 per cent produced in 1900 and marketed at an average price of $1.356 a barrel, a decline of 14.6 cents a barrel, or 12 per cent. There was a decline of 37.7 cents a barrel in the average price paid for California petroleum, and a decline of 76 cents a barrel for the Texas product in 1901, as compared with 1900—a decline accounted for by the increased production of the new fields developed in both these States.

The total number of wells completed in 1901 in the United States in search of petroleum approximates 14,250, of which 3,220 are estimated to be dry. The cost of these 14,250 wells is estimated at $21,375,000, approximately one-third of the receipts for the entire crude product.

In 1901, for the first time in the history of the trade, the total number of gallons of petroleum and its derivatives exported exceeded 1,000,000,000, the number of gallons being 1,062,750,396, a gain of 9 per cent over the exports of 1900. The value of these exports in 1901 was $71,479,124, as compared with a value of $73,276,282 in 1900. The total exports of manufactured petroleum from Russia in 1901 were 390,920,095 gallons, about 36.8 per cent of the exports from the United States.

The average price received for all the various grades of petroleum exported from the United States in 1901 was 6.72 cents a gallon, as compared with 7.52 cents a gallon received in 1900 and 6.83 cents a gallon in 1899. The developments of the oil pools at and near Beaumont, Tex., and in the section surrounding Bakersfield, Cal., and the developments at Boulder, Col., have been the chief causes of the organization of 1,578 oil stock companies with a capitalization, acknowledged and estimated, of $669,083,000 in 1901.

New-York continued to be the leading port for the export of petroleum and its products during 1901. Of the total amount shipped abroad, about 56.66 per cent was sent from that city, 30.75 per cent from Philadelphia, 8.75 per cent from Delaware ports, 3.75 per cent from Baltimore and less than one-tenth of 1 per cent from Boston. It is estimated that 45 per cent of the entire product of crude petroleum produced in the United States finds a market abroad, notwithstanding the high duties that have been imposed by almost all countries, except Great Britain, upon all imports of our petroleum. This fact seems to indicate that no other artificial source of light can replace petroleum in the markets of the world.

APPEAL FOR CHARITIES RENEWED.

The Charity Organization Society renews its appeal for assistance in the following cases of need: For $100 for the benefit of a widow who has four children; she has undergone severe surgical operations, which make necessary her complete rest for a time; she is unwilling to consent to the commitment of her children, hoping to re-establish her home; provision has been made for three of the children, and a small amount has been contributed toward the mother's board, which the sum asked for will sufficiently supplement, and also pay the board of the boy in a good temporary home. For $10 a month to provide food and shelter for an elderly and respectable American woman, who is slowly recovering from an attack of pneumonia; she has worked many years as a book folder, but is too feeble to resume her work now, and has neither relatives nor friends who can care for her. For $150 for an old German couple who are striving to keep a home; the man, who is deaf, and blind in one eye, is willing to work, but is prevented from doing so by his age, seventy-one years, and feeble health; his wife, seventy-four years of age, is an invalid, and unable to contribute anything toward their support. For $5 a month to enable a Bohemian widow to keep a home for her three boys, who are ten, nine and four years old; she is industrious, but has a nervous trouble which prevents her from earning sufficient to supply the needs of her family.

Any money for the above cases sent to the Charity Organization Society, No. 105 East Twenty-second-st., will be publicly acknowledged.

BRONX BUILDING PLANS.

Franklin-ave., west side, 110 feet south of One-hundred-and-seventieth-st., three story brick dwelling house, 22x57; Margaret Mulhall, No. 834 Eagle-ave., owner; The Bronx Architectural Company, No. 3,307 Third-ave., architect; $8,000.

One-hundred-and-fiftieth-st., south side, 200 feet west of Courtlandt-ave, three story brick fire engine house, 25x81; city of New-York, owner; Alexander Stevens, No. 167 East Sixty-seventh-st., architect; $35,000.

THEIR STEERING GEER

From Youth's Companion.

A professor of a profound subject at Harvard University has a small son who is very observant and inquisitive, and a hired man who has all the Irish wit and good humor.

The other day Albert, the small boy, was playing with a cat in the stable, while Larry cleaned the harness.

"Say, Larry," he asked, "why do cats always land on their feet?"

"They shteer themselves wid their tail."

"Well, how do rabbits steer themselves? They haven't long tails, only a stub."

"Wid their ears. That's phwat they have their long ears for."

"Well, how does a bulldog steer himself? He doesn't have long ears or a long tail."

"Wid his bark."

The boy looked doubtful and was silent. Presently he ran into his father's study, and in a few minutes came back to the stable.

"Larry?"

"Yis?"

"That's true what you told me about bulldogs. I asked papa, and he read something to mama out of a book about 'barks that steer against the wind.'"

THE WEEK IN REALTY.

There are two sections of the city which are likely to arouse the interest of the student of real estate conditions for many months, if not for many years. They are the one bounded by Forty-second and Fifty-ninth sts. and Fifth and Eighth aves. and that known as the upper West Side section, which begins at Fifty-ninth-st. and extends north. Because of its alluring beauty, its great possibilities and its numerous bargains, the upper West Side section will draw within its boundaries thousands of new home seekers, operators and investors in hotel and apartment house properties. Because of its central location, the architectural beauty of many of its buildings and the plans under way for the improvement of many of its sites, the section between Forty-second and Fifty-ninth sts. and Fifth and Eighth aves. is destined to be the scene of still greater realty activity. The oldtime speculator may not like to have these facts made known to the public, for he makes his profit by knowing now what the public will want to buy most of all in the near future. It is true that the public does not always know what it really wants, and that is owing to the fact that it cannot see its way clearly on every occasion. People who have

NO. 32 UNION SQUARE.
("The House of Many Wills.") Sold last week. It was long occupied by Richard Tighe, an eccentric recluse, and his wife.

thumbed the realty records for many years for the purpose of getting data by which to form a true standard of values are often heard to say that the realty problem is an intensely interesting one.

There seems to be no end to the great array of figures to be considered by the student. Many people think that buying a house is like purchasing a suit of clothes. If the house pleases them and the price is what they consider to be reasonable, they buy the property. When they have got the deed of the parcel in their pocket they begin to see how unbusinesslike they acted, and just about that time they may learn that they paid some thousand dollars too much for the property. If a great many persons would not shirk the task of comparing former and present prices, learning just what might be done with a parcel, whether it is best adapted for a schoolhouse, a factory or an apartment hotel site, the great wideawake realty body would thank them, and they would be better pleased with their investments. To calculate the damage that investors and builders, and especially property owners with little gray matter, can do is an utter impossibility. The ghastly marks of their work are too plainly seen in various sections of the city. In the Greenwich Village and the West Side section from the Battery up to Franklin-st. there are more idle factory and loft buildings and other properties, judging from the signs displayed on them, than the city should be burdened with. There was a time when these buildings were in great demand for factory and other purposes, but the owners of the buildings could not keep abreast of the times, and one by one they became empty. many of the manufacturing concerns sought places outside of the city, the property greatly depreciated, and for these and a hundred and one other reasons the city was the loser, and not the gainer. Why were not these buildings kept up to date and some effort made at least to keep the tenants? "Greed for gain" is the usual answer to the question. And just for the errors of the past almost whole block fronts in the lower West Side are dormant, practically dead, to real estate men. The awakening there is at hand, but it is a dear awakening to those who, through concerted action, might have preserved and strengthened the section as one especially well suited for big manufacturing concerns and for large mercantile houses.

If there are any striking lessons to be learned in the reported transactions last week, they are the three which have caused considerable attention among many real estate students, the first being the great future of the upper West Side section and of the central section and the terrible cost to the lower West Side section of the errors committed years ago by many light brained investors and others.

In the review of last week, a number of comparisons of values of properties in Fifty-seventh-st., between Sixth and Seventh aves., were given. The comparisons were formed by studying the recorded transfers of titles, and no transfer was used in the effort to get a fair idea of the great fluctuation in valuation in the section where the consideration of the transfer was not clearly set forth. There are only two more records to be viewed and carefully examined before completing this hasty search of the transfers of certain properties in West Fifty-seventh-st. One affects No. 130 West Fifty-seventh-st. Title to this parcel, which is a four story stone front dwelling house, on a lot 20x100.5 feet, was transferred in September, 1897, by Magdalene Walter to Brent Good for $49,000, or about $24.50 a square foot and $2,400 a front foot.

In June, 1898, No. 102 West Fifty-seventh-st., a four story stone front dwelling house, on a lot 15x100 feet, with all title to a strip 15x0.5 adjoining in rear, was transferred by Libbie M. R. Scott, widow, to Minnie R. Martin. The consideration was nominal and the property carried a mortgage of $27,000. The tables formed from the records have shown an increase in valuation of a front foot in Fifty-seventh-st., between Fifth and Sixth aves., from 1895 to 1901, of $2,100, and that properties in Fifty-seventh-st., between Sixth and Seventh aves., ought to bring in the open market at least $2,500 a front foot.

The Hotel Endicott is soon to be offered at public auction in foreclosure. The value of this property has greatly increased in the last few years, and it will be much more in the near future than now.

One of the interesting sales of last week was No. 32 Union Square, once the home of Richard Tighe, the eccentric recluse and No. 104 East Sixteenth-st.

SALES REPORTED YESTERDAY.

ANOTHER COOK PARCEL BOUGHT FOR IMPROVEMENT.

Henry D. Winans & May report the sale of the 25-foot lot No. 5 East Seventy-eighth-st., part of the Cook block, on which a strictly first class private dwelling house will be erected, under designs and supervision of C. P. H. Gilbert, the architect. This sale was effected for the J. C. Lyons Building and Operating Company, who recently purchased it from H. H. Benedict.

John M. Reid and Thomas Murphy sold for Michael Curley to Mary Higgins No. 250 East Forty-ninth-st., a three story and basement brownstone private house, on lot 19x100.5, for about $13,000. Messrs. Reid and Murphy have consolidated all their real estate and insurance interests under the firm name of Reid & Murphy, with office at No. 161 East Thirty-fourth-st. Mr. Murphy is the Tammany Hall leader of the XXth Assembly District and Mr. Reid is a well known Republican.

William Durland is said to have sold No. 231 West Seventy-fourth-st., a three story dwelling house, on lot 20x102.2, to Browning, King & Co., who own a plot at the northwest corner of Broadway and Seventy-fourth-st., which is separated from the above purchase by a vacant lot, which is owned by W. E. D. Stokes.

C. F. W. Johanning has sold for a client No. 2,102 Eighth-ave., a five story flathouse, with stores, on a lot 25x100, for $36,000.

Francis H. Leggett is reported to have sold No. 21 West Thirty-fourth-st., a five story building, on lot 25x98.9.

H. T. Gurney has resold for Dr. R. C. James No. 61 West Fifty-fifth-st., a four story and basement dwelling house, on lot 20x100.5.

Charles M. Rosenthal has sold No. 208 East Fifty-eighth-st., a three story and basement dwelling house, on lot 20x100.5.

Janpole & Werner have sold to Eva Jacobs a plot 50x100 feet on the west side of Seventh-ave., 75.11 feet north of One-hundred-and-twelfth-st.; also to Arthur E Silverman a plot 100x100